

Aregu Wind srl

Parco Eolico Aregu sito nei Comuni di Giave, Cossoine e Cheremule (SS)

Relazione sulle ombre

Dicembre 2022



REGIONE AUTÒNOMA DE SARDIGNA
REGIONE AUTONOMA DELLA SARDEGNA



Comune di Cheremule



Comune di Cossoine



Comune di Giave

Committente:

Aregu Wind srl

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Titolo del Progetto:

**Parco Eolico Aregu sito nei Comuni di Giave, Cossoine e
Cheremule (SS)**

Documento:

Relazione sulle ombre

N° Documento:

IT-VesAre-CLP-SPE-TR-12

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1. Introduzione

La presente relazione espone l'analisi dell'evoluzione dell'ombra giornaliera generata dalla presenza degli aerogeneratori del parco eolico proposto, denominato "Aregu" e sito nei comuni di Giave, Cossoine e Cheremule e che conta 11 aerogeneratori Vestas V162, così come richiesto nell'allegato alla D.G.R n.3/17 del 16/01/09, "Studio per l'individuazione delle aree in cui ubicare gli impianti eolici. Lo studio prende in considerazione la formazione di ghiaccio sulle strade e lo sfarfallio dell'ombra (shadow flicker) sugli edifici (di seguito recettori) presenti nell'ambiente circostante al parco.

La formazione di ghiaccio costituisce un pericolo per gli utilizzatori delle strade, e si presenta tipicamente zone montane, pedemontane o appenniniche. L'analisi è limitata alle strade statali e provinciali e alle principali strade comunali che attraversano l'area vasta del parco.

Lo sfarfallio dell'ombra si presenta quando la pala di una turbina interposta tra un recettore e il sole "taglia" il fascio luminoso, producendo un alternarsi di ombra e luce. A seconda della frequenza di sfarfallio questo fenomeno può indurre attacchi epilettici su soggetti predisposti. È stato mostrato¹ che frequenze di sfarfallio inferiori a 3 Hz non pongono un rischio su soggetti fotosensitivi². Pertanto in questo studio si prenderà tale valore come riferimento.

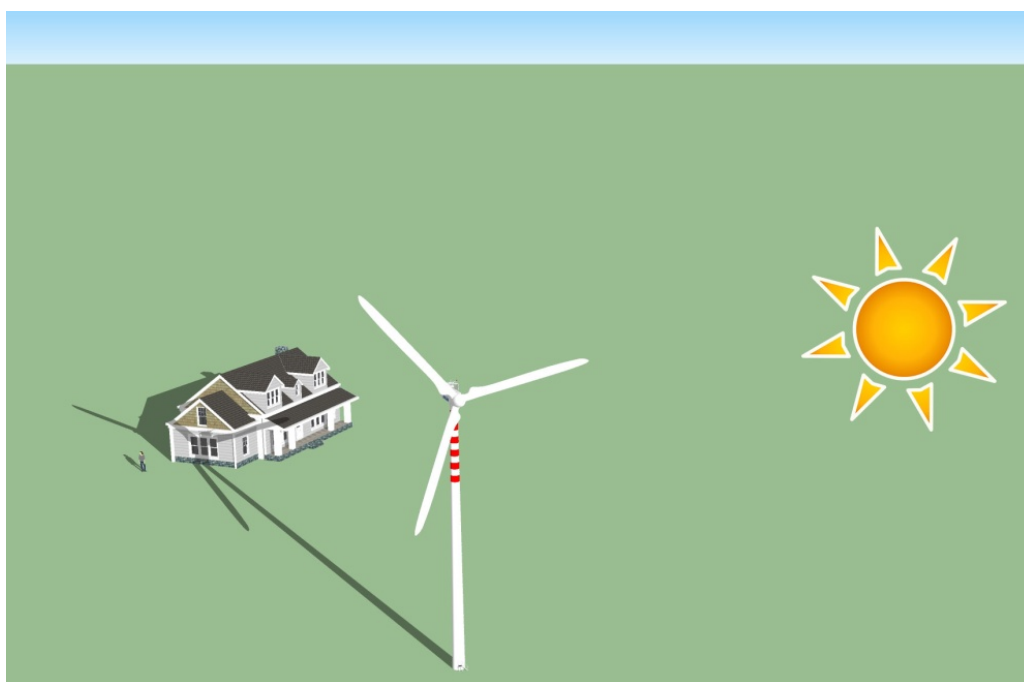



Figura 1: rappresentazione grafica del fenomeno di ombreggiamento.

¹ Harding et al doi:10.1111/j.1528-1167.2008.01563.x

² Ovvero il rischio cumulativo di attacco epilettico è inferiore a 17 persone per milione di soggetti fotosensitivi quando la frequenza di sfarfallio è inferiore a 3 Hz.

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Allo stato attuale solo la Germania possiede linee-guida dettagliate sui limiti e sulle condizioni per il calcolo dell'impatto dell'ombra e sono consultabili nel documento "Hinweise zur Ermittlung und Beurteilung der optischen Immissionen von Windenergieanlagen" (WEA-Shattenwurf-Hinweise).

Una condizione necessaria affinché si verifichi il fenomeno dello sfarfallio in un dato recettore è che, da quel sito, la dimensione angolare delle pale sia paragonabile alla dimensione angolare del sole, in quanto se la dimensione relativa della pala è piccola rispetto al sole, questa non produce ombra percettibile sul recettore. Seguendo le linee guida tedesche, si pone la soglia di 1/5 come rapporto minimo tra la dimensione angolare della pala e la dimensione angolare del sole perché si possa verificare lo sfarfallio in un certo sito.

I problemi sopra esposti non sussistono qualora (linee guida tedesche):

- Il recettore subisca meno di 30 ore/anno di ombra da parte degli aerogeneratori;
- per ogni giorno dell'anno, il recettore subisca meno di 30 minuti di ombra.

Inoltre le linee guida specificano che gli ombreggiamenti diventano rilevanti solamente quando si considerano i recettori comportanti attività residenziali e lavorative stabili: "è auspicabile (che l'effetto flickering) si mantenga al di sotto delle 30 ore/anno in presenza di attività lavorative statiche, tipo ufficio, scuole, ospedali, interessate direttamente da impatto".

Questa indicazione è legata al fatto che all'interno di un edificio adibito a uffici, le postazioni di lavoro sono generalmente fisse, pertanto se l'edificio con pareti finestrate risulta prospiciente l'impianto eolico, chiaramente lo sfarfallio delle ombre oltre certi limiti può costituire un problema per quei lavoratori che si ritrovino con le loro postazioni proprio davanti alle pareti vetrate. Viceversa, lo sfarfallio diventa irrilevante per tutti i recettori di tipo non residenziale e dedicati ad attività che non richiedono un'assidua presenza in una stazione fissa, come ad esempio le attività agricole e agropastorali, nelle quali il personale addetto si muove in continuazione all'interno dei terreni per svolgere le proprie mansioni.

Le stesse considerazioni valgono per tutti i beni paesaggistici, manufatti, beni archeologici etc; i quali possono essere frequentati ma le persone devono, per natura dei luoghi, muoversi in continuazione e non stazionare ferme nello stesso punto per quantità considerevoli di tempo. L'unica eccezione vale per quei contesti nei quali delle persone devono svolgere dei lavori e/o passare del tempo in maniera continuativa in una certa posizione fissa rispetto alle turbine. In quel caso si procede ad uno studio approfondito esattamente come nel caso dei recettori residenziali.

1. Metodologia

1.1 Specifiche aerogeneratori

Il modello degli aerogeneratori è Vestas V162. Questi hanno altezza al mozzo di 125 m e altezza totale all'apice di 206 m. Le pale sono lunghe 79.35 m e possiedono larghezza massima di 4.3m. La velocità massima di rotazione del rotore è pari a 12.1 rpm.

1.2 Modello digitale di elevazione (DEM)

Il modello digitale di elevazione (DEM) utilizzato per effettuare le simulazioni con il software WindPro è quello fornito dalla Regione Sardegna³, con risoluzione 10 m. Inoltre si è ipotizzata l'altezza degli occhi di un generico osservatore pari a 1.6 m. L'orografia può determinare l'occlusione della vista degli aerogeneratori da parte dei recettori (Figura 2) ed in questi casi non viene considerato il possibile effetto di ombreggiamento.

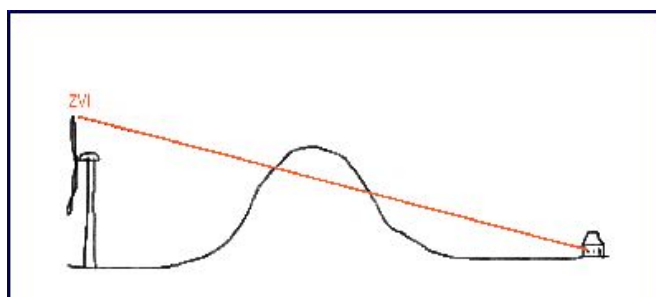


Figura 2: occlusione visiva dell'aerogeneratore rispetto al recettore, a causa dell'andamento orografico.

1.3 Recettori

Sono stati considerati i fabbricati che si trovano in prossimità del parco, entro 1 km di distanza da esso. Solamente uno di essi appartiene alla tipologia residenziale (i restanti alla tipologia non residenziale) ed è riportato in Tabella 1.

con la sua localizzazione rispetto al parco. In via conservativa è stato considerato il caso peggiore, ovvero che tutti i recettori siano delle serre sferiche (green house), ovvero che tutte le pareti siano trasparenti e

³ <http://www.sardegnaegeoportale.it/webgis2/sardegnamappe/>

che siano ortogonali a tutti gli aerogeneratori. In questo modo la simulazione fornisce una sovrastima degli effetti di ombra delle turbine sui recettori.

Per i recettori residenziali, se i risultati non indicano superamenti dei limiti indicati nelle linee guida, non si procede oltre, in caso contrario può essere necessario procedere a delle verifiche di dettaglio considerando le reali aperture dei ricettori (dimensioni ed orientazioni di finestre e porte).

Per i recettori non residenziali non è necessario procedere con ulteriori analisi in quanto lo shadow flickering non è impattante per questi (capitolo 1).

Nome	Tipologia	Categoria catastale	E GB (m)	N GB (m)	Altitudine (m)	AG più vicina	Distanza AG (m)
R07	Residenziale	A/4	1473571	4480979	470	AG08	508

Tabella 1 Recettori residenziali adiacenti al parco in proposta (1km).

1.4 Eliofania e distribuzione dei venti

I problemi dovuti all'ombra degli aerogeneratori sono presenti solamente quando è presente illuminazione diretta del sole (eliofania). I dati rilevanti nelle nostre simulazioni sono la lunghezza del dì (ovvero le ore presenti tra alba e tramonto, che non dipende dalle condizioni meteo) e le ore di illuminazione diretta. La prima varia con continuità nell'arco dell'anno, senza apprezzabili distinzioni tra le varie zone della Sardegna, mentre la seconda è variabile da zona a zona e dipende da fenomeni a grande scala che influenzano in maniera sostanzialmente uniforme l'intera superficie isolana.

Di conseguenza il valore climatologico dell'eliofania è da considerarsi lo stesso su tutta la Sardegna (fonte: ARPA Sardegna), e per questo motivo sono stati utilizzati i valori di eliofania forniti dalla stazione meteorologica di Alghero.

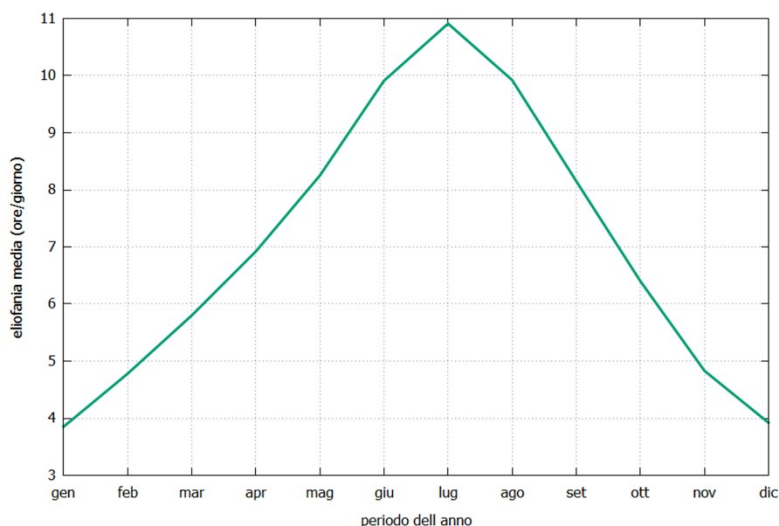


Figura 3: Elioфанía media. Dati rilevati nella stazione di Alghero.

L'ombra che gli aerogeneratori proiettano sui recettori dipende anche dalla direzione del piano di rotazione delle pale; nello specifico, l'ombra è massima quando il piano di rotazione è perpendicolare al recettore. L'orientamento del piano di rotazione è determinato dalla direzione del vento, quindi l'orientamento segue la distribuzione dei venti (si veda lo studio anemologico IT-VesAre-CLP-SPE-TR-14) :

	N	NE	E	SE	S	SW	W	NW
ore di attività annuali	704	820	622	355	622	1039	1312	1360

Tabella 2 Rosa dei venti. Valori scalati su un anno di attività, ovvero su un totale di 6832 ore.

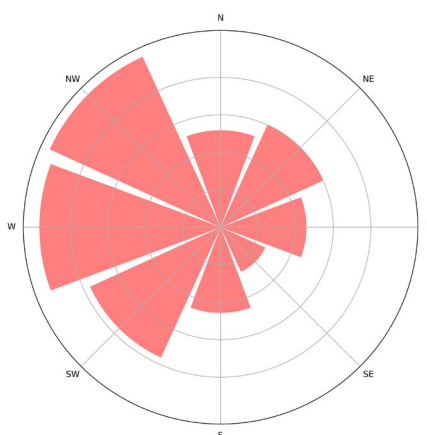
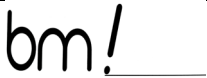


Figura 4: rosa dei venti per la località del parco in proposta in unità arbitrarie.

Nella simulazione questo fattore è preso in considerazione, in modo da diminuire o aumentare l'ombra a seconda dell'orientamento relativo tra il piano di rotazione delle pale e i recettori. In Figura 4 è riportata la

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rosa dei venti in unità arbitrarie e in Tabella 2 Rosa dei venti. Valori scalati su un anno di attività, ovvero su un totale di 6832 ore. la distribuzione dei venti normalizzata rispetto ad un anno di attività, ovvero al 78% di un anno, che rappresenta il tempo medio di attività del parco. Questo quantitativo di ore è quello che viene inserito come input nella simulazione per determinare la porzione di tempo nella quale una turbina ruota in una specifica direzione. I dati sono presi dallo Studio anemologico e di producibilità (IT-VesAre-CLP-SPE-TR-14).

Tutte le considerazioni esposte tengono conto dei risultati delle simulazioni realistiche, ovvero simulazioni basate sull'eliofania e sulla distribuzione dei venti (a differenza della simulazione rispetto al caso peggiore in cui non se ne tiene conto).

1.5 Effetti cumulativi

Ai fini dello studio delle ombre, l'impatto dei parchi eolici viene considerato nullo per distanze maggiori di 2 km, come risulta evidente dalle isolinee d'ombra delle immagini successive. I parchi esistenti o in istruttoria nelle vicinanze del parco in proposta sono riportati in Figura 5. Di questi il più vicino è Thiesi Bentu Energy ad una distanza di 4.6km verso nord ovest dal parco in proposta, per cui nessun recettore può trovarsi contemporaneamente entro 2km sia dal parco in proposta sia dai parchi in istruttoria o esistenti nelle vicinanze. Pertanto non sono presenti effetti cumulativi riguardo l'ombreggiatura e l'analisi viene limitata al parco in proposta.

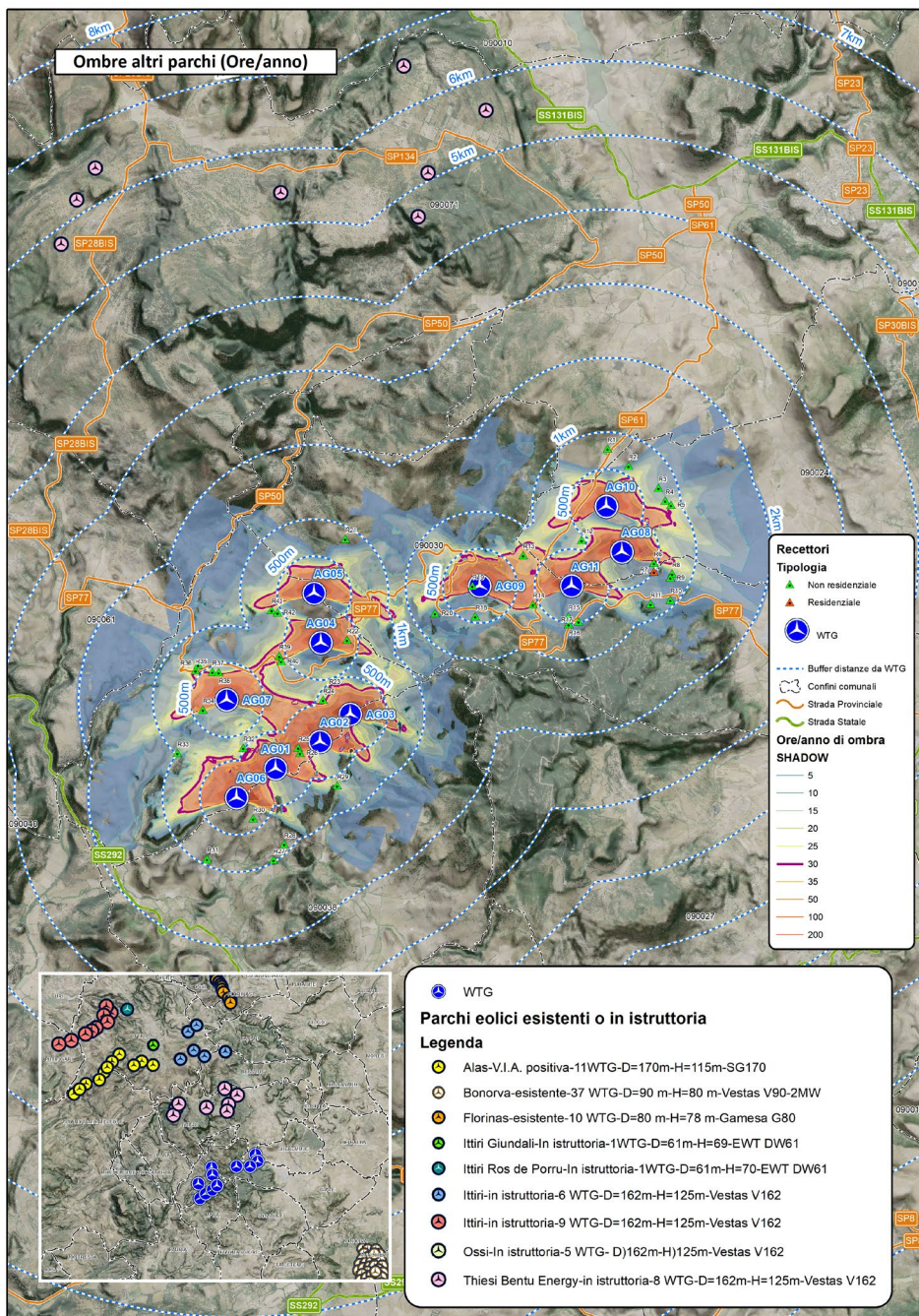


Figura 5 Effetti cumulativi. Nessuno dei recettori considerati subisce l'ombra dai parchi limitrofi a quello in proposta.

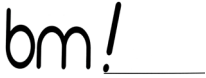
2. Risultati

2.1. Recettori

Nome	Tipologia	ombra (ore/anno)	massimo ombra giornaliera (min/giorno)	Giornate di ombra all'anno
R01	Non residenziale	0	0	0
R02	Non residenziale	3	7	35

Nome	Tipologia	ombra (ore/anno)	massimo ombra giornaliera (min/giorno)	Giornate di ombra all'anno
R03	Non residenziale	10	14	63
R04	Non residenziale	15	16	98
R05	Non residenziale	23	14	128
R06	Non residenziale	24	22	108
R07	Residenziale	5	11	42
R08	Non residenziale	11	12	81
R09	Non residenziale	4	9	36
R10	Non residenziale	5	10	42
R11	Non residenziale	8	13	57
R12	Non residenziale	19	18	114
R13	Non residenziale	32	23	161
R14	Non residenziale	39	33	117
R15	Non residenziale	3	5	42
R16	Non residenziale	3	5	54
R17	Non residenziale	2	4	36
R18	Non residenziale	8	12	60
R19	Non residenziale	180	90	177
R20	Non residenziale	3	8	48
R21	Non residenziale	0	0	0
R22	Non residenziale	65	35	198
R23	Non residenziale	27	21	132
R24	Non residenziale	27	28	96
R25	Non residenziale	122	45	281
R26	Non residenziale	63	27	239
R27	Non residenziale	0	0	0
R28	Non residenziale	0	0	0
R29	Non residenziale	20	16	93
R30	Non residenziale	0	0	0
R31	Non residenziale	0	0	0
R32	Non residenziale	17	17	81
R33	Non residenziale	12	9	123
R34	Non residenziale	46	34	215
R35	Non residenziale	27	19	137
R36	Non residenziale	16	13	113
R37	Non residenziale	25	19	152
R38	Non residenziale	22	16	155
R39	Non residenziale	44	24	173
R40	Non residenziale	28	18	140
R41	Non residenziale	19	11	143
R42	Non residenziale	18	13	110

Tabella 3 Ombra proiettata sui recettori. Caso realistico che tiene conto dell'eliofania e della rosa dei venti. In arancione sono evidenziati i recettori di tipo residenziale.

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In Figura 6 sono riportati i risultati della simulazione di ore totali di ombra all'anno, la zona ad alto impatto (ombra > 30 ore/anno) è delimitata dalla curva viola. I relativi valori sono tabulati in Tabella 3 Ombra proiettata sui recettori. Caso realistico che tiene conto dell'eliofania e della rosa dei venti. In arancione sono evidenziati i recettori di tipo residenziale.

Il recettore residenziale R07 subisce un ombreggiamento di 5 ore/anno, che risulta essere minore del valore di soglia 30 ore/anno. In ogni caso subisce l'ombreggiamento solamente da parte della turbina AG11 (Figura 10) e nelle ore serali, ma per un periodo sempre inferiore a 11 minuti per giorno.

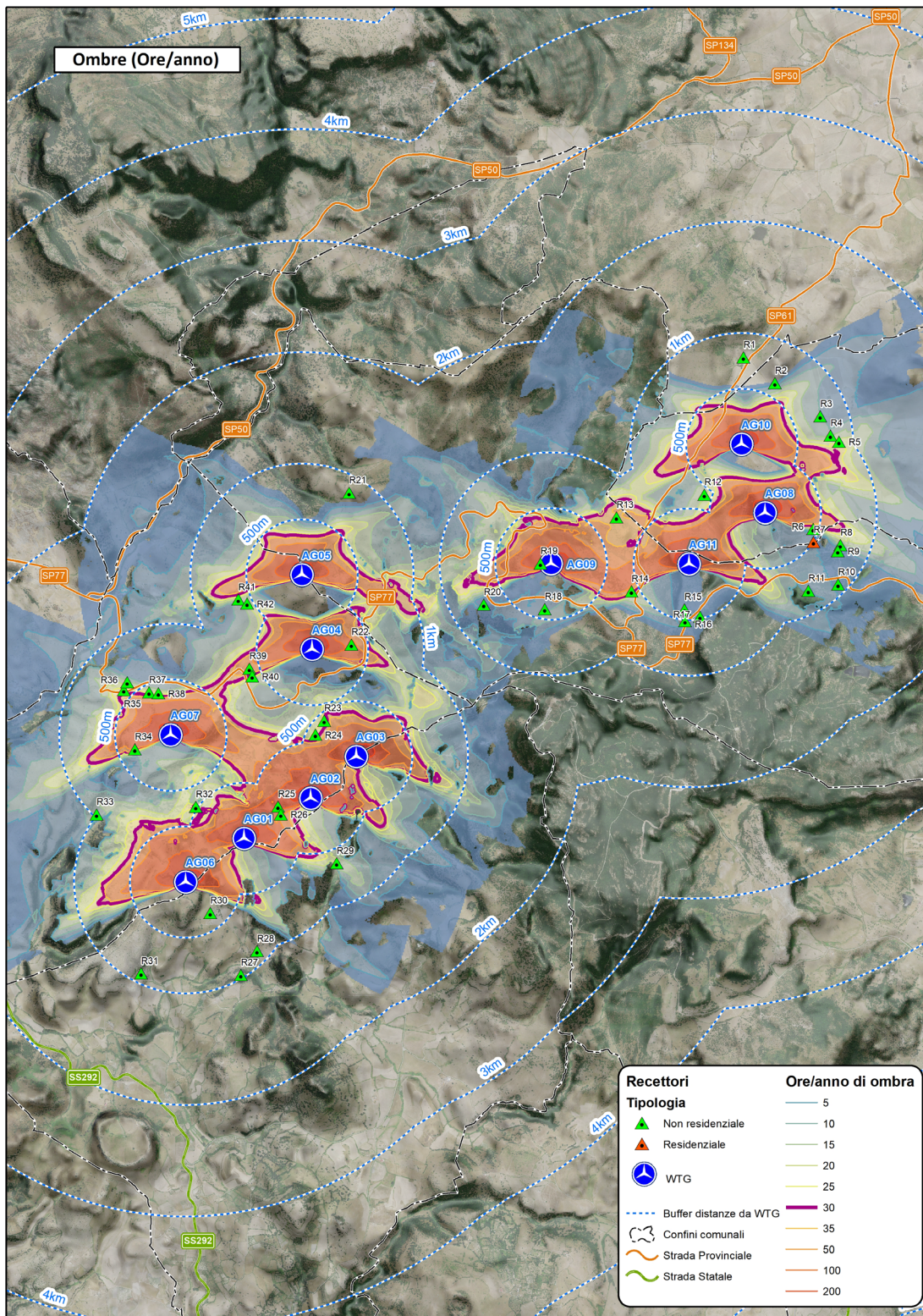


Figura 6: Ore di ombra totale all'anno su ortofoto, caso realistico che tiene conto dell'eliofania e della rosa dei venti. Sono presenti tutti i recettori. L'isolinea viola delimita al suo interno regioni con ombra > 30 ore/anno e al suo esterno regioni con ombra < 30 ore/anno.



Figura 7 Recettore R19.



Figura 8 Recettore R25.

Tra i recettori non residenziali quelli che subiscono maggiore ombreggiamento sono R19 e R25 rispettivamente 180 ore/anno e 122 ore anno e sono riportati in Figura 7 e Figura 8. Il recettore R19 si trova ad una distanza di 93 m dall'aerogeneratore AG09, tuttavia il locale è inutilizzato e il proprietario si è

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impegnato a demolire la struttura qualora il parco in proposta venisse autorizzato (si veda la relazione sui recettori).

In Figura 9 è riportato il massimo numero di minuti di ombra percepita dai recettori in un singolo giorno realisticamente; nessun recettore residenziale ricade nella zona con ombreggiatura massima giornaliera > 30 min/giorno.

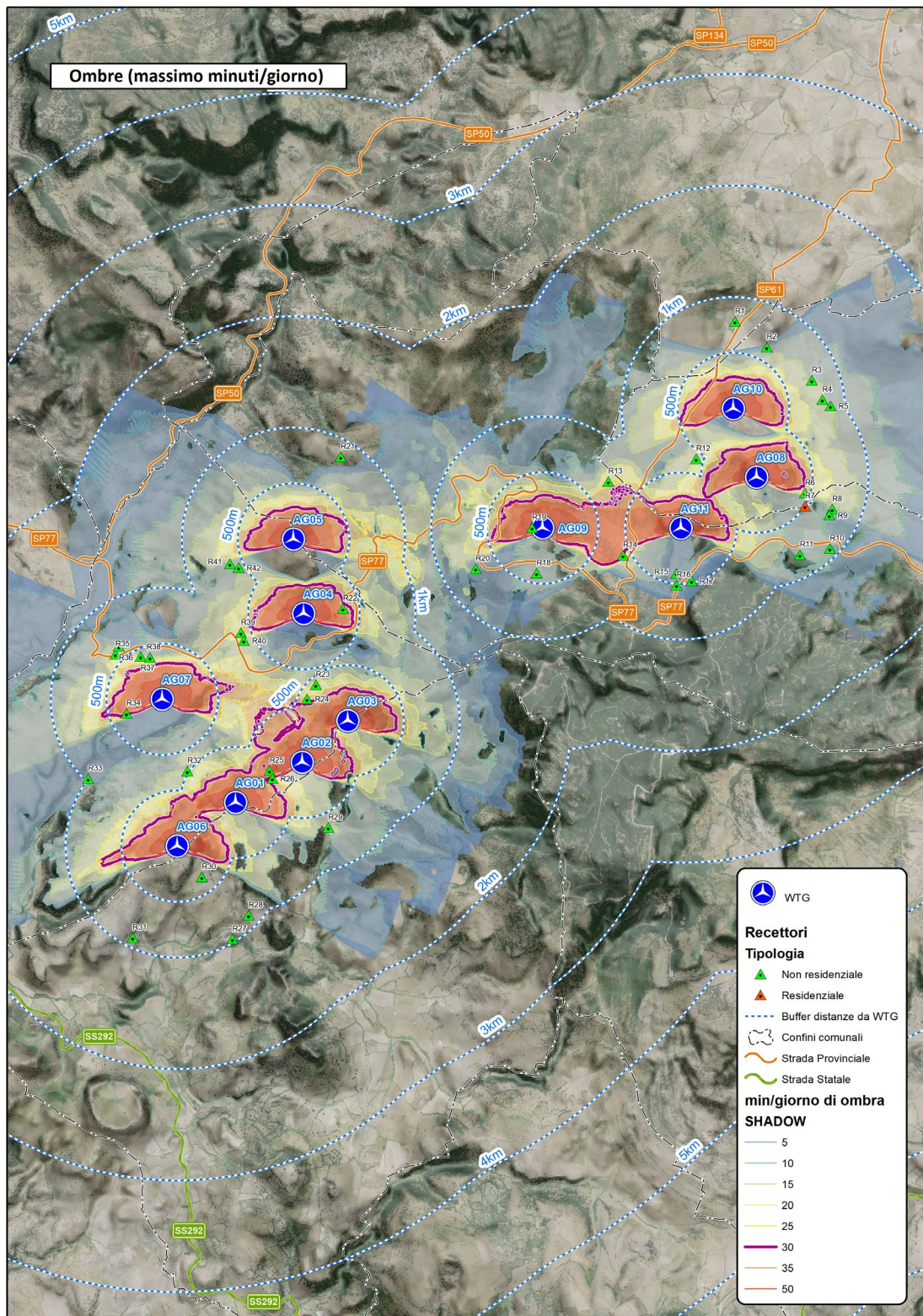


Figura 9: Massimo tempo di ombreggiatura giornaliera (minuti/giorno), caso realistico che tiene conto dell’eliofanìa e della rosa dei venti. L’isolinea viola delimita le zone a basso impatto (ombra < 30 min/giorno) dalle zone ad alto impatto (ombra > 30 minuti/giorno).

2.2. flickering

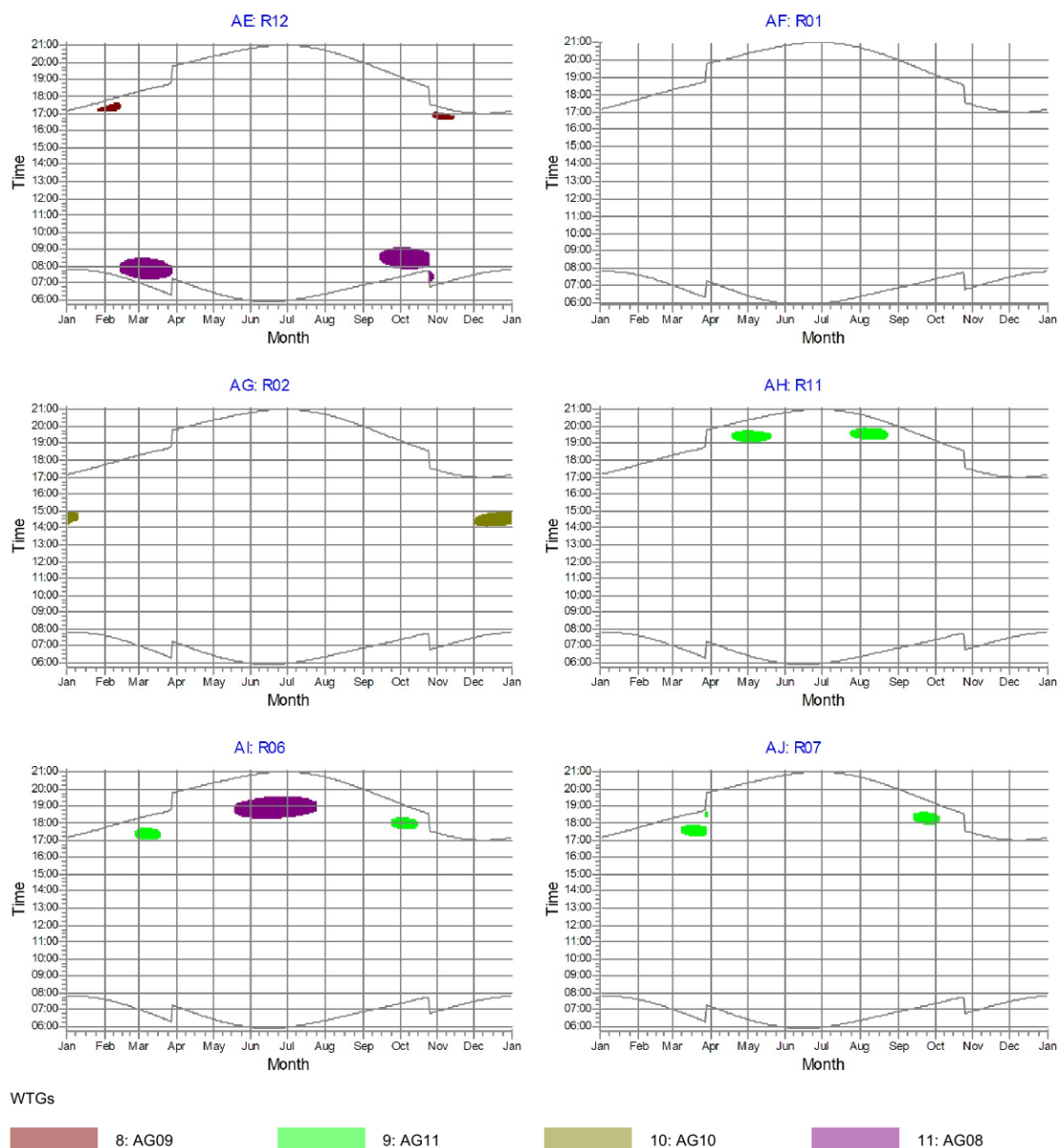


Figura 10: Calendario grafico ombre per ogni recettore nel caso peggiore, senza tenere conto di eliofania e rosa dei venti. Le linee continue indicano l'ora di alba e tramonto. Le macchie colorate indicano il periodo dell'anno e le ore nelle quali i recettori sono interessati dall'ombra di una WTG.

Le turbine in proposta (Vestas V162) hanno una velocità massima di rotazione pari a 12.1 rpm, ossia 0.6 Hz poiché la turbina è composta di 3 pale. Affinché si verifichi il fenomeno di flickering con almeno 3 Hz (soglia minima per soggetti fotosensibili, vedi capitolo 1) è necessario dunque che 4 o più turbine siano allineate rispetto ad un recettore; questo non avviene in nessun caso per i recettori considerati. Nello specifico, durante il corso dell'anno nessun recettore subisce l'ombra contemporanea di 3 o più turbine contemporaneamente. Questo scongiura la possibilità del verificarsi di potenziali rischi per soggetti

fotosensitivi, che si manifestano in presenza di frequenze di flickering superiori a 3Hz. Solamente il recettore R05 subisce l'ombra contemporanea di due turbine (AG08 e AG11), nelle sere di Dicembre e Gennaio (Figura 11) ma sempre per un periodo inferiore a 5 min al giorno (si veda il calendario tabellare in appendice). Questo non pone alcun impatto ai fini dello sfarfallio per nessun recettore considerato, residenziale e non.

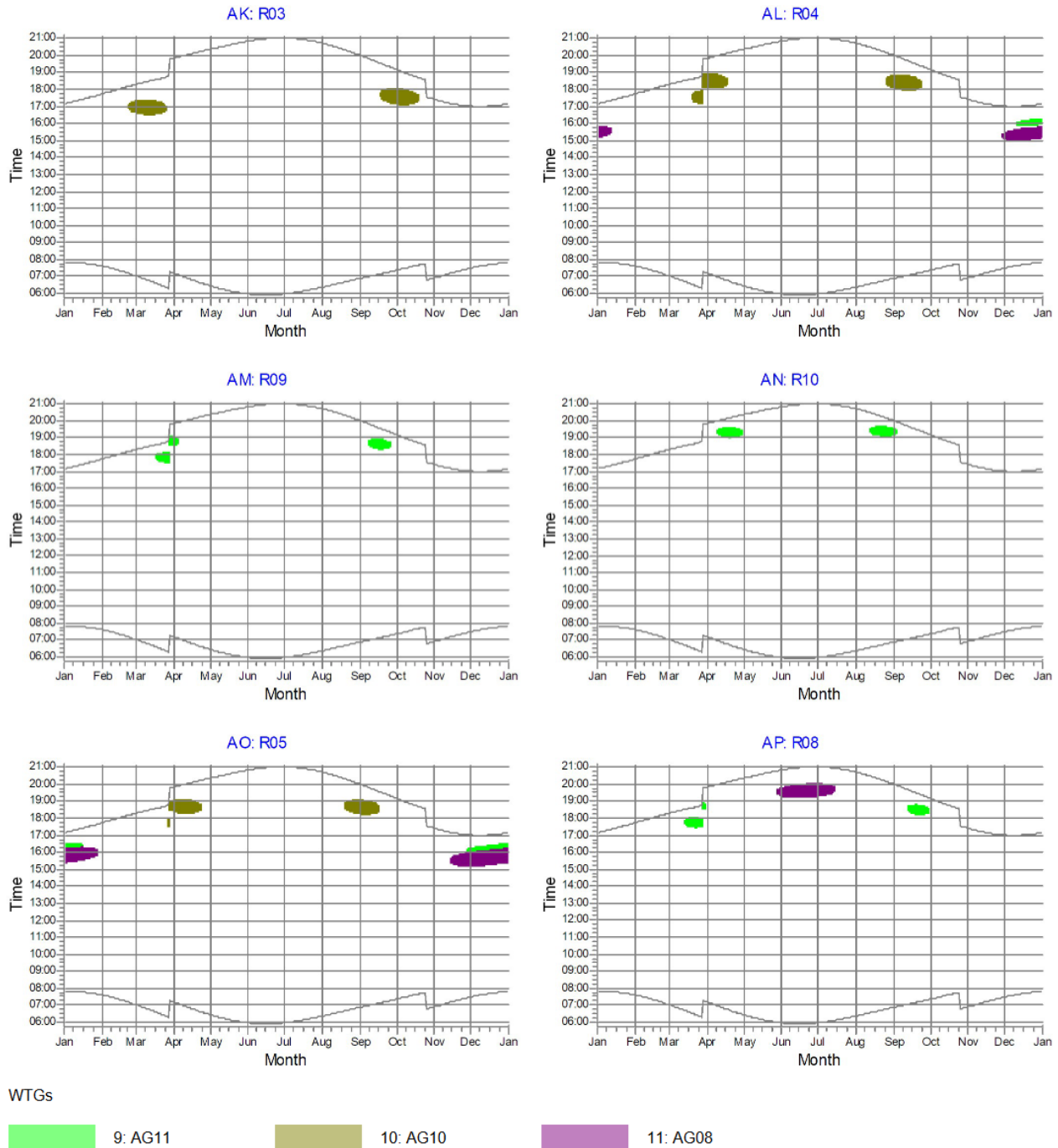


Figura 11: Calendario grafico ombre per ogni recettore nel caso peggiore. Il recettore R05 subisce ombra dalle turbine AG08 e AG11 nelle sere dei mesi invernali, e da AG10 nelle sere di Aprile e Settembre.

Le figure Figura 10 e Figura 11 riportano i calendari grafici delle ombre subite da alcuni recettori. Da questi è possibile determinare il periodo dell'anno e della giornata nel quale il recettore è interessato dall'ombra di una turbina. Ad esempio è possibile determinare che il recettore R07 subisce l'ombra della turbina AG11 nei mesi di Marzo e Settembre.

2.3 Strade

Le strade provinciali e statali sono riportate in Figura 9. La strada provinciale SP77 ricade dentro l'area con ombreggiatura massima giornaliera maggiore di 30 min/giorno a ovest della turbina AG09, mentre la strada SP61 ricade dentro l'area con ombreggiatura massima giornaliera superiore a 30 min/giorno nei pressi della turbina AG10 e nel tratto che separa AG09 e AG10 (si veda Figura 9).

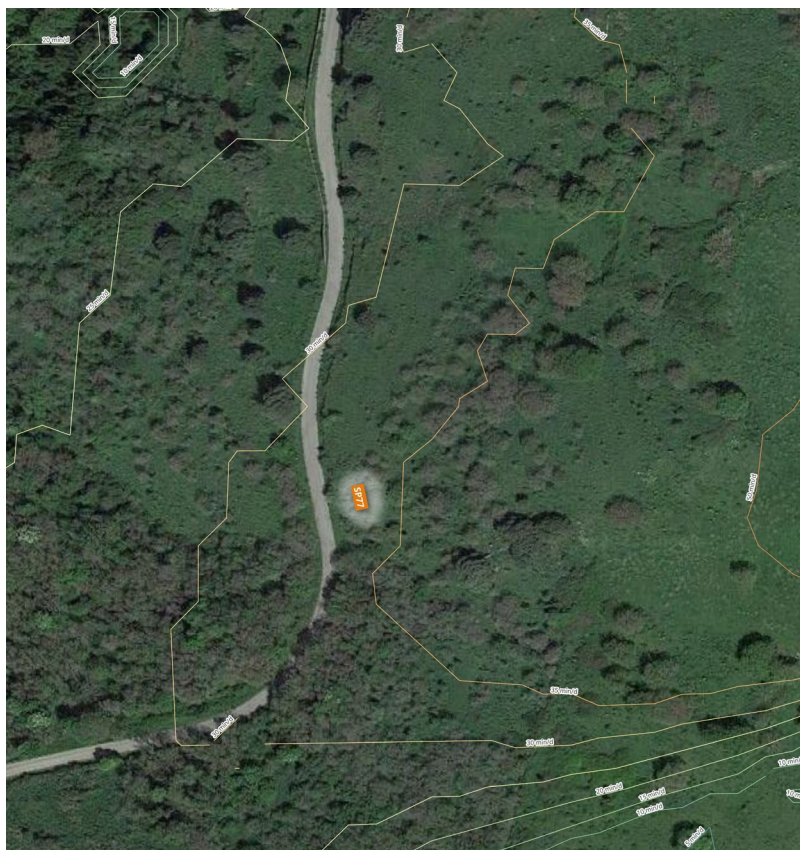


Figura 12 Strada provinciale SP77 e isolinee del massimo tempo di ombreggiatura giornaliera (minuti/giorno) .

L'ombreggiatura nel tratto di SP77 interessato non pone un problema ai fini della formazione del ghiaccio, questo perché lungo la strada è già presente della vegetazione che proietta la propria ombra lungo la strada (Figura 13) per un considerevole numero di ore. Di conseguenza l'ombra della turbina andrebbe a sommarsi a quella già presente e non determinerebbe un ulteriore effetto impattante. Inoltre in generale le

condizioni climatiche della zona assicurano nessuna criticità per la formazione di ghiaccio nelle strade circostanti al parco proposto.



Figura 13 Strada provinciale SP77 visione stradale. L'immagine è diretta verso nord.

Le stesse considerazioni valgono per la strada SP61 di cui viene proposta una visione stradale in Figura 14.



Figura 14 Strada provinciale SP61 visione stradale. L'immagine è diretta verso nord.

3. Conclusioni

È presente un solo recettore residenziale (R07) nell'intorno del parco in proposta (1 km). Esso subisce un ombreggiatura pari a 5 ore/anno; dunque nessun recettore residenziale considerato subisce un ombreggiatura maggiore a 30 ore/anno (soglia sotto la quale il flickering non è impattante). Inoltre nessun

recettore subisce il fenomeno di flickering a 3Hz o maggiore in quanto non si rileva mai l'ombra contemporanea di 3 o più turbine per nessun recettore.

Le strade provinciali SP77 e SP61 attraversano una zona con ombreggiatura massima giornaliera > 30 min/giorno, tuttavia l'impatto creato dal parco in proposta risulta trascurabile se confrontato con la naturale ombreggiatura proiettata sulla strada dalla vegetazione circostante.

Non sono presenti effetti di ombreggiamento cumulativo con i parchi limitrofi.

4. Appendice

Si riportano in appendice tutti i recettori considerati e il calendario grafico e tabellare per ogni recettore e per ogni turbina. Le metodologie di lettura delle tabelle e dei grafici sono state esposte nei precedenti paragrafi.

Nome	Tipologia	E GB (m)	N GB (m)	Altitudine (m)	AG più vicina	Distanza AG (m)
R01	Non residenziale	1472943	4482635	510	AG10	779
R02	Non residenziale	1473227	4482405	534	AG10	625
R03	Non residenziale	1473632	4482107	485	AG10	748
R04	Non residenziale	1473725	4481934	490	AG10	802
R05	Non residenziale	1473799	4481879	485	AG10	873
R06	Non residenziale	1473569	4481095	466	AG08	457
R07	Residenziale	1473571	4480979	470	AG08	508
R08	Non residenziale	1473813	4480950	463	AG08	737
R09	Non residenziale	1473790	4480898	461	AG08	738
R10	Non residenziale	1473793	4480598	490	AG08	919
R11	Non residenziale	1473525	4480543	505	AG08	800
R12	Non residenziale	1472593	4481403	557	AG10	564
R13	Non residenziale	1471806	4481201	550	AG09	720
R14	Non residenziale	1471939	4480538	540	AG11	572
R15	Non residenziale	1472416	4480374	574	AG11	410
R16	Non residenziale	1472420	4480270	576	AG11	514
R17	Non residenziale	1472554	4480308	575	AG11	484
R18	Non residenziale	1471163	4480376	483	AG09	413
R19	Non residenziale	1471125	4480786	501	AG09	93
R20	Non residenziale	1470617	4480418	445	AG09	704
R21	Non residenziale	1469410	4481420	444	AG05	850
R22	Non residenziale	1469430	4480059	341	AG04	355
R23	Non residenziale	1469186	4479376	306	AG03	430
R24	Non residenziale	1469106	4479250	313	AG03	415
R25	Non residenziale	1468770	4478606	340	AG02	304
R26	Non residenziale	1468797	4478535	342	AG02	305

Nome	Tipologia	E GB (m)	N GB (m)	Altitudine (m)	AG più vicina	Distanza AG (m)
R27	Non residenziale	1468439	4477094	222	AG06	973
R28	Non residenziale	1468584	4477308	232	AG06	894
R29	Non residenziale	1469298	4478096	264	AG02	632
R30	Non residenziale	1468165	4477650	275	AG06	359
R31	Non residenziale	1467545	4477108	223	AG06	914
R32	Non residenziale	1468034	4478602	270	AG01	516
R33	Non residenziale	1467144	4478534	189	AG07	977
R34	Non residenziale	1467488	4479119	263	AG07	346
R35	Non residenziale	1467388	4479649	268	AG07	581
R36	Non residenziale	1467421	4479721	274	AG07	611
R37	Non residenziale	1467616	4479629	285	AG07	426
R38	Non residenziale	1467700	4479621	286	AG07	388
R39	Non residenziale	1468516	4479844	310	AG04	588
R40	Non residenziale	1468541	4479773	315	AG04	589
R41	Non residenziale	1468415	4480462	368	AG05	612
R42	Non residenziale	1468494	4480427	381	AG05	554

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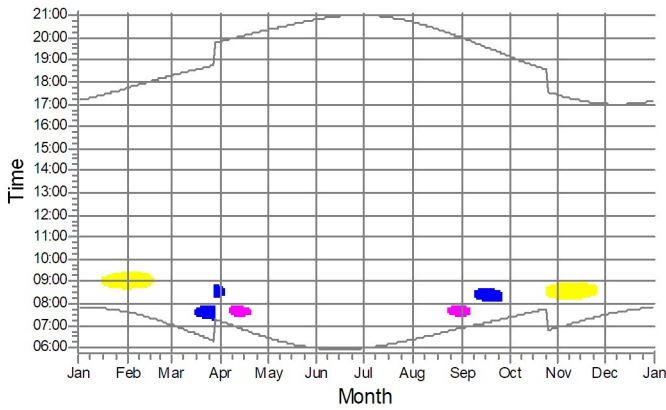
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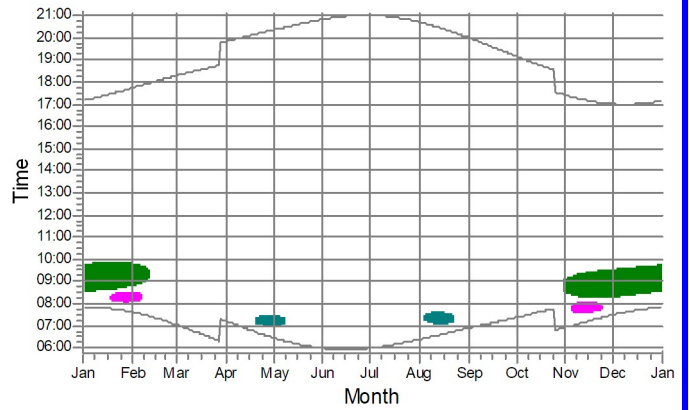
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Calculation: Giave progetto

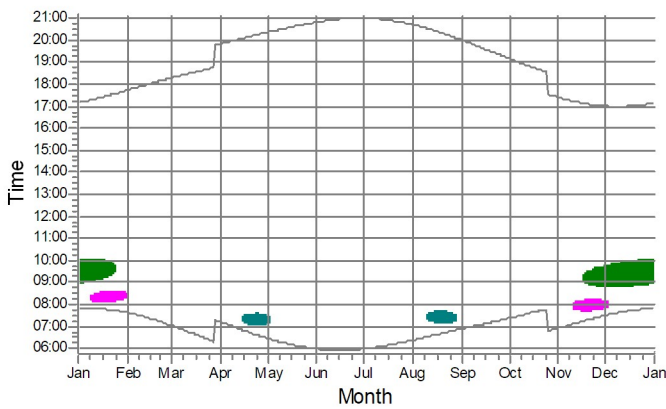
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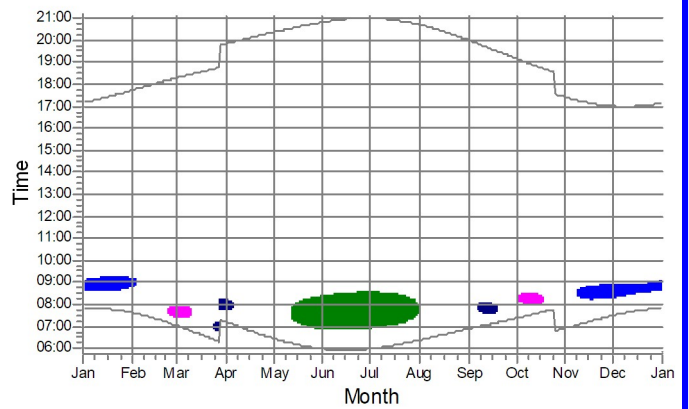
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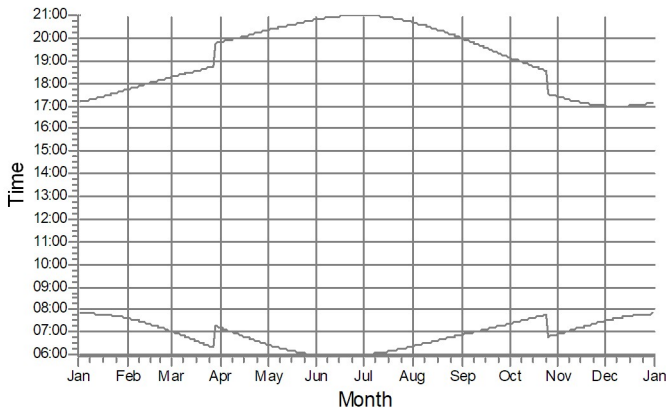
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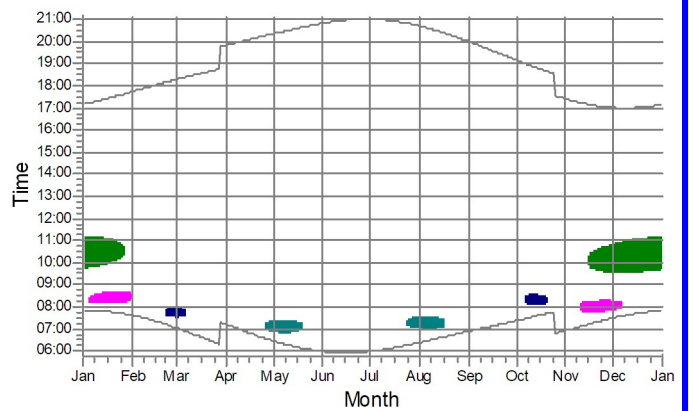
D: R34



E: R31



F: R37



WTGs

- | | | |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| 1: AG07 | 3: AG01 | 6: AG04 |
| 2: AG06 | 5: AG02 | 7: AG03 |

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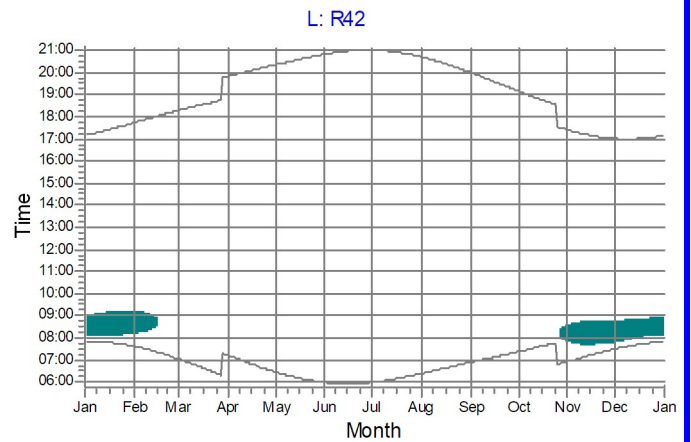
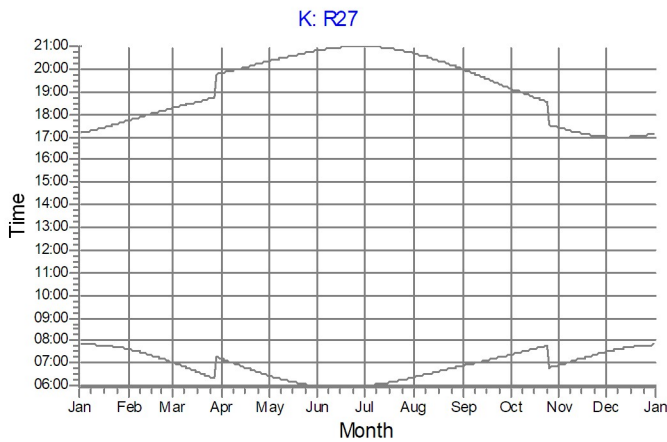
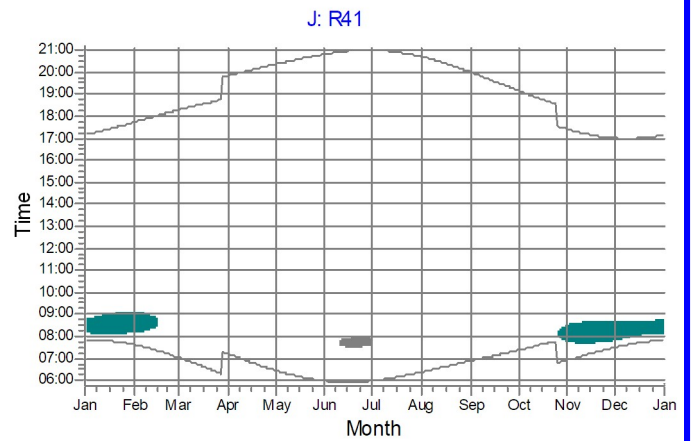
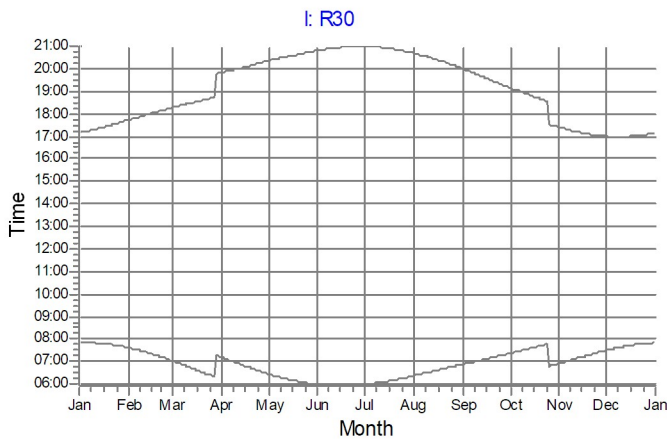
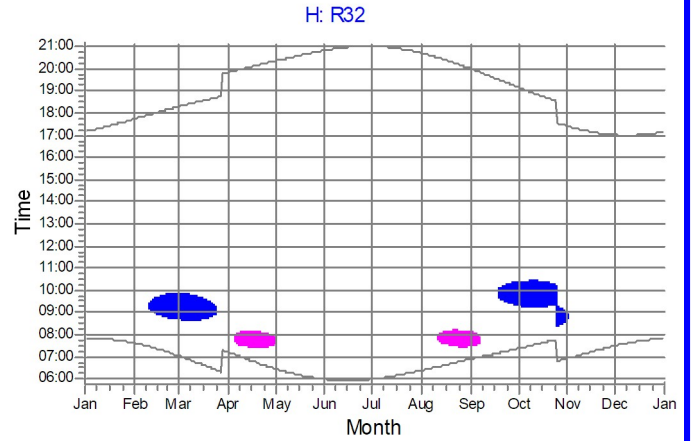
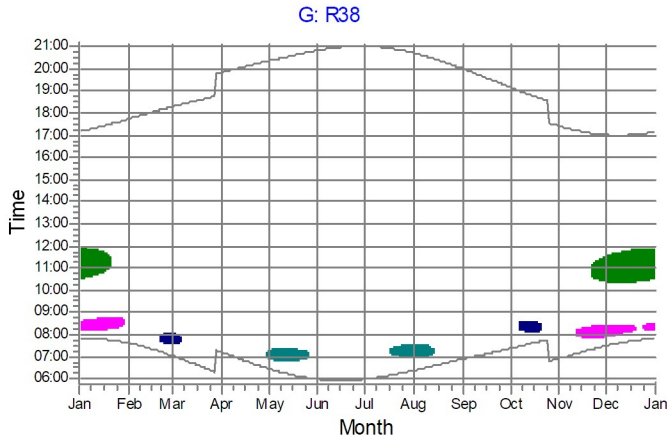
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SHADOW - Calendar, graphical

Calculation: Giave progetto



WTGs

- | | | | | | |
|-------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|---------|
|  | 1: AG07 |  | 4: AG05 |  | 6: AG04 |
|  | 3: AG01 |  | 5: AG02 |  | 7: AG03 |

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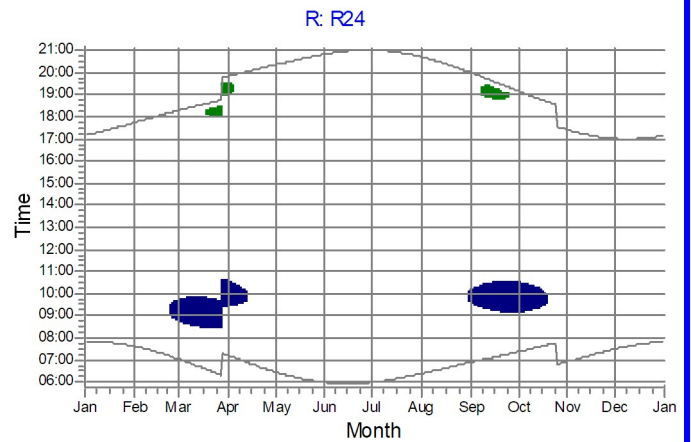
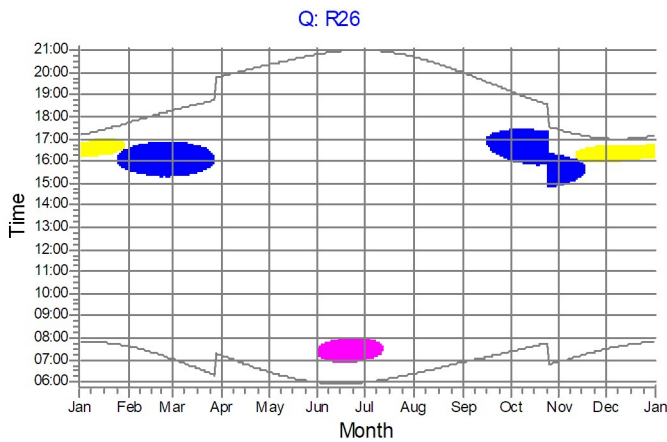
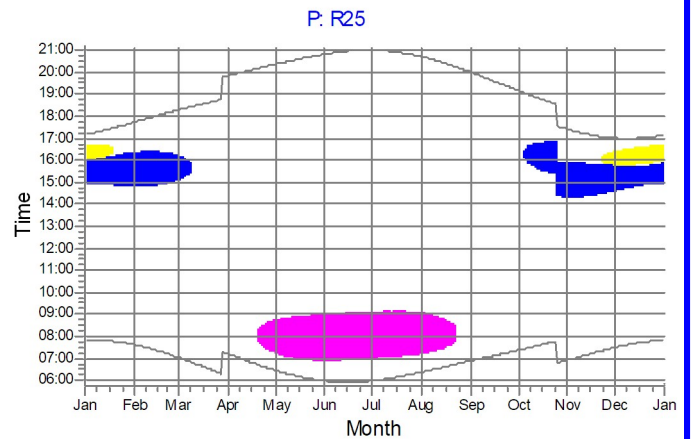
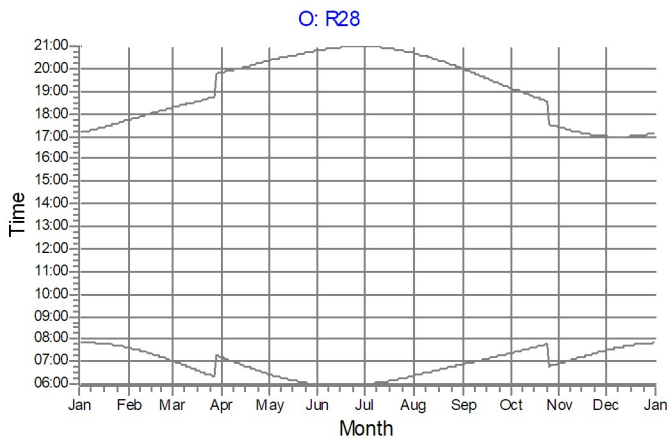
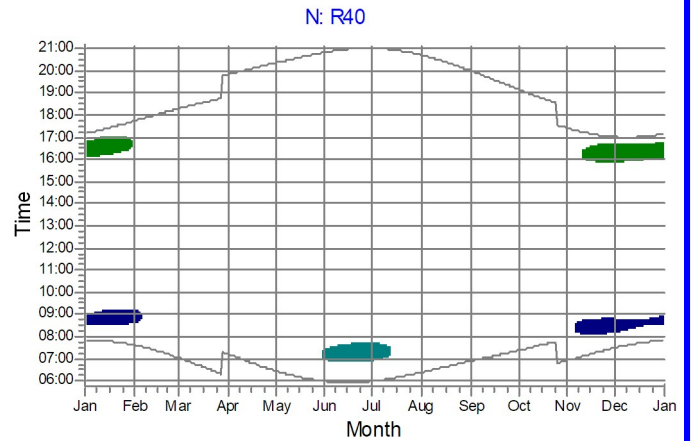
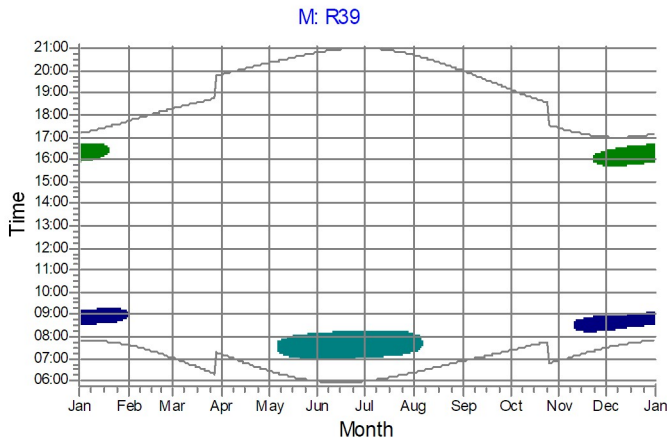
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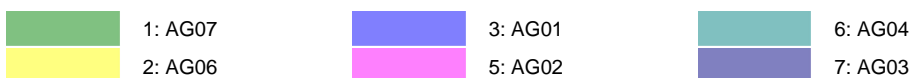
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SHADOW - Calendar, graphical

Calculation: Giave progetto



WTGs



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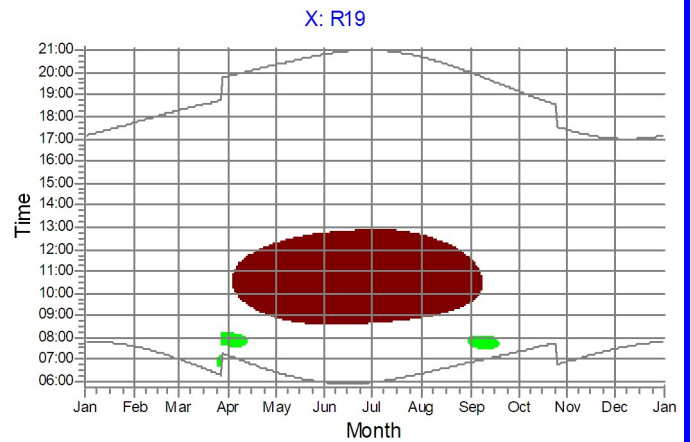
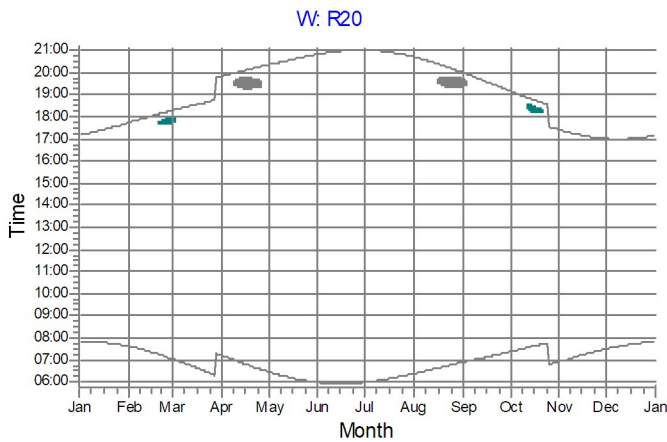
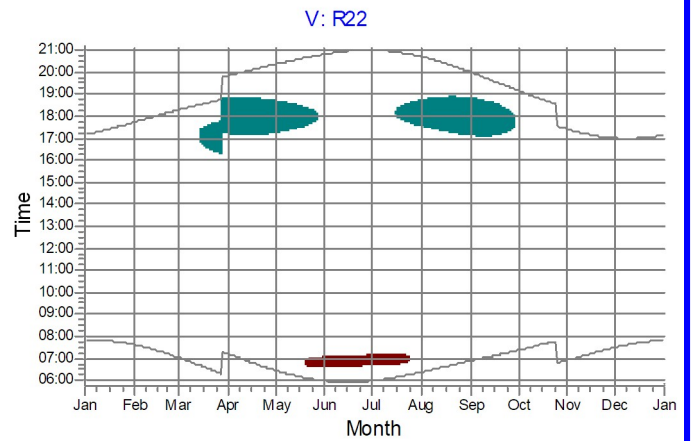
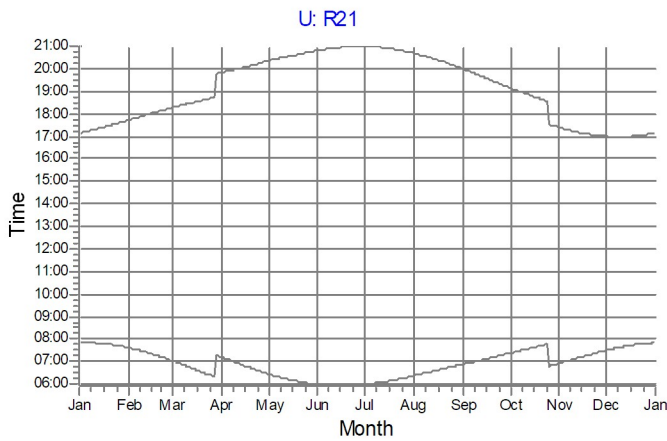
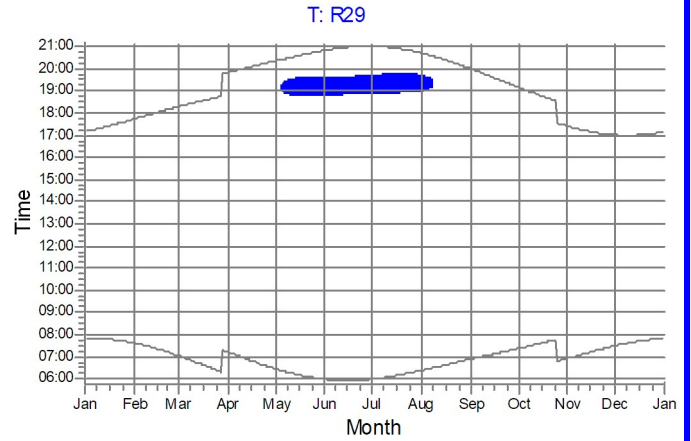
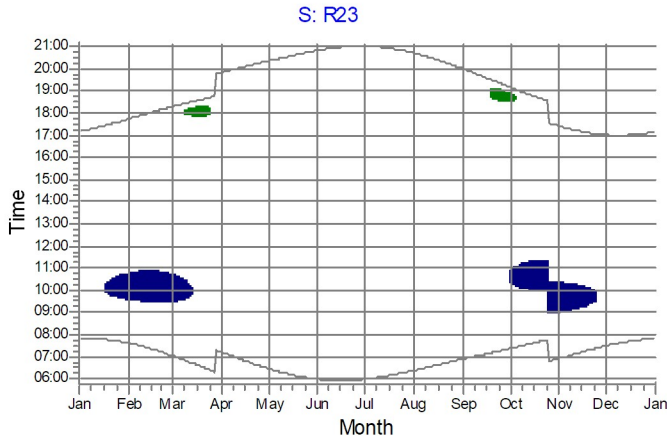
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SHADOW - Calendar, graphical

Calculation: Giave progetto



WTGs

- | | | | | | | | |
|-------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|---------|-------------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------|---------|
|  | 1: AG07 |  | 4: AG05 |  | 7: AG03 |  | 9: AG11 |
|  | 3: AG01 |  | 6: AG04 |  | 8: AG09 | | |

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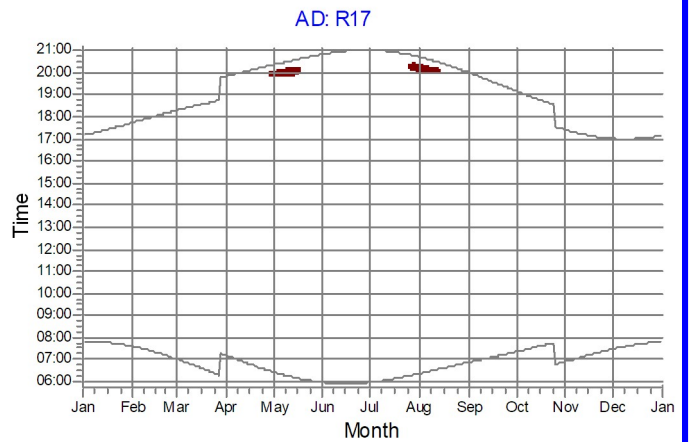
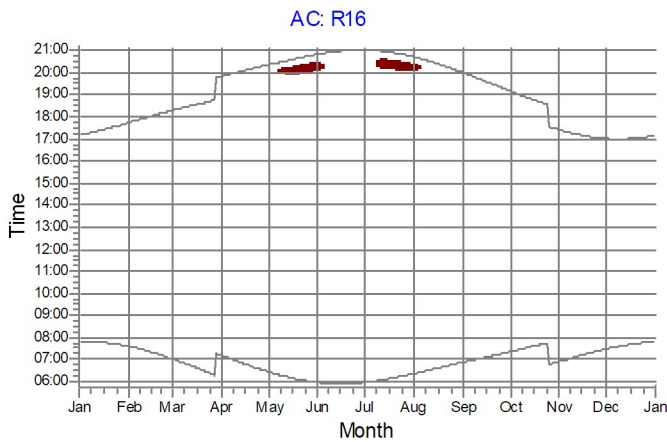
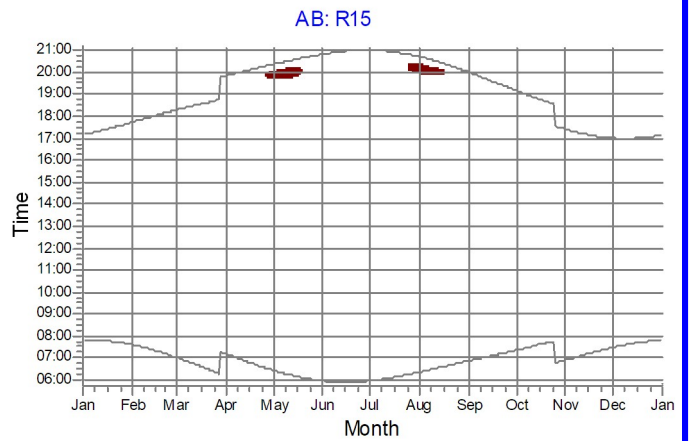
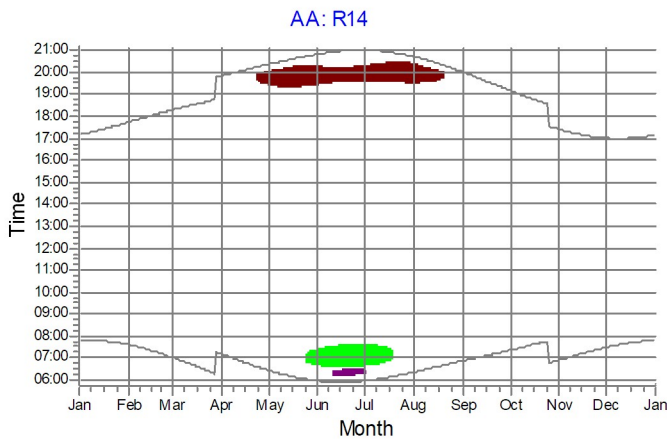
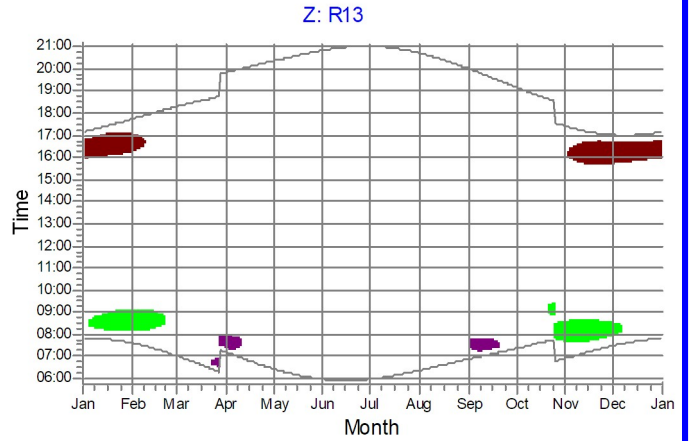
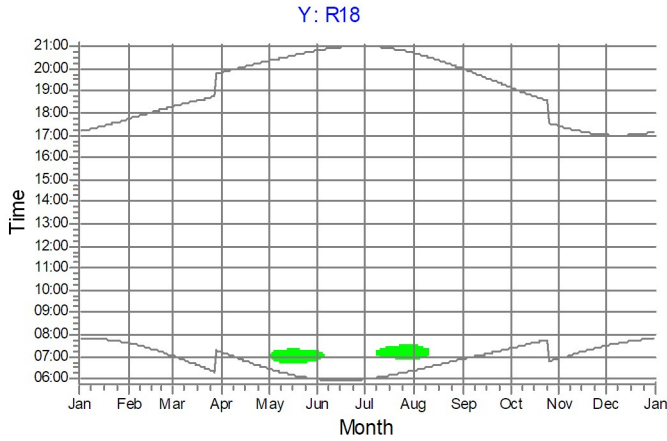
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SHADOW - Calendar, graphical

Calculation: Giave progetto



WTGs

8: AG09

9: AG11

11: AG08

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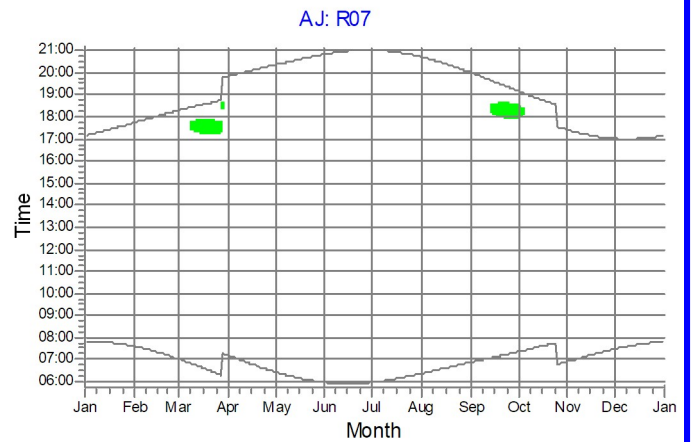
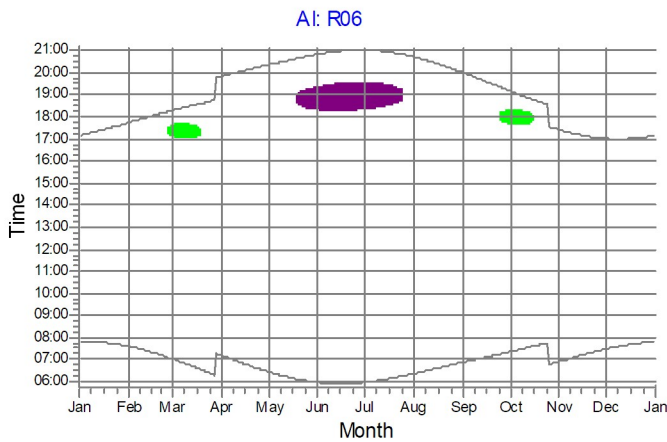
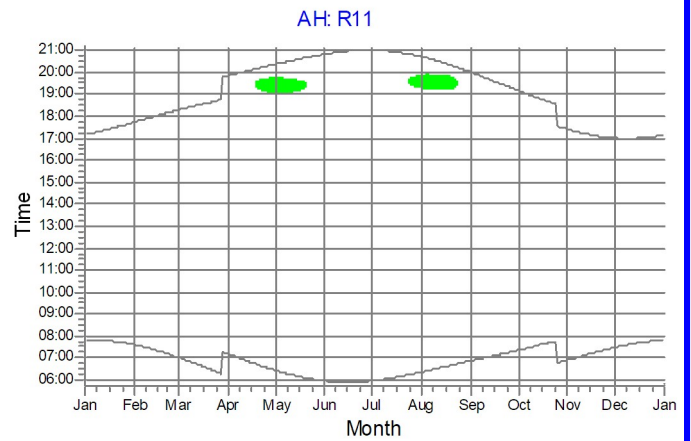
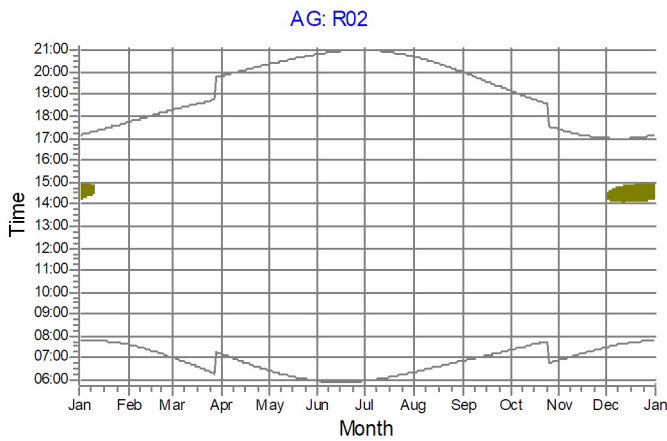
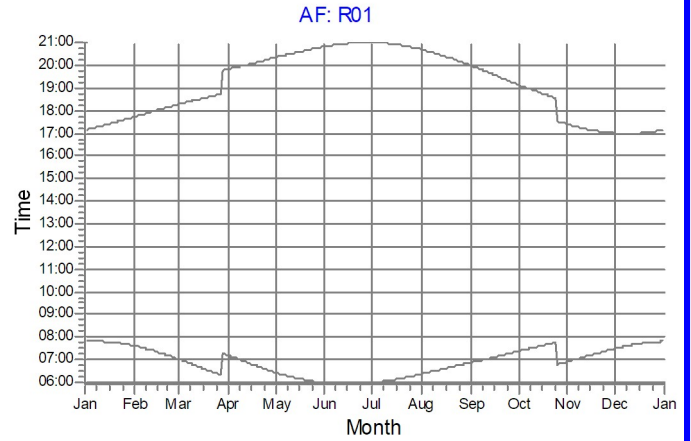
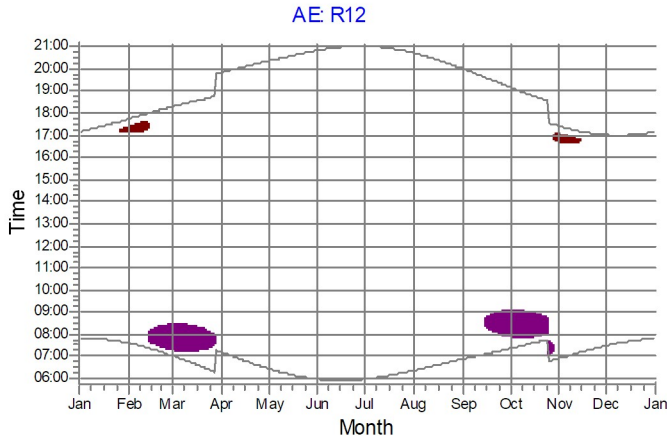
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SHADOW - Calendar, graphical

Calculation: Giave progetto



WTGs

8: AG09

9: AG11

10: AG10

11: AG08

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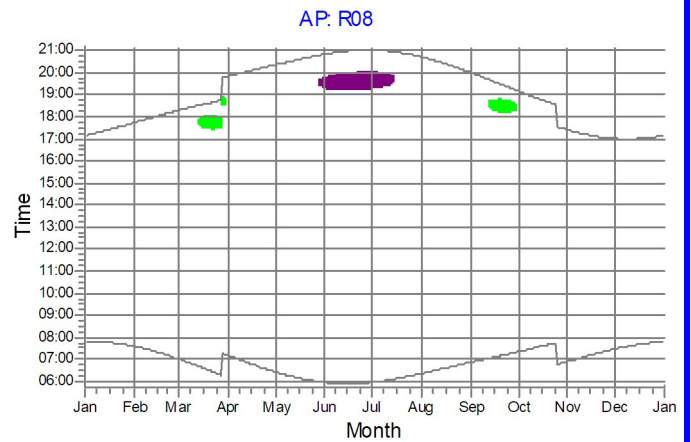
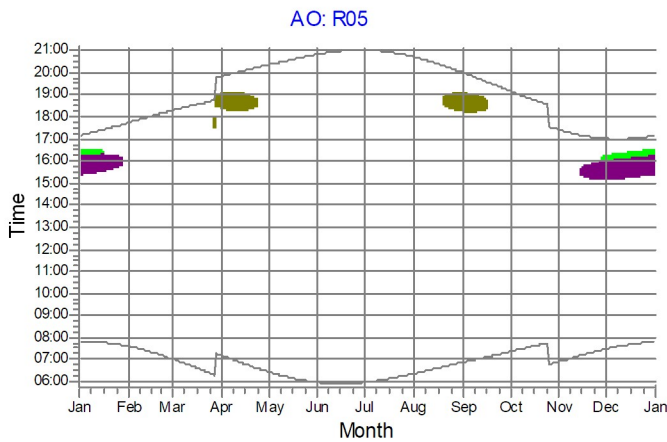
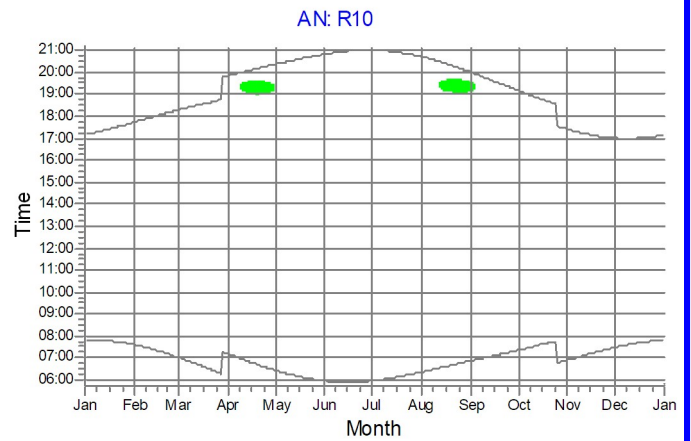
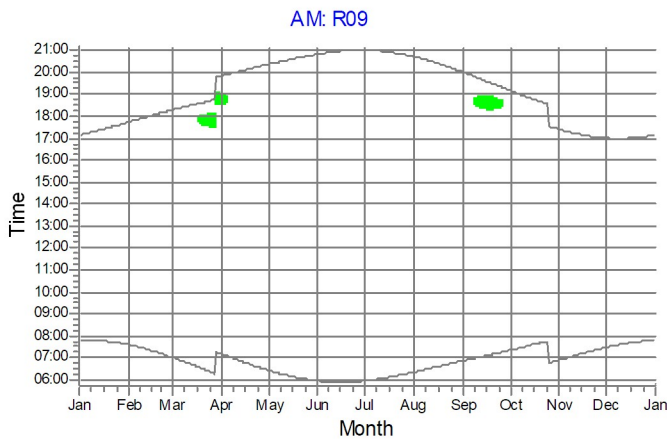
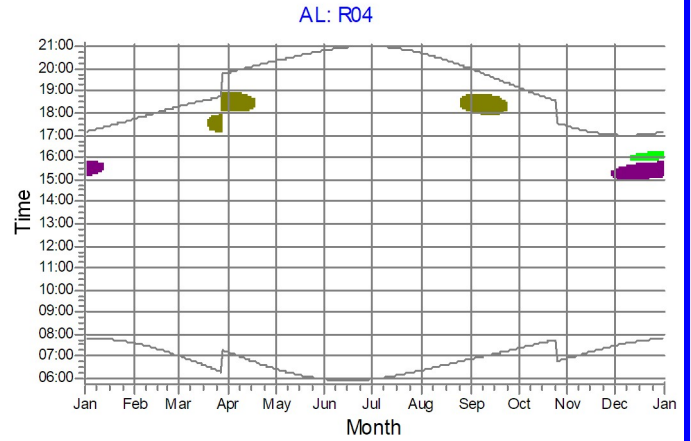
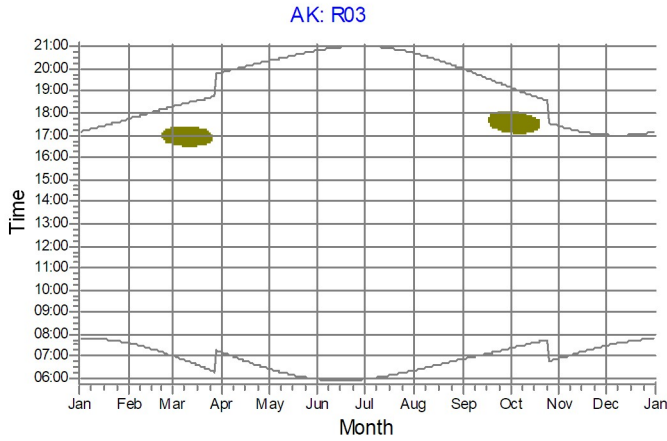
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SHADOW - Calendar, graphical

Calculation: Giave progetto



WTGs

9: AG11

10: AG10

11: AG08

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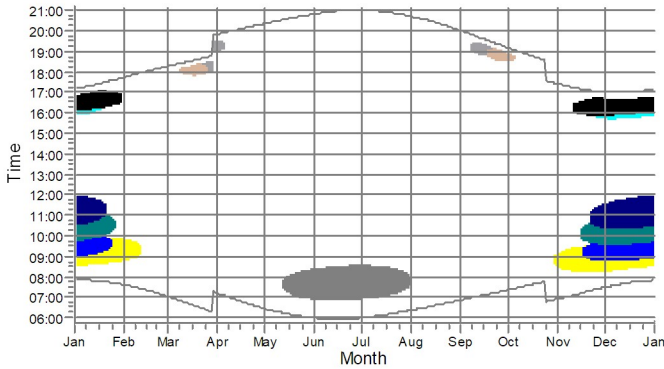
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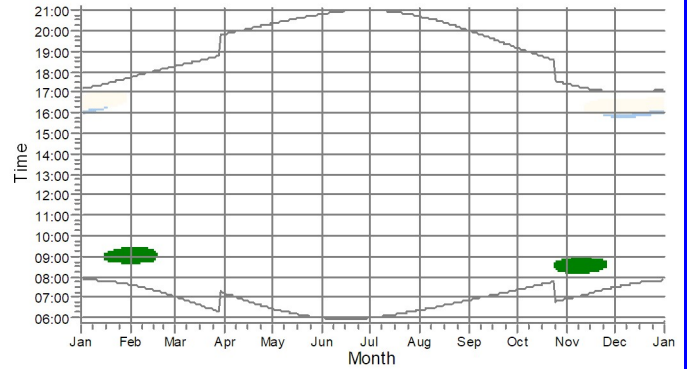
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Calculation: Giave progetto

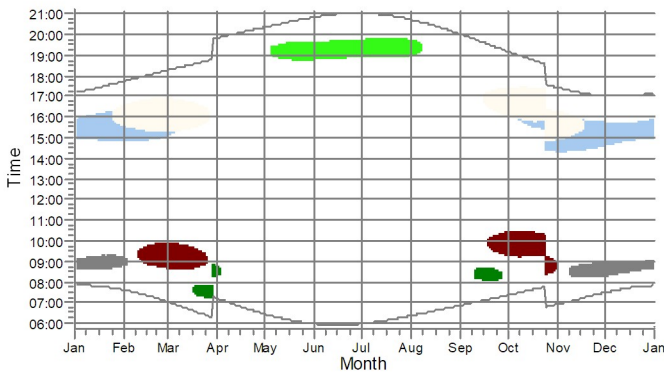
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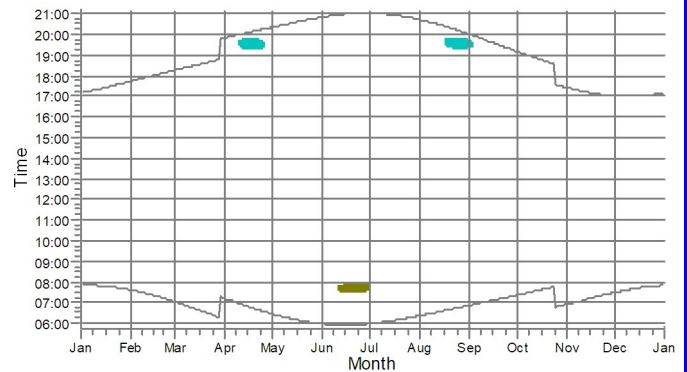
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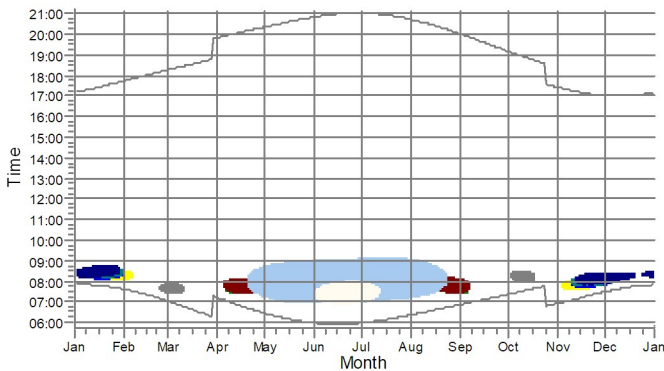
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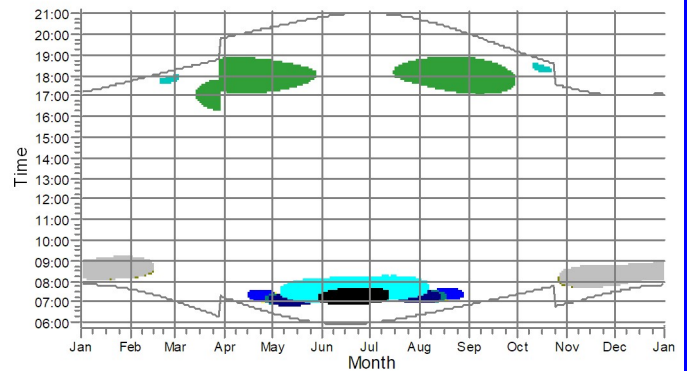
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


5: AG02



6: AG04



Shadow receptors

 A: R33	 D: R34	 H: R32	 M: R39	 Q: R26	 T: R29
 B: R35	 F: R37	 J: R41	 N: R40	 R: R24	 V: R22
 C: R36	 G: R38	 L: R42	 P: R25	 S: R23	 W: R20

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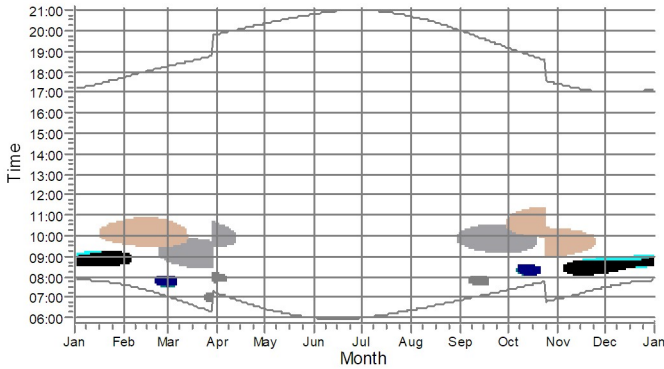
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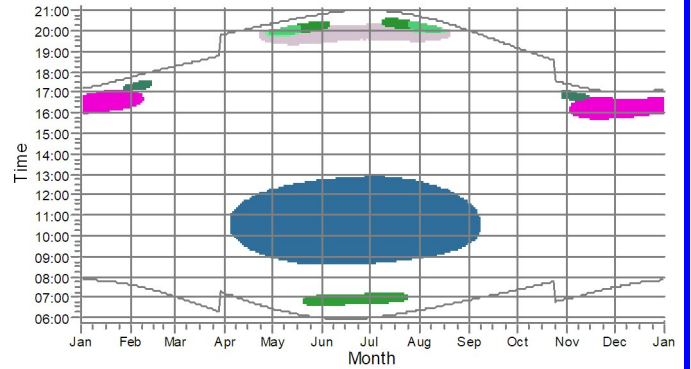
SHADOW - Calendar per WTG, graphical

Calculation: Giave progetto

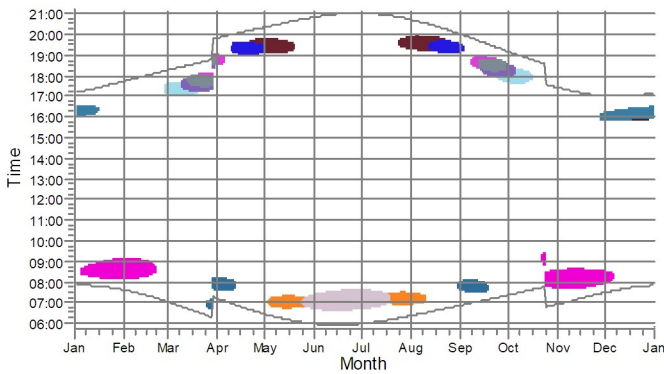
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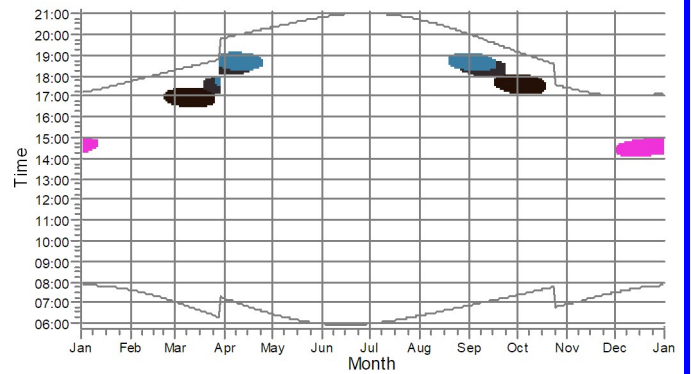
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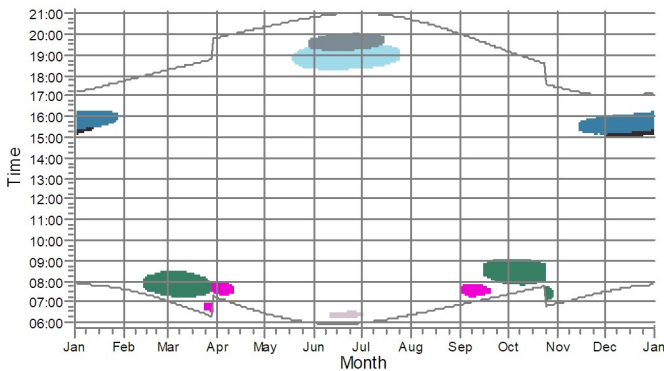
9: AG11
















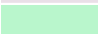


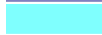
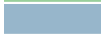

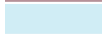






10: AG10



11: AG08



Shadow receptors

 D: R34	 R: R24	 Z: R13	 AE: R12	 AK: R03	 AP: R08
 F: R37	 S: R23	 AA: R14	 AG: R02	 AL: R04	
 G: R38	 V: R22	 AB: R15	 AH: R11	 AM: R09	
 M: R39	 X: R19	 AC: R16	 AI: R06	 AN: R10	
 N: R40	 Y: R18	 AD: R17	 AJ: R07	 AO: R05	

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SHADOW - Calendar

Calculation: Giave progettoShadow receptor: A - R33

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:49 17:10	07:37 17:43	08:43 (2) 09:20 (2)	07:01 18:17		05:58 20:50
2	07:49 17:10	07:36 17:44	08:43 (2) 09:21 (2)	07:00 18:18		05:58 20:50
3	07:50 17:11	07:35 17:46	08:43 (2) 09:21 (2)	06:58 18:19		05:57 20:51
4	07:50 17:12	07:34 17:47	08:44 (2) 09:21 (2)	06:57 18:20		05:57 20:52
5	07:50 17:13	07:33 17:48	08:44 (2) 09:21 (2)	06:55 18:21		05:57 20:52
6	07:50 17:14	07:32 17:49	08:44 (2) 09:21 (2)	06:54 18:22		05:56 20:53
7	07:50 17:15	07:30 17:51	08:45 (2) 09:21 (2)	06:52 18:23		05:56 20:54
8	07:49 17:16	07:29 17:52	08:45 (2) 09:20 (2)	06:51 18:24		05:56 20:54
9	07:49 17:17	07:28 17:53	08:46 (2) 09:20 (2)	06:49 18:25		05:56 20:55
10	07:49 17:18	07:27 17:54	08:46 (2) 09:19 (2)	06:47 18:27		05:56 20:55
11	07:49 17:19	07:26 17:55	08:47 (2) 09:18 (2)	06:46 18:28		05:55 20:56
12	07:49 17:20	07:25 17:57	08:48 (2) 09:17 (2)	06:44 18:29		05:55 20:56
13	07:48 17:21	07:23 17:58	08:50 (2) 09:16 (2)	06:43 18:30		05:55 20:57
14	07:48 17:22	07:22 17:59	08:50 (2) 09:14 (2)	06:41 18:31		05:55 20:57
15	07:48 17:23	07:21 18:00	08:52 (2) 09:12 (2)	06:39 18:32		05:55 20:58
16	07:47 17:24	07:20 18:01	08:55 (2) 09:09 (2)	06:38 18:33		05:55 20:58
17	07:47 17:25	08:54 (2) 09:04 (2)	07:18 18:03	06:36 18:34	07:35 (3) 07:41 (3)	06:09 20:59
18	07:47 17:27	08:51 (2) 09:06 (2)	07:17 18:04	06:34 18:35	06:45 07:44 (3)	06:08 20:59
19	07:46 17:28	08:50 (2) 09:09 (2)	07:16 18:05	06:33 18:36	06:43 07:45 (3)	06:07 20:59
20	07:45 17:29	08:49 (2) 09:10 (2)	07:14 18:06	06:31 18:37	06:42 07:47 (3)	06:06 20:59
21	07:45 17:30	08:47 (2) 09:11 (2)	07:13 18:07	06:30 18:38	06:40 07:48 (3)	06:05 20:59
22	07:44 17:31	08:47 (2) 09:13 (2)	07:12 18:09	06:28 18:39	06:39 07:48 (3)	06:05 21:00
23	07:44 17:32	08:46 (2) 09:14 (2)	07:10 18:10	06:26 18:40	06:37 07:48 (3)	06:04 21:00
24	07:43 17:34	08:45 (2) 09:15 (2)	07:09 18:11	06:25 18:41	06:36 07:48 (3)	06:03 21:00
25	07:42 17:35	08:46 (2) 09:17 (2)	07:07 18:12	06:23 18:42	06:35 07:48 (3)	06:02 21:00
26	07:42 17:36	08:45 (2) 09:17 (2)	07:06 18:13	06:21 18:43	06:33 07:48 (3)	06:02 21:00
27	07:41 17:37	08:44 (2) 09:18 (2)	07:04 18:14	06:20 18:45	06:32 07:47 (3)	06:01 21:00
28	07:40 17:38	08:44 (2) 09:19 (2)	07:03 18:15	06:18 18:46	06:30 07:46 (3)	06:00 21:01
29	07:39 17:40	08:44 (2) 09:19 (2)	07:02 18:16	06:16 19:47	06:29 08:45 (3)	06:00 21:00
30	07:38 17:41	08:43 (2) 09:20 (2)	07:01 18:17	06:15 19:48	06:28 08:44 (3)	05:59 21:00
31	07:37 17:42	08:43 (2) 09:20 (2)	07:00 18:18	06:14 19:49	06:27 08:42 (3)	05:59 20:49
Potential sun hours	299	298	370	398	447	450
Total, worst case	414	508	332	227		
Sun reduction	0,40	0,45	0,49	0,52		
Oper. time red.	0,78	0,78	0,78	0,78		
Wind dir. red.	0,62	0,62	0,65	0,67		
Total reduction	0,19	0,22	0,25	0,27		
Total, real	80	110	82	62		

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: A - R33

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December
1	05:59 21:00	06:22 20:42	06:52 20:00	07:29 (5) 19:10	07:21 17:24	06:55 (2) 17:00
2	05:59 21:00	06:23 20:41	06:53 19:58	07:30 (5) 19:08	07:22 17:23	06:56 (2) 17:00
3	06:00 21:00	06:24 20:40	06:54 19:56	07:30 (5) 19:07	07:24 17:22	06:57 (2) 17:00
4	06:00 21:00	06:25 20:39	06:55 19:55	07:31 (5) 19:05	07:25 17:21	06:58 (2) 17:00
5	06:01 21:00	06:26 20:37	06:56 19:53	07:33 (5) 19:03	07:26 17:19	06:59 (2) 17:00
6	06:02 20:59	06:27 20:36	06:57 19:52	07:27 19:02	07:27 17:18	06:59 (2) 16:59
7	06:02 20:59	06:28 20:35	06:58 19:50	07:28 19:00	07:28 17:17	06:59 (2) 16:59
8	06:03 20:59	06:29 20:34	06:59 19:48	07:29 18:58	07:29 17:16	06:59 (2) 16:59
9	06:03 20:59	06:30 20:33	07:00 19:47	07:30 18:57	07:30 17:15	06:59 (2) 16:59
10	06:04 20:58	06:31 20:31	07:01 19:45	08:19 (3) 18:55	07:31 17:14	07:05 (2) 16:59
11	06:05 20:58	06:32 20:30	07:02 19:43	08:16 (3) 18:54	07:32 17:13	07:05 (2) 16:59
12	06:05 20:57	06:33 20:29	07:03 19:42	08:14 (3) 18:52	07:33 17:12	07:05 (2) 17:00
13	06:06 20:57	06:34 20:28	07:04 19:40	08:13 (3) 18:51	07:34 17:11	07:05 (2) 17:00
14	06:07 20:56	06:35 20:26	07:05 19:38	08:12 (3) 18:49	07:35 17:10	07:05 (2) 17:00
15	06:08 20:56	06:36 20:25	07:06 19:37	08:11 (3) 18:48	07:36 17:10	07:05 (2) 17:00
16	06:08 20:55	06:37 20:24	07:07 19:35	08:10 (3) 18:46	07:37 17:09	07:05 (2) 17:00
17	06:09 20:55	06:38 20:22	07:08 19:33	08:09 (3) 18:45	07:38 17:08	07:05 (2) 17:01
18	06:10 20:54	06:39 20:21	07:09 19:32	08:09 (3) 18:43	07:39 17:07	07:05 (2) 17:01
19	06:11 20:53	06:40 20:19	07:10 19:30	08:09 (3) 18:42	07:40 17:06	07:05 (2) 17:01
20	06:12 20:53	06:41 20:18	07:11 19:28	08:09 (3) 18:40	07:41 17:06	07:05 (2) 17:02
21	06:12 20:52	06:42 20:16	07:12 19:27	08:09 (3) 18:39	07:42 17:05	07:05 (2) 17:02
22	06:13 20:51	06:43 20:15	07:13 19:25	08:08 (3) 18:37	07:44 17:04	07:05 (2) 17:03
23	06:14 20:50	06:44 20:13	07:14 19:23	08:32 (3) 18:36	07:45 17:04	07:05 (2) 17:03
24	06:15 20:49	06:45 20:12	07:15 19:22	08:10 (3) 18:34	07:46 17:03	07:05 (2) 17:04
25	06:16 20:49	06:46 20:10	07:16 19:20	08:12 (3) 18:33	06:47 08:29 (2) 17:03	07:05 (2) 08:32 (2) 17:04
26	06:17 20:48	06:47 20:09	07:17 19:18	08:27 (3) 18:32	06:48 08:24 (2) 17:02	07:05 (2) 08:42 (2) 17:02
27	06:18 20:47	06:47 20:07	07:18 19:16	08:14 (3) 18:31	06:49 08:22 (2) 17:02	07:05 (2) 07:25 (2) 17:02
28	06:19 20:46	06:48 20:06	07:18 19:15	08:24 (3) 18:30	06:50 08:20 (2) 17:01	07:05 (2) 07:26 (2) 17:01
29	06:20 20:45	06:49 20:04	07:19 19:13	07:29 (5) 18:29	06:51 17:28 17:01	07:05 (2) 08:18 (2) 17:01
30	06:20 20:44	06:50 20:03	07:20 19:12	07:20 (5) 18:28	06:53 17:27 17:01	07:05 (2) 08:18 (2) 17:01
31	06:21 20:43	06:51 20:01	07:21 (5) 18:27	07:21 (5) 18:27	06:54 17:25 17:01	07:05 (2) 08:17 (2) 17:01
Potential sun hours	457	427	375	346	299	290
Total, worst case		127	440	154	774	
Sun reduction		0,72	0,65	0,57	0,48	
Oper. time red.		0,78	0,78	0,78	0,78	
Wind dir. red.		0,68	0,65	0,62	0,62	
Total reduction		0,38	0,33	0,28	0,23	
Total, real		48	146	43	181	

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: B - R35

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:49	08:36 (1) 07:37	08:07 (5) 07:01	07:11	06:26	07:02 (6) 05:58
	17:09	67 09:43 (1) 17:43	73 09:45 (1) 18:17	19:50	20:21	21 07:23 (6) 20:50
2	07:50	08:37 (1) 07:36	08:08 (5) 07:00	07:10	06:25	21 07:02 (6) 05:58
	17:10	66 09:43 (1) 17:44	70 09:44 (1) 18:18	19:51	20:22	20 07:22 (6) 20:50
3	07:50	08:37 (1) 07:35	08:09 (5) 06:58	07:08	06:24	20 07:02 (6) 05:57
	17:11	67 09:44 (1) 17:46	66 09:43 (1) 18:19	19:52	20:23	19 07:21 (6) 20:51
4	07:50	08:37 (1) 07:34	08:10 (5) 06:57	07:07	06:23	20 07:03 (6) 05:57
	17:12	67 09:44 (1) 17:47	61 09:42 (1) 18:20	19:53	20:24	18 07:21 (6) 20:52
5	07:50	08:38 (1) 07:33	08:12 (5) 06:55	07:05	06:21	20 07:04 (6) 05:57
	17:13	67 09:45 (1) 17:48	56 09:41 (1) 18:21	19:54	20:25	16 07:20 (6) 20:52
6	07:50	08:37 (1) 07:32	08:15 (5) 06:54	07:03	06:20	20 07:06 (6) 05:56
	17:14	67 09:44 (1) 17:49	46 09:39 (1) 18:22	19:55	20:26	12 07:18 (6) 20:53
7	07:50	08:38 (1) 07:30	08:59 (1) 06:52	07:02	06:19	20 07:08 (6) 05:56
	17:15	67 09:45 (1) 17:51	39 09:38 (1) 18:23	19:56	20:27	8 07:16 (6) 20:54
8	07:50	08:38 (1) 07:29	09:01 (1) 06:51	07:00	06:18	20 07:16 (6) 05:56
	17:16	68 09:46 (1) 17:52	35 09:36 (1) 18:24	19:57	20:28	20 07:16 (6) 05:56
9	07:49	08:39 (1) 07:28	09:04 (1) 06:49	06:59	06:17	20 07:16 (6) 05:56
	17:17	67 09:46 (1) 17:53	30 09:34 (1) 18:25	19:58	20:29	20 07:16 (6) 05:56
10	07:49	08:40 (1) 07:27	09:06 (1) 06:47	06:57	06:16	20 07:16 (6) 05:56
	17:18	67 09:47 (1) 17:54	24 09:30 (1) 18:27	19:59	20:30	20 07:16 (6) 05:56
11	07:49	08:39 (1) 07:26	09:10 (1) 06:46	06:55	06:15	20 07:16 (6) 05:56
	17:19	67 09:46 (1) 17:55	16 09:26 (1) 18:28	20:00	20:31	20 07:16 (6) 05:56
12	07:49	08:40 (1) 07:25	06:44	06:54	06:14	20 07:16 (6) 05:56
	17:20	67 09:47 (1) 17:57	18:29	20:01	20:32	20 07:16 (6) 05:56
13	07:48	08:41 (1) 07:23	06:43	06:52	06:13	20 07:16 (6) 05:56
	17:21	67 09:48 (1) 17:58	18:30	20:02	20:33	20 07:16 (6) 05:56
14	07:48	08:40 (1) 07:22	06:41	06:51	06:12	20 07:16 (6) 05:56
	17:22	68 09:48 (1) 17:59	18:31	20:03	20:34	20 07:16 (6) 05:56
15	07:48	08:41 (1) 07:21	06:39	06:49	06:11	20 07:16 (6) 05:56
	17:23	67 09:48 (1) 18:00	18:32	20:04	20:35	20 07:16 (6) 05:56
16	07:47	08:41 (1) 07:20	06:38	06:48	06:10	20 07:16 (6) 05:56
	17:24	67 09:48 (1) 18:01	18:33	20:05	20:36	20 07:16 (6) 05:56
17	07:47	08:42 (1) 07:18	06:36	06:46	06:09	20 07:16 (6) 05:56
	17:25	67 09:49 (1) 18:03	18:34	20:06	20:37	20 07:16 (6) 05:56
18	07:47	08:42 (1) 07:17	06:34	06:45	06:08	20 07:16 (6) 05:56
	17:26	66 09:48 (1) 18:04	18:35	20:07	20:38	20 07:16 (6) 05:56
19	07:46	08:14 (5) 07:16	06:33	06:43	06:07	20 07:16 (6) 05:56
	17:28	68 09:49 (1) 18:05	18:36	20:08	20:39	20 07:16 (6) 05:56
20	07:45	08:10 (5) 07:14	06:31	06:42	06:06	20 07:16 (6) 05:56
	17:29	74 09:49 (1) 18:06	18:37	20:09	20:40	20 07:16 (6) 05:56
21	07:45	08:08 (5) 07:13	06:30	06:40	07:10 (6) 06:05	20 07:16 (6) 05:56
	17:30	77 09:48 (1) 18:07	18:38	20:10	8 07:18 (6) 20:40	21 07:16 (6) 05:56
22	07:44	08:08 (5) 07:12	06:28	06:39	07:07 (6) 06:04	21 07:16 (6) 05:56
	17:31	78 09:49 (1) 18:08	18:39	20:11	13 07:20 (6) 20:41	21 07:16 (6) 05:56
23	07:44	08:07 (5) 07:10	06:26	06:37	07:06 (6) 06:04	21 07:16 (6) 05:56
	17:32	80 09:49 (1) 18:10	18:40	20:12	16 07:22 (6) 20:42	21 07:16 (6) 05:56
24	07:43	08:07 (5) 07:09	06:25	06:36	07:05 (6) 06:03	21 07:16 (6) 05:56
	17:33	80 09:48 (1) 18:11	18:41	20:14	18 07:23 (6) 20:43	21 07:16 (6) 05:56
25	07:42	08:07 (5) 07:07	06:23	06:35	07:03 (6) 06:02	21 07:16 (6) 05:56
	17:35	81 09:49 (1) 18:12	18:42	20:15	20 07:23 (6) 20:44	21 07:16 (6) 05:56
26	07:42	08:07 (5) 07:06	06:21	06:33	07:03 (6) 06:02	21 07:16 (6) 05:56
	17:36	81 09:49 (1) 18:13	18:43	20:16	21 07:24 (6) 20:45	21 07:16 (6) 05:56
27	07:41	08:06 (5) 07:04	06:20	06:32	07:02 (6) 06:01	21 07:16 (6) 05:56
	17:37	81 09:48 (1) 18:14	18:45	20:17	22 07:24 (6) 20:46	21 07:16 (6) 05:56
28	07:40	08:06 (5) 07:03	06:18	06:30	07:01 (6) 06:00	21 07:16 (6) 05:56
	17:38	79 09:47 (1) 18:15	18:46	20:18	22 07:23 (6) 20:46	21 07:16 (6) 05:56
29	07:39	08:06 (5) 07:02	07:16	06:29	07:01 (6) 06:00	21 07:16 (6) 05:56
	17:40	79 09:47 (1) 18:16	19:47	20:19	22 07:23 (6) 20:47	21 07:16 (6) 05:56
30	07:38	08:07 (5) 07:01	07:15	06:28	07:02 (6) 05:59	21 07:16 (6) 05:56
	17:41	77 09:46 (1) 18:17	19:48	20:20	21 07:23 (6) 20:48	21 07:16 (6) 05:56
31	07:37	08:07 (5) 07:00	07:13	06:27	07:01 (6) 05:59	21 07:16 (6) 05:56
	17:42	75 09:46 (1) 18:18	19:49	20:21	20 07:23 (6) 20:49	21 07:16 (6) 05:56
Potential sun hours	299	298	370	398	447	450
Total, worst case	2216	516	183	114		
Sun reduction	0,40	0,45	0,52	0,57		
Oper. time red.	0,78	0,78	0,78	0,78		
Wind dir. red.	0,62	0,62	0,67	0,67		
Total reduction	0,19	0,22	0,27	0,30		
Total, real	429	112	50	34		

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:58 / 4

Licensed user:

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: B - R35

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December		
1	05:59 21:00	06:22 20:42	06:52 20:00	07:21 19:10	06:55 17:24	08:35 (1) 09:00 (1)	07:29 17:00	08:21 (1) 09:29 (1)
2	05:59 21:00	06:23 20:41	06:53 19:58	07:22 19:08	06:56 17:23	08:32 (1) 09:03 (1)	07:30 17:00	08:22 (1) 09:29 (1)
3	06:00 21:00	06:24 20:40	06:54 19:56	07:23 19:07	06:57 17:22	08:31 (1) 09:06 (1)	07:31 17:00	08:22 (1) 09:29 (1)
4	06:00 21:00	06:25 20:39	06:55 19:55	07:25 19:05	06:58 17:20	08:29 (1) 09:08 (1)	07:32 17:00	08:22 (1) 09:30 (1)
5	06:01 21:00	06:26 20:37	07:20 (6) 07:23 (6)	06:56 19:53	07:26 19:03	07:44 (5) 09:09 (1)	07:33 16:59	08:23 (1) 09:30 (1)
6	06:02 21:00	06:27 20:36	07:16 (6) 07:27 (6)	06:57 19:52	07:27 19:02	07:42 (5) 09:11 (1)	07:34 16:59	08:23 (1) 09:30 (1)
7	06:02 20:59	06:28 20:35	07:15 (6) 07:28 (6)	06:58 19:50	07:28 19:00	07:41 (5) 09:13 (1)	07:35 16:59	08:24 (1) 09:31 (1)
8	06:03 20:59	06:29 20:34	07:13 (6) 07:30 (6)	06:59 19:48	07:29 18:58	07:40 (5) 09:14 (1)	07:36 16:59	08:24 (1) 09:31 (1)
9	06:03 20:59	06:30 20:33	07:12 (6) 07:31 (6)	07:00 19:47	07:30 18:57	07:39 (5) 09:15 (1)	07:37 16:59	08:25 (1) 09:32 (1)
10	06:04 20:58	06:31 20:31	07:11 (6) 07:30 (6)	07:01 19:45	07:31 18:55	07:38 (5) 09:16 (1)	07:38 16:59	08:26 (1) 09:32 (1)
11	06:05 20:58	06:32 20:30	07:10 (6) 07:31 (6)	07:02 19:43	07:32 18:54	07:39 (5) 09:18 (1)	07:38 16:59	08:26 (1) 09:33 (1)
12	06:05 20:57	06:33 20:29	07:10 (6) 07:31 (6)	07:03 19:42	07:33 18:52	07:38 (5) 09:18 (1)	07:39 16:59	08:27 (1) 09:33 (1)
13	06:06 20:57	06:34 20:28	07:09 (6) 07:31 (6)	07:04 19:40	07:34 18:51	07:38 (5) 09:19 (1)	07:40 17:00	08:27 (1) 09:33 (1)
14	06:07 20:56	06:35 20:26	07:09 (6) 07:31 (6)	07:05 19:38	07:35 18:49	07:38 (5) 09:19 (1)	07:41 17:00	08:27 (1) 09:34 (1)
15	06:08 20:56	06:36 20:25	07:09 (6) 07:31 (6)	07:06 19:37	07:36 18:48	07:39 (5) 09:21 (1)	07:42 17:00	08:28 (1) 09:34 (1)
16	06:08 20:55	06:37 20:24	07:09 (6) 07:31 (6)	07:07 19:35	07:37 18:46	07:40 (5) 09:22 (1)	07:42 17:00	08:29 (1) 09:35 (1)
17	06:09 20:55	06:38 20:22	07:09 (6) 07:30 (6)	07:08 19:33	07:38 18:45	07:40 (5) 09:22 (1)	07:43 17:01	08:29 (1) 09:35 (1)
18	06:10 20:54	06:39 20:21	07:10 (6) 07:29 (6)	07:09 19:32	07:39 18:43	07:41 (5) 09:22 (1)	07:44 17:01	08:30 (1) 09:36 (1)
19	06:11 20:53	06:40 20:19	07:11 (6) 07:28 (6)	07:10 19:30	07:40 18:42	07:42 (5) 09:24 (1)	07:44 17:01	08:30 (1) 09:36 (1)
20	06:12 20:53	06:41 20:18	07:12 (6) 07:27 (6)	07:11 19:28	07:41 18:40	07:43 (5) 09:24 (1)	07:45 17:02	08:31 (1) 09:36 (1)
21	06:12 20:52	06:42 20:16	07:13 (6) 07:25 (6)	07:12 19:27	07:42 18:39	07:44 (5) 09:24 (1)	07:45 17:02	08:31 (1) 09:36 (1)
22	06:13 20:51	06:43 20:15	07:16 (6) 07:22 (6)	07:13 19:25	07:44 18:37	07:46 (5) 09:25 (1)	07:46 17:03	08:32 (1) 09:37 (1)
23	06:14 20:50	06:44 20:13	07:14 19:23	07:14 18:36	07:45 18:36	07:49 (5) 09:25 (1)	07:46 17:03	08:32 (1) 09:37 (1)
24	06:15 20:49	06:45 20:12	07:15 19:21	07:15 18:34	07:46 18:34	08:20 (1) 09:26 (1)	07:47 17:04	08:33 (1) 09:38 (1)
25	06:16 20:49	06:46 20:10	07:16 19:20	06:47 17:33	07:47 17:33	08:20 (1) 09:27 (1)	07:47 17:04	08:33 (1) 09:39 (1)
26	06:17 20:48	06:46 20:09	07:17 19:18	06:48 17:32	07:48 17:32	08:20 (1) 09:27 (1)	07:48 17:05	08:33 (1) 09:39 (1)
27	06:18 20:47	06:47 20:07	07:17 19:16	06:49 17:30	07:49 17:30	08:20 (1) 09:27 (1)	07:48 17:06	08:34 (1) 09:40 (1)
28	06:19 20:46	06:48 20:06	07:18 19:15	06:50 17:29	07:50 17:29	08:20 (1) 09:28 (1)	07:48 17:06	08:34 (1) 09:40 (1)
29	06:20 20:45	06:49 20:04	07:19 19:13	06:51 17:28	07:51 17:28	08:21 (1) 09:28 (1)	07:49 17:07	08:34 (1) 09:41 (1)
30	06:20 20:44	06:50 20:03	07:20 19:12	06:53 17:27	07:52 17:27	08:21 (1) 09:28 (1)	07:49 17:08	08:35 (1) 09:41 (1)
31	06:21 20:43	06:51 20:01	06:54 17:25	08:39 (1) 08:56 (1)	07:53 17:25	08:21 (1) 09:28 (1)	07:49 17:08	08:35 (1) 09:41 (1)
Potential sun hours	457	427	375	346	299	290		
Total, worst case		302		17		1986		2055
Sun reduction		0,72		0,57		0,48		0,42
Oper. time red.		0,78		0,78		0,78		0,78
Wind dir. red.		0,67		0,62		0,62		0,62
Total reduction		0,38		0,28		0,23		0,20
Total, real		114		5		465		419

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: C - R36

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June
1	07:49	09:02 (1)	07:37	07:01	07:11	06:26
	17:09	10:00 (1)	17:43	18:17	19:50	20:21
2	07:50	09:02 (1)	07:36	07:00	07:10	06:25
	17:10	10:00 (1)	17:44	18:18	19:51	20:22
3	07:50	09:03 (1)	07:35	06:58	07:08	06:24
	17:11	10:00 (1)	17:46	18:19	19:52	20:23
4	07:50	09:04 (1)	07:34	06:57	07:07	06:23
	17:12	10:00 (1)	17:47	18:20	19:53	20:24
5	07:50	09:04 (1)	07:33	06:55	07:05	06:21
	17:13	10:00 (1)	17:48	18:21	19:54	20:25
6	07:50	09:04 (1)	07:32	06:54	07:03	06:20
	17:14	10:00 (1)	17:49	18:22	19:55	20:26
7	07:50	09:05 (1)	07:30	06:52	07:02	06:19
	17:15	10:00 (1)	17:51	18:23	19:56	20:27
8	07:50	09:06 (1)	07:29	06:51	07:00	06:18
	17:16	10:00 (1)	17:52	18:24	19:57	20:28
9	07:49	09:07 (1)	07:28	06:49	06:59	06:17
	17:17	10:00 (1)	17:53	18:25	19:58	20:29
10	07:49	08:14 (5)	07:27	06:47	06:57	06:16
	17:18	10:00 (1)	17:54	18:27	19:59	20:30
11	07:49	08:12 (5)	07:26	06:46	06:55	06:15
	17:19	09:59 (1)	17:55	18:28	20:00	20:31
12	07:49	08:12 (5)	07:25	06:44	06:54	06:14
	17:20	09:59 (1)	17:57	18:29	20:01	20:32
13	07:48	08:12 (5)	07:23	06:43	06:52	06:13
	17:21	09:59 (1)	17:58	18:30	20:02	20:33
14	07:48	08:11 (5)	07:22	06:41	06:51	06:12
	17:22	09:58 (1)	17:59	18:31	20:03	20:34
15	07:48	08:11 (5)	07:21	06:39	06:49	06:11
	17:23	09:58 (1)	18:00	18:32	20:04	20:35
16	07:47	08:10 (5)	07:20	06:38	06:48	06:10
	17:24	09:57 (1)	18:01	18:33	20:05	8 07:17 (6) 20:36
17	07:47	08:11 (5)	07:18	06:36	06:46	07:14 (6) 06:09
	17:25	09:57 (1)	18:03	18:34	20:06	14 07:28 (6) 20:37
18	07:47	08:10 (5)	07:17	06:34	06:45	07:12 (6) 06:08
	17:26	09:55 (1)	18:04	18:35	20:07	16 07:28 (6) 20:38
19	07:46	08:11 (5)	07:16	06:33	06:43	07:11 (6) 06:07
	17:28	09:55 (1)	18:05	18:36	20:08	19 07:30 (6) 20:39
20	07:45	08:11 (5)	07:14	06:31	06:42	07:09 (6) 06:06
	17:29	09:53 (1)	18:06	18:37	20:09	21 07:30 (6) 20:40
21	07:45	08:10 (5)	07:13	06:30	06:40	07:09 (6) 06:05
	17:30	09:51 (1)	18:07	18:38	20:10	21 07:30 (6) 20:40
22	07:44	08:11 (5)	07:12	06:28	06:39	07:08 (6) 06:04
	17:31	09:50 (1)	18:08	18:39	20:11	22 07:30 (6) 20:41
23	07:44	08:11 (5)	07:10	06:26	06:37	07:08 (6) 06:04
	17:32	09:47 (1)	18:10	18:40	20:12	22 07:30 (6) 20:42
24	07:43	08:12 (5)	07:09	06:25	06:36	07:08 (6) 06:03
	17:33	09:44 (1)	18:11	18:41	20:13	23 07:31 (6) 20:43
25	07:42	08:13 (5)	07:07	06:23	06:35	07:07 (6) 06:02
	17:35	09:42 (5)	18:12	18:42	20:15	22 07:29 (6) 20:44
26	07:42	08:13 (5)	07:06	06:21	06:33	07:08 (6) 06:02
	17:36	09:42 (5)	18:13	18:43	20:16	21 07:29 (6) 20:45
27	07:41	08:14 (5)	07:04	06:20	06:32	07:08 (6) 06:01
	17:37	09:41 (5)	18:14	18:45	20:17	21 07:29 (6) 20:46
28	07:40	08:15 (5)	07:03	06:18	06:30	07:08 (6) 06:00
	17:38	09:40 (5)	18:15	18:46	20:18	19 07:27 (6) 20:46
29	07:39	08:16 (5)	07:02	06:16	06:29	07:09 (6) 06:00
	17:40	09:39 (5)	18:16	18:47	20:19	18 07:27 (6) 20:47
30	07:38	08:18 (5)	07:01	06:15	06:28	07:11 (6) 05:59
	17:41	09:38 (5)	18:17	18:48	20:20	14 07:25 (6) 20:48
31	07:37	08:20 (5)	07:00	06:13	06:27	05:59
	17:42	09:37 (5)	18:18	18:49	20:21	20:49
Potential sun hours	299	298	370	398	447	450
Total, worst case	1424			281		16
Sun reduction	0,40			0,52		0,57
Oper. time red.	0,78			0,78		0,78
Wind dir. red.	0,62			0,68		0,68
Total reduction	0,19			0,27		0,30
Total, real	272			77		5

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: C - R36

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:59 21:00	06:22 20:42	06:52 20:00	07:21 19:10	06:55 17:24	07:29 17:00
2	05:59 21:00	06:23 20:41	06:53 19:58	07:22 19:08	06:56 17:23	07:30 17:00
3	06:00 21:00	06:24 20:40	06:54 19:56	07:23 19:07	06:57 17:22	07:31 17:00
4	06:00 21:00	06:25 20:39	06:55 19:55	07:25 19:05	06:58 17:20	07:32 17:00
5	06:01 21:00	06:26 20:37	06:56 19:53	07:26 19:03	07:00 17:19	07:33 16:59
6	06:02 21:00	06:27 20:36	06:57 19:52	07:27 19:02	07:01 17:18	07:34 16:59
7	06:02 20:59	06:28 20:35	06:58 19:50	07:28 19:00	07:02 17:17	07:35 16:59
8	06:03 20:59	06:29 20:34	06:59 19:48	07:29 18:58	07:03 17:16	07:36 16:59
9	06:03 20:59	06:30 20:33	07:00 19:47	07:30 18:57	07:04 17:15	07:37 16:59
10	06:04 20:58	06:31 20:31	07:01 19:45	07:31 18:55	07:05 17:14	07:38 16:59
11	06:05 20:58	06:32 20:30	07:22 (6) 07:30 (6)	07:02 19:43	07:32 18:54	07:52 (5) 16:59
12	06:05 20:57	06:33 20:29	07:20 (6) 07:32 (6)	07:03 19:42	07:33 18:52	07:49 (5) 16:59
13	06:06 20:57	06:34 20:28	07:18 (6) 07:33 (6)	07:04 19:40	07:34 18:51	07:48 (5) 17:00
14	06:07 20:56	06:35 20:26	07:17 (6) 07:35 (6)	07:05 19:38	07:35 18:49	07:47 (5) 17:00
15	06:08 20:56	06:36 20:25	07:16 (6) 07:35 (6)	07:06 19:37	07:36 18:48	07:47 (5) 17:00
16	06:08 20:55	06:37 20:24	07:15 (6) 07:36 (6)	07:07 19:35	07:37 18:46	07:46 (5) 17:00
17	06:09 20:55	06:38 20:22	07:14 (6) 07:36 (6)	07:08 19:33	07:38 18:45	07:46 (5) 17:01
18	06:10 20:54	06:39 20:21	07:14 (6) 07:36 (6)	07:09 19:32	07:39 18:43	07:46 (5) 17:01
19	06:11 20:53	06:40 20:19	07:14 (6) 07:36 (6)	07:10 19:30	07:40 18:42	07:46 (5) 17:01
20	06:12 20:53	06:41 20:18	07:14 (6) 07:36 (6)	07:11 19:28	07:41 18:40	07:46 (5) 17:02
21	06:12 20:52	06:42 20:16	07:14 (6) 07:36 (6)	07:12 19:27	07:42 18:39	07:46 (5) 17:02
22	06:13 20:51	06:43 20:15	07:14 (6) 07:35 (6)	07:13 19:25	07:44 18:37	07:47 (5) 17:03
23	06:14 20:50	06:44 20:13	07:14 (6) 07:34 (6)	07:14 19:23	07:45 18:36	07:47 (5) 17:03
24	06:15 20:49	06:45 20:12	07:14 (6) 07:32 (6)	07:15 19:21	07:46 18:34	07:48 (5) 17:04
25	06:16 20:49	06:46 20:10	07:15 (6) 07:31 (6)	07:16 19:20	07:47 18:33	07:49 (5) 17:04
26	06:17 20:48	06:46 20:09	07:16 (6) 07:29 (6)	07:17 19:18	07:48 18:32	07:49 (5) 17:05
27	06:18 20:47	06:47 20:07	07:19 (6) 07:26 (6)	07:17 19:16	07:49 18:30	07:50 (5) 17:06
28	06:19 20:46	06:48 20:06	07:18 19:15	07:26 19:15	07:48 18:29	07:51 (5) 17:06
29	06:20 20:45	06:49 20:04	07:19 19:13	07:27 19:13	07:49 18:28	07:52 (5) 17:07
30	06:20 20:44	06:50 20:03	07:20 19:12	07:28 19:12	07:50 18:27	07:53 (5) 17:08
31	06:21 20:43	06:51 20:01	06:54 19:11	06:54 19:11	06:54 19:11	07:49 17:08
Potential sun hours	457	427	375	346	299	290
Total, worst case		298			804	1810
Sun reduction		0,72			0,48	0,42
Oper. time red.		0,78			0,78	0,78
Wind dir. red.		0,68			0,62	0,62
Total reduction		0,38			0,23	0,20
Total, real		113			186	364

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: D - R34

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:49	08:40 (3) 07:37	08:52 (3) 07:01	07:29 (5) 07:11	07:49 (7) 06:26	05:58
	17:09	09:00 (3) 17:43	09:06 (3) 18:17	07:51 (5) 19:50	08:07 (7) 20:21	20:50 81
2	07:49	08:40 (3) 07:36	08:55 (3) 07:00	07:29 (5) 07:10	07:49 (7) 06:25	05:58
	17:10	09:01 (3) 17:44	09:04 (3) 18:18	07:51 (5) 19:51	08:05 (7) 20:22	20:50 82
3	07:50	08:40 (3) 07:35	06:58	07:28 (5) 07:08	07:50 (7) 06:24	05:57
	17:11	09:02 (3) 17:46	18:19	07:51 (5) 19:52	08:05 (7) 20:23	20:51 83
4	07:50	08:40 (3) 07:34	06:57	07:28 (5) 07:07	07:51 (7) 06:23	05:57
	17:12	09:03 (3) 17:47	18:20	07:51 (5) 19:53	08:02 (7) 20:24	20:52 84
5	07:50	08:40 (3) 07:33	06:55	07:28 (5) 07:05	07:53 (7) 06:21	05:57
	17:13	09:04 (3) 17:48	18:21	07:50 (5) 19:54	07:59 (7) 20:25	20:52 85
6	07:50	08:39 (3) 07:32	06:54	07:28 (5) 07:03	06:20	05:56
	17:14	09:04 (3) 17:49	18:22	07:49 (5) 19:55	20:26	20:53 86
7	07:50	08:40 (3) 07:30	06:52	07:29 (5) 07:02	06:19	05:56
	17:15	09:05 (3) 17:51	18:23	07:49 (5) 19:56	20:27	20:54 86
8	07:49	08:40 (3) 07:29	06:51	07:29 (5) 07:00	06:18	05:56
	17:16	09:06 (3) 17:52	18:24	07:47 (5) 19:57	20:28	20:54 87
9	07:49	08:40 (3) 07:28	06:49	07:31 (5) 06:59	06:17	05:56
	17:17	09:07 (3) 17:53	18:25	07:46 (5) 19:58	20:29	20:55 88
10	07:49	08:40 (3) 07:27	06:47	07:33 (5) 06:57	06:16	05:55
	17:18	09:08 (3) 17:54	18:27	07:43 (5) 19:59	20:30	20:55 88
11	07:49	08:40 (3) 07:26	06:46	06:55	06:15	05:55
	17:19	09:08 (3) 17:55	18:28	20:00	20:31	20:56 89
12	07:49	08:40 (3) 07:25	06:44	06:54	06:14	05:55
	17:20	09:09 (3) 17:57	18:29	20:01	20:32	20:56 89
13	07:48	08:41 (3) 07:23	06:43	06:52	06:13	07:27 (1) 05:55
	17:21	09:10 (3) 17:58	18:30	20:02	20:33	19 07:46 (1) 20:57
14	07:48	08:40 (3) 07:22	06:41	06:51	06:12	07:22 (1) 05:55
	17:22	09:10 (3) 17:59	18:31	20:03	20:34	29 07:51 (1) 20:57
15	07:48	08:41 (3) 07:21	06:39	06:49	06:11	07:19 (1) 05:55
	17:23	09:11 (3) 18:00	18:32	20:04	20:35	36 07:55 (1) 20:58
16	07:47	08:40 (3) 07:20	06:38	06:48	06:10	07:16 (1) 05:55
	17:24	09:11 (3) 18:01	18:33	20:05	20:36	42 07:58 (1) 20:58
17	07:47	08:41 (3) 07:18	06:36	06:46	06:09	07:14 (1) 05:55
	17:25	09:12 (3) 18:03	18:34	20:06	20:37	46 08:00 (1) 20:59
18	07:47	08:41 (3) 07:17	06:34	06:45	06:08	07:11 (1) 05:55
	17:26	09:12 (3) 18:04	18:35	20:07	20:38	51 08:02 (1) 20:59
19	07:46	08:42 (3) 07:16	06:33	06:43	06:07	07:09 (1) 05:55
	17:28	09:13 (3) 18:05	18:36	20:08	20:39	55 08:04 (1) 20:59
20	07:45	08:42 (3) 07:14	06:31	06:42	06:06	07:07 (1) 05:55
	17:29	09:12 (3) 18:06	18:37	20:09	20:40	58 08:05 (1) 20:59
21	07:45	08:42 (3) 07:13	06:30	06:40	06:05	07:07 (1) 05:56
	17:30	09:12 (3) 18:07	18:38	20:10	20:40	60 08:07 (1) 21:00
22	07:44	08:43 (3) 07:12	06:28	06:39	06:04	07:05 (1) 05:56
	17:31	09:13 (3) 18:08	18:39	20:11	20:41	64 08:09 (1) 21:00
23	07:44	08:43 (3) 07:10	06:26	06:37	06:04	07:04 (1) 05:56
	17:32	09:13 (3) 18:10	18:40	20:12	20:42	66 08:10 (1) 21:00
24	07:43	08:43 (3) 07:09	07:40 (5) 06:25	06:36	06:03	07:03 (1) 05:56
	17:33	09:12 (3) 18:11	2 07:42 (5) 18:41	20:13	20:43	68 08:11 (1) 21:00
25	07:42	08:45 (3) 07:07	07:35 (5) 06:23	06:35	06:02	07:02 (1) 05:57
	17:35	09:13 (3) 18:12	11 07:46 (5) 18:42	9 07:04 (7) 20:15	20:44	70 08:12 (1) 21:00
26	07:42	08:45 (3) 07:06	07:33 (5) 06:21	06:33	06:02	07:01 (1) 05:57
	17:36	09:13 (3) 18:13	15 07:48 (5) 18:43	13 07:06 (7) 20:16	20:45	72 08:13 (1) 21:00
27	07:41	08:46 (3) 07:04	07:31 (5) 06:20	06:32	06:01	07:00 (1) 05:57
	17:37	09:12 (3) 18:14	18 07:49 (5) 18:45	16 07:07 (7) 20:17	20:46	74 08:14 (1) 21:00
28	07:40	08:46 (3) 07:03	07:30 (5) 06:18	06:30	06:00	06:59 (1) 05:58
	17:38	09:11 (3) 18:15	21 07:51 (5) 18:46	17 07:07 (7) 20:18	20:46	76 08:15 (1) 21:01
29	07:39	08:47 (3)	07:16	07:50 (7) 06:29	06:00	06:59 (1) 05:58
	17:40	09:11 (3)	19:47	18 08:08 (7) 20:19	20:47	77 08:16 (1) 21:00
30	07:38	08:49 (3)	07:15	07:49 (7) 06:28	05:59	06:58 (1) 05:58
	17:41	09:09 (3)	19:48	18 08:07 (7) 20:20	20:48	78 08:16 (1) 21:00
31	07:37	08:50 (3)	07:13	07:48 (7)	05:59	06:58 (1)
	17:42	09:08 (3)	19:49	19 08:07 (7)	20:49	80 08:18 (1)
Potential sun hours	299	298	370	398	447	450
Total, worst case	829	90	306	66	1121	2659
Sun reduction	0,40	0,45	0,49	0,52	0,57	0,66
Oper. time red.	0,78	0,78	0,78	0,78	0,78	0,78
Wind dir. red.	0,62	0,62	0,64	0,67	0,65	0,65
Total reduction	0,19	0,22	0,24	0,27	0,29	0,34
Total, real	160	20	74	18	326	893

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

Ing. Bruno Manca
Via Vittorio Veneto 231
IT-09028 Sestu
+390702358125
BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: D - R34

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December					
1	05:59	06:59 (1)	06:22	06:52	07:21	06:55	07:29	08:22 (3)			
	21:00	89 08:28 (1)	20:42	19:10	19:10	17:24	17:00	28 08:50 (3)			
2	05:59	07:00 (1)	06:23	06:53	07:22	06:56	07:30	08:22 (3)			
	21:00	88 08:28 (1)	20:41	19:58	19:08	17:23	17:00	28 08:50 (3)			
3	06:00	07:00 (1)	06:24	06:54	07:23	06:57	07:31	08:23 (3)			
	21:00	88 08:28 (1)	20:40	19:56	19:07	7 08:19 (5)	17:22	17:00	27 08:50 (3)		
4	06:00	07:01 (1)	06:25	06:55	07:25	06:58	07:32	08:24 (3)			
	21:00	87 08:28 (1)	20:39	19:55	19:05	13 08:22 (5)	17:20	17:00	26 08:50 (3)		
5	06:01	07:01 (1)	06:26	06:56	07:26	06:59	07:33	08:25 (3)			
	21:00	87 08:28 (1)	20:37	19:53	19:03	16 08:23 (5)	17:19	16:59	25 08:50 (3)		
6	06:02	07:02 (1)	06:27	06:57	07:27	07:01	07:34	08:25 (3)			
	20:59	86 08:28 (1)	20:36	19:52	19:02	19 08:24 (5)	17:18	16:59	25 08:50 (3)		
7	06:02	07:02 (1)	06:28	06:58	07:28	07:02	07:35	08:26 (3)			
	20:59	85 08:27 (1)	20:35	19:50	6 07:54 (7)	19:00	20 08:24 (5)	17:17	16:59	24 08:50 (3)	
8	06:03	07:03 (1)	06:29	06:59	07:29	07:03	07:36	08:27 (3)			
	20:59	84 08:27 (1)	20:34	19:48	11 07:56 (7)	18:58	22 08:26 (5)	17:16	16:59	23 08:50 (3)	
9	06:03	07:04 (1)	06:30	07:00	07:30	07:04	07:37	08:28 (3)			
	20:59	83 08:27 (1)	20:33	19:47	15 07:58 (7)	18:57	23 08:26 (5)	17:15	9 08:35 (3)	16:59	22 08:50 (3)
10	06:04	07:04 (1)	06:31	07:01	07:31	07:05	07:38	08:29 (3)			
	20:58	82 08:26 (1)	20:31	19:45	16 07:58 (7)	18:55	23 08:26 (5)	17:14	14 08:37 (3)	16:59	21 08:50 (3)
11	06:05	07:05 (1)	06:32	07:02	07:32	07:07	07:38	08:30 (3)			
	20:58	81 08:26 (1)	20:30	19:43	18 07:59 (7)	18:54	22 08:25 (5)	17:13	18 08:40 (3)	16:59	21 08:51 (3)
12	06:05	07:06 (1)	06:33	07:03	07:33	07:08	07:39	08:31 (3)			
	20:57	80 08:26 (1)	20:29	19:42	19 07:59 (7)	18:52	23 08:25 (5)	17:12	21 08:41 (3)	16:59	20 08:51 (3)
13	06:06	07:06 (1)	06:34	07:04	07:34	07:09	07:40	08:31 (3)			
	20:57	79 08:25 (1)	20:28	19:40	19 07:59 (7)	18:51	21 08:24 (5)	17:11	24 08:43 (3)	17:00	19 08:50 (3)
14	06:07	07:07 (1)	06:35	07:05	07:35	07:10	07:41	08:32 (3)			
	20:56	78 08:25 (1)	20:26	19:38	18 07:58 (7)	18:49	20 08:23 (5)	17:10	25 08:43 (3)	17:00	18 08:50 (3)
15	06:08	07:08 (1)	06:36	07:06	07:36	07:11	07:42	08:33 (3)			
	20:56	77 08:25 (1)	20:25	19:37	17 07:57 (7)	18:48	17 08:21 (5)	17:09	26 08:45 (3)	17:00	18 08:51 (3)
16	06:08	07:09 (1)	06:37	07:07	07:37	07:12	07:42	08:34 (3)			
	20:55	75 08:24 (1)	20:24	19:35	16 07:56 (7)	18:46	14 08:19 (5)	17:09	28 08:46 (3)	17:00	16 08:50 (3)
17	06:09	07:10 (1)	06:38	07:08	07:38	07:14	07:43	08:35 (3)			
	20:55	73 08:23 (1)	20:22	19:33	14 07:55 (7)	18:45	10 08:17 (5)	17:08	28 08:46 (3)	17:01	16 08:51 (3)
18	06:10	07:11 (1)	06:39	07:09	07:39	07:15	07:44	08:36 (3)			
	20:54	71 08:22 (1)	20:21	19:32	10 07:53 (7)	18:43	17:07	29 08:46 (3)	17:01	15 08:51 (3)	
19	06:11	07:12 (1)	06:40	07:10	07:40	07:16	07:44	08:36 (3)			
	20:53	69 08:21 (1)	20:19	19:30	18:42	17:06	30 08:48 (3)	17:01	15 08:51 (3)		
20	06:12	07:13 (1)	06:41	07:11	07:41	07:17	07:45	08:37 (3)			
	20:53	68 08:21 (1)	20:18	19:28	18:40	17:06	30 08:48 (3)	17:02	15 08:52 (3)		
21	06:12	07:15 (1)	06:42	07:12	07:42	07:18	07:45	08:37 (3)			
	20:52	65 08:20 (1)	20:16	19:27	18:39	17:05	30 08:48 (3)	17:02	15 08:52 (3)		
22	06:13	07:15 (1)	06:43	07:13	07:43	07:19	07:46	08:38 (3)			
	20:51	63 08:18 (1)	20:15	19:25	18:37	17:04	30 08:48 (3)	17:03	15 08:53 (3)		
23	06:14	07:17 (1)	06:44	07:14	07:44	07:20	07:46	08:38 (3)			
	20:50	59 08:16 (1)	20:13	19:23	18:36	17:04	31 08:49 (3)	17:03	15 08:53 (3)		
24	06:15	07:19 (1)	06:45	07:15	07:45	07:22	07:47	08:39 (3)			
	20:49	56 08:15 (1)	20:12	19:21	18:34	17:03	31 08:50 (3)	17:04	15 08:54 (3)		
25	06:16	07:21 (1)	06:46	07:16	07:46	07:23	07:47	08:39 (3)			
	20:49	53 08:14 (1)	20:10	19:20	17:33	17:03	31 08:50 (3)	17:04	15 08:54 (3)		
26	06:17	07:23 (1)	06:47	07:17	07:47	07:24	07:48	08:39 (3)			
	20:48	49 08:12 (1)	20:09	19:18	17:32	17:02	31 08:50 (3)	17:05	16 08:55 (3)		
27	06:18	07:25 (1)	06:47	07:17	07:47	07:25	07:48	08:40 (3)			
	20:47	45 08:10 (1)	20:07	19:16	17:30	17:02	30 08:50 (3)	17:06	16 08:56 (3)		
28	06:19	07:28 (1)	06:48	07:18	07:48	07:26	07:48	08:39 (3)			
	20:46	39 08:07 (1)	20:06	19:15	17:29	17:01	30 08:50 (3)	17:06	18 08:57 (3)		
29	06:20	07:30 (1)	06:49	07:19	07:49	07:27	07:49	08:39 (3)			
	20:45	33 08:03 (1)	20:04	19:13	17:28	17:01	29 08:50 (3)	17:07	18 08:57 (3)		
30	06:20	07:34 (1)	06:50	07:20	07:50	07:28	07:49	08:39 (3)			
	20:44	26 08:00 (1)	20:03	19:11	17:27	17:01	29 08:50 (3)	17:08	19 08:58 (3)		
31	06:21	07:40 (1)	06:51	07:21	07:51	07:29	07:49	08:39 (3)			
	20:43	13 07:53 (1)	20:01	19:10	17:25	17:08	20 08:59 (3)				
Potential sun hours	457	427	375	346	270	299	290	604			
Total, worst case	2111		179	270	584		604				
Sun reduction	0,74		0,65	0,57	0,48		0,42				
Oper. time red.	0,78		0,78	0,78	0,78		0,78				
Wind dir. red.	0,65		0,67	0,62	0,62		0,62				
Total reduction	0,38		0,34	0,28	0,23		0,20				
Total, real	794		61	75	137		123				

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

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 IT-09028 Sestu
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 Calculated:
 07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: E - R31

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
 N NE E SE S SW W NW Sum
 704 820 622 355 622 1.039 1.312 1.360 6.834
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49	07:36	07:01	07:11	06:26	05:58	05:59	06:22	06:52	07:21	06:55	07:29
	17:10	17:43	18:17	19:50	20:21	20:50	21:00	20:42	20:00	19:10	17:24	17:00
2	07:49	07:36	07:00	07:10	06:25	05:58	05:59	06:23	06:53	07:22	06:56	07:30
	17:10	17:44	18:18	19:51	20:22	20:50	21:00	20:41	19:58	19:08	17:23	17:00
3	07:50	07:35	06:58	07:08	06:24	05:57	06:00	06:24	06:54	07:23	06:57	07:31
	17:11	17:46	18:19	19:52	20:23	20:51	21:00	20:40	19:56	19:07	17:22	17:00
4	07:50	07:34	06:57	07:07	06:23	05:57	06:00	06:25	06:55	07:24	06:58	07:32
	17:12	17:47	18:20	19:53	20:24	20:52	21:00	20:39	19:55	19:05	17:21	17:00
5	07:50	07:33	06:55	07:05	06:22	05:57	06:01	06:26	06:56	07:26	06:59	07:33
	17:13	17:48	18:21	19:54	20:25	20:52	21:00	20:37	19:53	19:03	17:19	17:00
6	07:50	07:31	06:54	07:03	06:20	05:56	06:02	06:27	06:57	07:27	07:01	07:34
	17:14	17:49	18:22	19:55	20:26	20:53	20:59	20:36	19:51	19:02	17:18	16:59
7	07:50	07:30	06:52	07:02	06:19	05:56	06:02	06:28	06:58	07:28	07:02	07:35
	17:15	17:51	18:23	19:56	20:27	20:54	20:59	20:35	19:50	19:00	17:17	16:59
8	07:49	07:29	06:51	07:00	06:18	05:56	06:03	06:29	06:59	07:29	07:03	07:36
	17:16	17:52	18:24	19:57	20:28	20:54	20:59	20:34	19:48	18:58	17:16	16:59
9	07:49	07:28	06:49	06:59	06:17	05:56	06:03	06:30	07:00	07:30	07:04	07:37
	17:17	17:53	18:25	19:58	20:29	20:55	20:58	20:33	19:47	18:57	17:15	16:59
10	07:49	07:27	06:47	06:57	06:16	05:56	06:04	06:31	07:01	07:31	07:05	07:38
	17:18	17:54	18:27	19:59	20:30	20:55	20:58	20:31	19:45	18:55	17:14	16:59
11	07:49	07:26	06:46	06:55	06:15	05:55	06:05	06:32	07:02	07:32	07:06	07:38
	17:19	17:55	18:28	20:00	20:31	20:56	20:58	20:30	19:43	18:54	17:13	16:59
12	07:49	07:25	06:44	06:54	06:14	05:55	06:06	06:33	07:03	07:33	07:08	07:39
	17:20	17:57	18:29	20:01	20:32	20:56	20:57	20:29	19:42	18:52	17:12	17:00
13	07:48	07:23	06:43	06:52	06:13	05:55	06:06	06:34	07:04	07:34	07:09	07:40
	17:21	17:58	18:30	20:02	20:33	20:57	20:57	20:28	19:40	18:51	17:11	17:00
14	07:48	07:22	06:41	06:51	06:12	05:55	06:07	06:35	07:05	07:35	07:10	07:41
	17:22	17:59	18:31	20:03	20:34	20:57	20:56	20:26	19:38	18:49	17:10	17:00
15	07:48	07:21	06:39	06:49	06:11	05:55	06:08	06:36	07:06	07:36	07:11	07:41
	17:23	18:00	18:32	20:04	20:35	20:58	20:56	20:25	19:37	18:48	17:10	17:00
16	07:47	07:20	06:38	06:48	06:10	05:55	06:08	06:37	07:07	07:37	07:12	07:42
	17:24	18:01	18:33	20:05	20:36	20:58	20:55	20:23	19:35	18:46	17:09	17:00
17	07:47	07:18	06:36	06:46	06:09	05:55	06:09	06:38	07:08	07:38	07:13	07:43
	17:25	18:03	18:34	20:06	20:37	20:58	20:55	20:22	19:33	18:45	17:08	17:01
18	07:46	07:17	06:34	06:45	06:08	05:55	06:10	06:39	07:09	07:39	07:15	07:44
	17:27	18:04	18:35	20:07	20:38	20:59	20:54	20:21	19:32	18:43	17:07	17:01
19	07:46	07:16	06:33	06:43	06:07	05:55	06:11	06:40	07:10	07:40	07:16	07:44
	17:28	18:05	18:36	20:08	20:39	20:59	20:53	20:19	19:30	18:42	17:06	17:01
20	07:45	07:14	06:31	06:42	06:06	05:55	06:12	06:41	07:11	07:41	07:17	07:45
	17:29	18:06	18:37	20:09	20:39	20:59	20:53	20:18	19:28	18:40	17:06	17:02
21	07:45	07:13	06:30	06:40	06:05	05:56	06:13	06:42	07:12	07:42	07:18	07:45
	17:30	18:07	18:38	20:10	20:40	21:00	20:52	20:16	19:27	18:39	17:05	17:02
22	07:44	07:12	06:28	06:39	06:05	05:56	06:13	06:43	07:13	07:43	07:19	07:46
	17:31	18:09	18:39	20:11	20:41	21:00	20:51	20:15	19:25	18:37	17:04	17:03
23	07:44	07:10	06:26	06:37	06:04	05:56	06:14	06:44	07:14	07:45	07:20	07:46
	17:32	18:10	18:40	20:12	20:42	21:00	20:50	20:13	19:23	18:36	17:04	17:03
24	07:43	07:09	06:25	06:36	06:03	05:56	06:15	06:45	07:15	07:46	07:21	07:47
	17:34	18:11	18:41	20:13	20:43	21:00	20:49	20:12	19:21	18:34	17:03	17:04
25	07:42	07:07	06:23	06:35	06:02	05:57	06:16	06:46	07:16	07:47	07:23	07:47
	17:35	18:12	18:42	20:14	20:44	21:00	20:49	20:10	19:20	17:33	17:03	17:04
26	07:42	07:06	06:21	06:33	06:02	05:57	06:17	06:47	07:17	07:48	07:24	07:48
	17:36	18:13	18:43	20:16	20:45	21:00	20:48	20:09	19:18	17:32	17:02	17:05
27	07:41	07:04	06:20	06:32	06:01	05:57	06:18	06:47	07:17	07:49	07:25	07:48
	17:37	18:14	18:44	20:17	20:46	21:00	20:47	20:07	19:16	17:30	17:02	17:06
28	07:40	07:03	06:18	06:30	06:00	05:58	06:19	06:48	07:18	07:50	07:26	07:48
	17:38	18:15	18:46	20:18	20:46	21:00	20:46	20:06	19:15	17:29	17:01	17:06
29	07:39		07:16	06:29	06:00	05:58	06:20	06:49	07:19	07:51	07:27	07:49
	17:40		19:47	20:19	20:47	21:00	20:45	20:04	19:13	17:28	17:01	17:07
30	07:38		07:15	06:28	05:59	05:59	06:21	06:50	07:20	07:53	07:28	07:49
	17:41		19:48	20:20	20:48	21:00	20:44	20:03	19:12	17:27	17:01	17:08
31	07:37		07:13		05:59		06:21	06:51		06:54		07:49
	17:42		19:49		20:49		20:43	20:01		17:25		17:09
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: F - R37

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:49 17:09	09:48 (1) 11:06 (1)	07:37 17:43	07:01 18:17	07:35 (7) 19:50	06:58 (6) 20:50
2	07:49 17:10	09:49 (1) 11:06 (1)	07:36 17:44	07:00 18:18	07:36 (7) 19:51	06:55 (6) 20:50
3	07:50 17:11	09:49 (1) 11:06 (1)	07:35 17:46	06:58 18:19	07:36 (7) 19:52	06:55 (6) 20:51
4	07:50 17:12	09:50 (1) 11:06 (1)	07:34 17:47	06:57 18:20	07:37 (7) 19:53	06:55 (6) 20:52
5	07:50 17:13	09:51 (1) 11:06 (1)	07:33 17:48	06:55 18:21	07:38 (7) 19:54	06:54 (6) 20:52
6	07:50 17:14	08:16 (5) 11:05 (1)	07:32 17:49	06:54 18:22	07:39 (7) 19:55	06:54 (6) 20:53
7	07:50 17:15	08:15 (5) 11:05 (1)	07:30 17:51	06:52 18:23	07:02 19:56	06:54 (6) 20:54
8	07:50 17:16	08:15 (5) 11:05 (1)	07:29 17:52	06:51 18:24	07:00 19:57	06:53 (6) 20:54
9	07:49 17:17	08:15 (5) 11:05 (1)	07:28 17:53	06:49 18:25	06:59 19:58	06:54 (6) 20:55
10	07:49 17:18	08:14 (5) 11:05 (1)	07:27 17:54	06:47 18:26	06:57 19:59	06:54 (6) 20:55
11	07:49 17:19	08:13 (5) 11:04 (1)	07:26 17:55	06:46 18:28	06:55 20:00	06:54 (6) 20:56
12	07:49 17:20	08:14 (5) 11:04 (1)	07:25 17:57	06:44 18:29	06:54 20:01	06:55 (6) 20:56
13	07:48 17:21	08:14 (5) 11:04 (1)	07:23 17:58	06:43 18:30	06:52 20:02	06:55 (6) 20:57
14	07:48 17:22	08:13 (5) 11:02 (1)	07:22 17:59	06:41 18:31	06:51 20:03	06:56 (6) 20:57
15	07:48 17:23	08:13 (5) 11:02 (1)	07:21 18:00	06:39 18:32	06:49 20:04	06:58 (6) 20:58
16	07:47 17:24	08:13 (5) 11:01 (1)	07:20 18:01	06:38 18:33	06:48 20:05	06:59 (6) 20:58
17	07:47 17:25	08:13 (5) 11:00 (1)	07:18 18:03	06:36 18:34	06:46 20:06	07:00 (6) 20:59
18	07:47 17:26	08:13 (5) 10:59 (1)	07:17 18:04	06:34 18:35	06:45 20:07	07:02 (6) 20:59
19	07:46 17:28	08:14 (5) 10:58 (1)	07:16 18:05	06:33 18:36	06:43 20:08	06:57 20:59
20	07:45 17:29	08:14 (5) 10:56 (1)	07:14 18:06	06:31 18:37	06:42 20:09	06:55 20:59
21	07:45 17:30	08:13 (5) 10:54 (1)	07:13 18:07	06:29 18:38	06:40 20:10	06:56 21:00
22	07:44 17:31	08:14 (5) 10:53 (1)	07:12 18:08	06:28 18:39	06:39 20:11	06:56 21:00
23	07:44 17:32	08:15 (5) 10:50 (1)	07:10 18:10	06:26 18:40	06:37 20:12	06:04 21:00
24	07:43 17:33	08:15 (5) 10:48 (1)	07:09 18:11	06:25 18:41	06:36 20:13	06:03 21:00
25	07:42 17:35	08:16 (5) 10:45 (1)	07:07 18:12	06:23 18:42	06:35 20:15	06:02 21:00
26	07:42 17:36	08:17 (5) 10:39 (1)	07:06 18:13	06:21 18:43	06:33 20:16	06:02 21:00
27	07:41 17:37	08:17 (5) 10:36 (5)	07:04 18:14	06:20 18:44	06:32 20:17	06:01 21:00
28	07:40 17:38	08:18 (5) 10:36 (5)	07:03 18:15	06:18 18:46	06:30 20:18	06:00 21:01
29	07:39 17:40	08:19 (5) 10:35 (5)	07:02 18:16	06:16 18:47	06:29 20:19	06:59 (6) 21:01
30	07:38 17:41	08:21 (5) 10:33 (5)	07:01 18:17	06:15 18:48	06:28 20:20	06:58 (6) 21:01
31	07:37 17:42	08:23 (5) 10:31 (5)	07:00 18:18	06:14 18:49	06:27 20:21	06:57 21:00
Potential sun hours	299	298	370	398	447	450
Total, worst case	1999	96	92	59	388	
Sun reduction	0,40	0,45	0,49	0,52	0,57	
Oper. time red.	0,78	0,78	0,78	0,78	0,78	
Wind dir. red.	0,59	0,62	0,62	0,67	0,67	
Total reduction	0,18	0,21	0,23	0,27	0,30	
Total, real	365	21	21	16	115	

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: F - R37

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December
1	05:59 21:00	06:22 20:42	07:05 (6) 19:58	06:52 19:10	06:55 17:24	07:29 17:00
2	05:59 21:00	06:23 20:41	07:05 (6) 19:58	06:53 19:08	06:56 17:23	07:30 17:00
3	06:00 21:00	06:24 20:40	07:04 (6) 19:56	06:54 19:07	06:57 17:22	07:31 17:00
4	06:00 21:00	06:25 20:39	07:04 (6) 19:55	06:55 19:05	06:58 17:20	07:32 17:00
5	06:01 21:00	06:26 20:37	07:04 (6) 19:53	06:56 19:03	06:59 17:19	07:33 16:59
6	06:02 21:00	06:27 20:36	07:04 (6) 19:52	06:57 19:02	07:01 17:18	07:34 16:59
7	06:02 20:59	06:28 20:35	07:04 (6) 19:50	06:58 19:00	07:02 17:17	07:35 16:59
8	06:03 20:59	06:29 20:34	07:04 (6) 19:48	06:59 18:58	07:03 17:16	07:36 16:59
9	06:03 20:59	06:30 20:33	07:04 (6) 19:47	07:00 18:57	07:04 17:15	07:37 16:59
10	06:04 20:58	06:31 20:31	07:04 (6) 19:45	07:01 18:55	07:05 17:14	07:38 16:59
11	06:05 20:58	06:32 20:30	07:04 (6) 19:43	07:02 18:54	07:07 17:13	07:38 16:59
12	06:05 20:57	06:33 20:29	07:05 (6) 19:42	07:03 18:52	07:08 17:12	07:39 16:59
13	06:06 20:57	06:34 20:28	07:06 (6) 19:40	07:04 18:51	07:09 17:11	07:40 17:00
14	06:07 20:56	06:35 20:26	07:07 (6) 19:38	07:05 18:49	07:10 17:10	07:41 17:00
15	06:08 20:56	06:36 20:25	07:09 (6) 19:37	07:06 18:48	07:11 17:09	07:42 17:00
16	06:08 20:55	06:37 20:24	07:12 (6) 19:35	07:07 18:46	07:12 17:09	07:42 17:00
17	06:09 20:55	06:38 20:22	07:19 (6) 19:33	07:08 18:45	07:14 17:08	07:43 17:01
18	06:10 20:54	06:39 20:21	07:09 19:32	07:09 18:43	07:15 17:07	07:44 17:01
19	06:11 20:53	06:40 20:19	07:10 19:30	07:10 18:42	07:16 17:06	07:44 17:01
20	06:12 20:53	06:41 20:18	07:11 19:28	07:11 18:40	07:17 17:06	07:45 17:02
21	06:12 20:52	06:42 20:16	07:12 19:27	07:12 18:39	07:18 17:05	07:45 17:02
22	06:13 20:51	06:43 20:15	07:13 19:25	07:13 18:37	07:19 17:04	07:46 17:03
23	06:14 20:50	06:44 20:13	07:14 19:23	07:14 18:36	07:20 17:04	07:46 17:03
24	06:15 20:49	06:45 20:12	07:15 19:21	07:15 18:34	07:22 17:03	07:47 17:04
25	06:16 20:49	07:14 (6) 07:20 (6)	06:46 20:10	07:16 19:20	07:23 17:03	07:47 17:04
26	06:17 20:48	07:11 (6) 07:22 (6)	06:46 20:09	07:16 19:18	07:24 17:02	07:48 17:05
27	06:18 20:47	07:10 (6) 07:24 (6)	06:47 20:07	07:17 19:16	07:25 17:02	07:48 17:06
28	06:19 20:46	07:09 (6) 07:26 (6)	06:48 20:06	07:18 19:15	07:26 17:01	07:48 17:06
29	06:20 20:45	07:07 (6) 07:26 (6)	06:49 20:04	07:19 19:13	07:27 17:01	07:49 17:07
30	06:20 20:44	07:06 (6) 07:27 (6)	06:50 20:03	07:20 19:11	07:28 17:01	07:49 17:08
31	06:21 20:43	07:06 (6) 07:27 (6)	06:51 20:01	07:21 19:11	07:29 17:01	07:49 17:08
Potential sun hours	457	427	375	346	299	290
Total, worst case	109	347	195	116	2482	
Sun reduction	0,74	0,72	0,57	0,48	0,42	
Oper. time red.	0,78	0,78	0,78	0,78	0,78	
Wind dir. red.	0,67	0,67	0,62	0,59	0,58	
Total reduction	0,38	0,37	0,27	0,22	0,19	
Total, real	42	130	53	249	471	

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: G - R38

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:49 17:09	08:17 (5) 11:50 (1)	07:37 17:43	07:01 18:16	07:37 (7) 19:50	07:11 20:21
2	07:49 17:10	08:17 (5) 11:50 (1)	07:36 17:44	07:00 18:18	07:38 (7) 19:51	07:10 20:22
3	07:50 17:11	08:17 (5) 11:50 (1)	07:35 17:46	06:58 18:19	07:38 (7) 19:52	07:08 20:23
4	07:50 17:12	08:16 (5) 11:50 (1)	07:34 17:47	06:57 18:20	07:39 (7) 19:53	07:07 20:24
5	07:50 17:13	08:16 (5) 11:50 (1)	07:33 17:48	06:55 18:21	07:40 (7) 19:54	07:05 20:25
6	07:50 17:14	08:16 (5) 11:48 (1)	07:32 17:49	06:54 18:22	07:42 (7) 19:55	07:03 20:26
7	07:50 17:15	08:16 (5) 11:48 (1)	07:30 17:51	06:52 18:23	07:02 19:56	07:02 20:27
8	07:49 17:16	08:16 (5) 11:48 (1)	07:29 17:52	06:51 18:24	07:00 19:57	07:00 20:28
9	07:49 17:17	08:16 (5) 11:47 (1)	07:28 17:53	06:49 18:25	06:59 19:58	06:59 20:29
10	07:49 17:18	08:16 (5) 11:47 (1)	07:27 17:54	06:47 18:26	06:57 19:59	06:57 20:30
11	07:49 17:19	08:16 (5) 11:45 (1)	07:26 17:55	06:46 18:28	06:55 20:00	06:55 20:31
12	07:49 17:20	08:16 (5) 11:45 (1)	07:25 17:57	06:44 18:29	06:54 20:01	06:54 20:32
13	07:48 17:21	08:17 (5) 11:44 (1)	07:23 17:58	06:43 18:30	06:52 20:02	06:52 20:33
14	07:48 17:22	08:16 (5) 11:42 (1)	07:22 17:59	06:41 18:31	06:51 20:03	06:51 20:34
15	07:48 17:23	08:17 (5) 11:41 (1)	07:21 18:00	06:39 18:32	06:49 20:04	06:49 20:35
16	07:47 17:24	08:16 (5) 11:39 (1)	07:20 18:01	06:38 18:33	06:48 20:05	06:48 20:36
17	07:47 17:25	08:17 (5) 11:37 (1)	07:18 18:03	06:36 18:34	06:46 20:06	06:46 20:37
18	07:47 17:26	08:17 (5) 11:34 (1)	07:17 18:04	06:34 18:35	06:45 20:07	06:45 20:38
19	07:46 17:28	08:18 (5) 11:31 (1)	07:16 18:05	06:33 18:36	06:43 20:08	06:43 20:39
20	07:45 17:29	08:18 (5) 11:27 (1)	07:14 18:06	06:31 18:37	06:42 20:09	06:42 20:40
21	07:45 17:30	08:18 (5) 11:27 (1)	07:13 18:07	06:29 18:38	06:40 20:10	06:40 20:41
22	07:44 17:31	08:20 (5) 11:22 (1)	07:12 18:08	06:28 18:39	06:39 20:11	06:39 20:42
23	07:44 17:32	08:20 (5) 11:22 (1)	07:10 18:10	06:26 18:40	06:37 20:12	06:37 20:43
24	07:43 17:33	08:21 (5) 11:21 (1)	07:09 18:11	06:25 18:41	06:36 20:13	06:36 20:44
25	07:42 17:35	08:22 (5) 11:21 (1)	07:07 18:12	06:23 18:42	06:35 20:15	06:35 20:46
26	07:42 17:36	08:23 (5) 11:21 (1)	07:06 18:13	06:21 18:43	06:33 20:16	06:33 20:47
27	07:41 17:37	08:24 (5) 11:20 (1)	07:04 18:14	06:20 18:44	06:32 20:17	06:32 20:48
28	07:40 17:38	08:26 (5) 11:19 (1)	07:03 18:15	06:18 18:46	06:30 20:18	06:30 20:49
29	07:39 17:39	08:29 (5) 11:19 (1)	07:02 18:16	06:16 18:47	06:29 20:19	06:29 20:50
30	07:38 17:41	08:35 (5)	07:01 18:17	06:15 18:48	06:28 20:20	06:28 20:51
31	07:37 17:42		07:00 18:18	06:14 18:49	06:27 20:21	06:27 20:52
Potential sun hours	299	298	370	398	447	450
Total, worst case	1701	114	94	8	542	
Sun reduction	0,40	0,45	0,49	0,52	0,57	
Oper. time red.	0,78	0,78	0,78	0,78	0,78	
Wind dir. red.	0,60	0,61	0,61	0,67	0,67	
Total reduction	0,19	0,21	0,23	0,27	0,30	
Total, real	316	24	22	2	161	

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: G - R38

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:59 21:00	06:22 20:42	07:01 (6) 19:58	06:52 19:10	07:21 19:10	06:55 17:24
2	05:59 21:00	06:23 20:41	07:02 (6) 19:58	06:53 19:08	07:22 17:23	06:56 17:00
3	06:00 21:00	06:24 20:40	07:02 (6) 19:56	06:54 19:07	07:23 17:22	06:57 17:00
4	06:00 21:00	06:25 20:39	07:02 (6) 19:55	06:55 19:05	07:24 17:20	06:58 17:00
5	06:01 21:00	06:26 20:37	07:02 (6) 19:53	06:56 19:03	07:26 17:19	06:59 16:59
6	06:02 20:59	06:27 20:36	07:03 (6) 19:52	06:57 19:02	07:27 17:18	07:01 16:59
7	06:02 20:59	06:28 20:35	07:03 (6) 19:50	06:58 19:00	07:28 17:17	07:02 16:59
8	06:03 20:59	06:29 20:34	07:04 (6) 19:48	06:59 18:58	07:29 17:16	07:03 16:59
9	06:03 20:59	06:30 20:33	07:04 (6) 19:47	07:00 18:57	07:30 17:15	07:04 16:59
10	06:04 20:58	06:31 20:31	07:05 (6) 19:45	07:01 18:55	07:31 17:14	07:05 16:59
11	06:05 20:58	06:32 20:30	07:06 (6) 19:43	07:02 18:54	07:32 17:13	07:07 16:59
12	06:05 20:57	06:33 20:29	07:08 (6) 19:42	07:03 18:52	07:33 17:12	07:08 16:59
13	06:06 20:57	06:34 20:28	07:12 (6) 19:40	07:04 18:51	07:34 17:11	07:09 17:00
14	06:07 20:56	06:35 20:26	07:16 (6) 19:38	07:05 18:49	07:35 17:10	07:11 17:00
15	06:08 20:56	06:36 20:25	07:06 19:37	07:36 18:48	07:11 17:09	07:42 17:00
16	06:08 20:55	06:37 20:24	07:07 19:35	07:37 18:46	07:12 17:09	07:42 17:00
17	06:09 20:55	06:38 20:22	07:08 19:33	07:38 18:45	07:14 17:08	07:43 17:01
18	06:10 20:54	07:12 (6) 20:21	06:39 19:32	07:39 18:43	07:15 17:07	07:44 17:01
19	06:11 20:53	07:10 (6) 20:19	06:40 19:30	07:40 18:42	07:16 17:06	07:44 17:01
20	06:12 20:53	07:08 (6) 20:18	06:41 19:28	07:41 18:40	07:17 17:06	07:45 17:02
21	06:12 20:52	07:07 (6) 20:16	06:42 19:27	07:42 18:39	07:18 17:05	07:45 17:02
22	06:13 20:51	07:06 (6) 20:15	06:43 19:25	07:44 18:37	07:19 17:04	07:46 17:03
23	06:14 20:50	07:05 (6) 20:13	06:44 19:23	07:45 18:36	07:20 17:04	07:46 17:03
24	06:15 20:49	07:04 (6) 20:12	06:45 19:21	07:46 18:34	07:22 17:03	07:47 17:04
25	06:16 20:49	07:04 (6) 20:10	06:46 19:20	07:47 17:33	07:23 17:03	07:47 17:04
26	06:17 20:48	07:04 (6) 20:09	06:46 19:18	07:48 17:32	07:24 17:02	07:48 17:05
27	06:18 20:47	07:03 (6) 20:07	06:47 19:16	07:49 17:30	07:25 17:02	07:48 17:06
28	06:19 20:46	07:03 (6) 20:06	06:48 19:15	07:50 17:29	07:26 17:01	07:48 17:06
29	06:20 20:45	07:02 (6) 20:04	06:49 19:13	07:51 17:28	07:27 17:01	07:49 17:07
30	06:20 20:44	07:02 (6) 20:03	06:50 19:11	07:52 17:26	07:28 17:01	07:49 17:08
31	06:21 20:43	07:02 (6) 20:01	06:51 19:11	07:53 17:25	07:29 17:01	07:49 17:08
Potential sun hours	457	427	375	346	299	290
Total, worst case	272	275	211	211	759	2619
Sun reduction	0,74	0,72	0,57	0,57	0,48	0,42
Oper. time red.	0,78	0,78	0,78	0,78	0,78	0,78
Wind dir. red.	0,67	0,67	0,61	0,61	0,61	0,60
Total reduction	0,38	0,37	0,27	0,27	0,23	0,19
Total, real	104	103	58	58	172	507

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: H - R32

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:49 17:09	07:36 17:43	07:01 18:16	08:44 (3) 19:50	06:26 20:21	05:58 20:50
2	07:49 17:10	07:36 17:44	07:00 18:18	08:44 (3) 19:51	06:25 20:22	05:58 20:50
3	07:50 17:11	07:35 17:46	06:58 18:19	08:43 (3) 19:52	06:24 20:23	05:57 20:51
4	07:50 17:12	07:34 17:47	06:57 18:20	08:43 (3) 19:53	06:23 20:24	05:57 20:52
5	07:50 17:13	07:33 17:48	06:55 18:21	08:43 (3) 19:54	06:21 20:25	05:57 20:52
6	07:50 17:14	07:31 17:49	06:54 18:22	08:42 (3) 19:55	07:44 (5) 20:26	05:56 20:53
7	07:50 17:15	07:30 17:51	06:52 18:23	08:43 (3) 19:56	07:40 (5) 20:27	05:56 20:54
8	07:49 17:16	07:29 17:52	06:51 18:24	08:42 (3) 19:57	07:37 (5) 20:28	05:56 20:54
9	07:49 17:17	07:28 17:53	06:49 18:25	08:43 (3) 19:58	07:35 (5) 20:29	05:56 20:55
10	07:49 17:18	07:27 17:54	06:47 18:26	08:42 (3) 19:59	07:33 (5) 20:30	05:55 20:55
11	07:49 17:19	07:26 17:55	09:13 (3) 18:28	08:42 (3) 20:00	07:33 (5) 20:31	05:55 20:56
12	07:49 17:20	07:25 17:57	09:08 (3) 18:29	08:43 (3) 20:01	07:31 (5) 20:32	05:55 20:56
13	07:48 17:21	07:23 17:58	09:04 (3) 18:30	08:43 (3) 20:02	07:31 (5) 20:33	05:55 20:57
14	07:48 17:22	07:22 17:59	09:01 (3) 18:31	08:43 (3) 20:03	07:29 (5) 20:34	05:55 20:57
15	07:48 17:23	07:21 18:00	09:35 (3) 18:32	08:43 (3) 20:04	07:29 (5) 20:35	05:55 20:58
16	07:47 17:24	07:20 18:01	09:37 (3) 18:33	08:44 (3) 20:05	07:28 (5) 20:36	05:55 20:58
17	07:47 17:25	07:18 18:03	09:39 (3) 18:34	08:45 (3) 20:06	07:28 (5) 20:37	05:55 20:58
18	07:46 17:26	07:17 18:04	08:54 (3) 18:35	08:46 (3) 20:07	07:28 (5) 20:38	05:55 20:59
19	07:46 17:28	07:16 18:05	08:53 (3) 18:36	08:47 (3) 20:08	07:28 (5) 20:39	05:55 20:59
20	07:45 17:29	07:14 18:06	08:51 (3) 18:37	08:49 (3) 20:09	07:27 (5) 20:39	05:55 20:59
21	07:45 17:30	07:13 18:07	08:50 (3) 18:38	08:50 (3) 20:10	07:28 (5) 20:40	05:56 21:00
22	07:44 17:31	07:11 18:08	08:50 (3) 18:39	08:51 (3) 20:11	07:27 (5) 20:41	05:56 21:00
23	07:44 17:32	07:10 18:10	08:48 (3) 18:40	08:54 (3) 20:12	07:28 (5) 20:42	05:56 21:00
24	07:43 17:33	07:09 18:11	08:48 (3) 18:41	08:58 (3) 20:13	07:29 (5) 20:43	05:56 21:00
25	07:42 17:35	07:07 18:12	08:47 (3) 18:42	08:57 (3) 20:14	07:29 (5) 20:44	05:57 21:00
26	07:42 17:36	07:06 18:13	08:46 (3) 18:43	08:56 (3) 20:15	07:30 (5) 20:45	05:57 21:00
27	07:41 17:37	07:04 18:14	08:45 (3) 18:44	08:55 (3) 20:16	07:32 (5) 20:46	05:57 21:00
28	07:40 17:38	07:03 18:15	08:45 (3) 18:46	08:54 (3) 20:17	07:35 (5) 20:47	05:58 21:00
29	07:39 17:40		07:16 19:47	06:29 20:18	07:34 (5) 20:48	05:58 21:00
30	07:38 17:41		07:15 19:48	06:28 20:19	07:37 (5) 20:49	05:58 21:00
31	07:37 17:42		07:13 19:49	06:27 20:20	07:49 (5) 20:50	05:59 21:00
Potential sun hours	299	298	370	398	447	450
Total, worst case		848	1244	712		
Sun reduction		0,45	0,49	0,52		
Oper. time red.		0,78	0,78	0,78		
Wind dir. red.		0,62	0,62	0,68		
Total reduction		0,22	0,23	0,27		
Total, real		183	290	195		

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: H - R32

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:59 21:00	06:22 20:42	06:52 20:00	07:32 (5) 19:10	07:21 19:10	09:22 (3) 17:24
2	05:59 21:00	06:23 20:41	06:53 19:58	07:32 (5) 08:01 (5)	07:22 19:08	09:21 (3) 17:23
3	06:00 21:00	06:24 20:40	06:54 19:56	07:33 (5) 07:59 (5)	07:23 19:07	09:20 (3) 17:22
4	06:00 21:00	06:25 20:39	06:55 19:55	07:35 (5) 07:58 (5)	07:24 19:05	09:19 (3) 17:20
5	06:01 21:00	06:26 20:37	06:56 19:53	07:37 (5) 07:55 (5)	07:25 19:03	09:19 (3) 17:19
6	06:02 20:59	06:27 20:36	06:57 19:51	07:38 (5) 07:51 (5)	07:27 19:02	09:18 (3) 17:18
7	06:02 20:59	06:28 20:35	06:58 19:50	07:38 (5) 19:00	07:28 19:00	09:18 (3) 17:17
8	06:03 20:59	06:29 20:34	06:59 19:48	07:39 (5) 18:58	07:29 18:58	09:17 (3) 17:16
9	06:03 20:59	06:30 20:33	07:00 19:47	07:40 (5) 18:57	07:30 18:57	09:18 (3) 17:15
10	06:04 20:58	06:31 20:31	07:01 19:45	07:41 (5) 18:55	07:31 18:55	09:18 (3) 17:14
11	06:05 20:58	06:32 20:30	07:02 19:43	07:42 (5) 18:54	07:32 18:54	09:18 (3) 17:13
12	06:05 20:57	06:33 20:29	07:03 19:42	07:43 (5) 18:52	07:33 18:52	09:18 (3) 17:12
13	06:06 20:57	06:34 20:28	07:04 19:40	07:44 (5) 18:51	07:34 18:51	09:18 (3) 17:11
14	06:07 20:56	06:35 20:26	07:05 19:38	07:45 (5) 18:49	07:35 18:49	09:18 (3) 17:10
15	06:08 20:56	06:36 20:25	07:06 19:37	07:46 (5) 18:48	07:36 18:48	09:18 (3) 17:09
16	06:08 20:55	06:37 20:23	07:07 19:35	07:47 (5) 18:46	07:37 18:46	09:18 (3) 17:09
17	06:09 20:55	06:38 20:22	07:08 19:33	07:48 (5) 18:44	07:38 18:44	09:18 (3) 17:08
18	06:10 20:54	06:39 20:21	07:09 19:32	07:49 (5) 18:43	07:39 18:43	09:19 (3) 17:07
19	06:11 20:53	06:40 20:19	07:10 19:30	07:50 (5) 18:42	07:40 18:42	09:20 (3) 17:06
20	06:12 20:53	06:41 20:18	07:11 19:28	07:51 (5) 18:40	07:41 18:40	09:21 (3) 17:06
21	06:12 20:52	06:42 20:16	07:12 19:26	07:52 (5) 18:39	07:42 18:39	09:21 (3) 17:05
22	06:13 20:51	06:43 20:15	07:13 19:25	07:53 (5) 18:37	07:43 18:37	09:22 (3) 17:04
23	06:14 20:50	06:44 20:13	07:14 19:23	07:54 (5) 18:36	07:44 18:36	09:23 (3) 17:04
24	06:15 20:49	06:45 20:12	07:15 19:21	07:55 (5) 18:34	07:45 18:34	09:24 (3) 17:03
25	06:16 20:49	06:46 20:10	07:16 19:20	07:56 (5) 18:33	07:46 18:33	09:25 (3) 17:03
26	06:17 20:48	06:47 20:09	07:17 19:18	07:57 (5) 18:32	07:47 18:32	09:26 (3) 17:02
27	06:18 20:47	06:48 20:07	07:18 19:16	07:58 (5) 18:30	07:48 18:30	09:27 (3) 17:02
28	06:19 20:46	06:49 20:06	07:19 19:15	07:59 (5) 18:29	07:49 18:29	09:28 (3) 17:01
29	06:20 20:45	06:50 20:04	07:20 19:13	08:00 (5) 18:27	07:50 18:27	09:29 (3) 17:01
30	06:20 20:44	06:50 20:03	07:20 19:11	08:01 (5) 18:26	07:50 18:26	09:30 (3) 17:01
31	06:21 20:43	06:51 20:01	07:21 19:10	08:02 (5) 18:25	07:51 18:25	09:31 (3) 17:00
Potential sun hours	457	427	375	346	299	290
Total, worst case		585	615	1643		
Sun reduction		0,72	0,65	0,57		
Oper. time red.		0,78	0,78	0,78		
Wind dir. red.		0,68	0,63	0,62		
Total reduction		0,38	0,32	0,28		
Total, real		222	197	452		

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progetto Shadow receptor: I - R30

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49	07:36	07:01	07:11	06:26	05:58	05:59	06:22	06:52	07:21	06:55	07:29
	17:10	17:43	18:16	19:50	20:21	20:49	21:00	20:42	20:00	19:10	17:24	17:00
2	07:49	07:36	07:00	07:10	06:25	05:58	05:59	06:23	06:53	07:22	06:56	07:30
	17:10	17:44	18:18	19:51	20:22	20:50	21:00	20:41	19:58	19:08	17:23	17:00
3	07:50	07:35	06:58	07:08	06:24	05:57	06:00	06:24	06:54	07:23	06:57	07:31
	17:11	17:46	18:19	19:52	20:23	20:51	21:00	20:40	19:56	19:07	17:22	17:00
4	07:50	07:34	06:57	07:07	06:23	05:57	06:00	06:25	06:55	07:24	06:58	07:32
	17:12	17:47	18:20	19:53	20:24	20:52	21:00	20:39	19:55	19:05	17:20	17:00
5	07:50	07:33	06:55	07:05	06:21	05:57	06:01	06:26	06:56	07:25	06:59	07:33
	17:13	17:48	18:21	19:54	20:25	20:52	21:00	20:37	19:53	19:03	17:19	17:00
6	07:50	07:31	06:54	07:03	06:20	05:56	06:02	06:27	06:57	07:27	07:01	07:34
	17:14	17:49	18:22	19:55	20:26	20:53	20:59	20:36	19:51	19:02	17:18	16:59
7	07:50	07:30	06:52	07:02	06:19	05:56	06:02	06:28	06:58	07:28	07:02	07:35
	17:15	17:51	18:23	19:56	20:27	20:54	20:59	20:35	19:50	19:00	17:17	16:59
8	07:49	07:29	06:50	07:00	06:18	05:56	06:03	06:29	06:59	07:29	07:03	07:36
	17:16	17:52	18:24	19:57	20:28	20:54	20:59	20:34	19:48	18:58	17:16	16:59
9	07:49	07:28	06:49	06:59	06:17	05:56	06:03	06:30	07:00	07:30	07:04	07:37
	17:17	17:53	18:25	19:58	20:29	20:55	20:58	20:33	19:47	18:57	17:15	16:59
10	07:49	07:27	06:47	06:57	06:16	05:55	06:04	06:31	07:01	07:31	07:05	07:38
	17:18	17:54	18:26	19:59	20:30	20:55	20:58	20:31	19:45	18:55	17:14	16:59
11	07:49	07:26	06:46	06:55	06:15	05:55	06:05	06:32	07:02	07:32	07:06	07:38
	17:19	17:55	18:28	20:00	20:31	20:56	20:58	20:30	19:43	18:54	17:13	16:59
12	07:49	07:25	06:44	06:54	06:14	05:55	06:05	06:33	07:03	07:33	07:08	07:39
	17:20	17:57	18:29	20:01	20:32	20:56	20:57	20:29	19:42	18:52	17:12	16:59
13	07:48	07:23	06:43	06:52	06:13	05:55	06:06	06:34	07:04	07:34	07:09	07:40
	17:21	17:58	18:30	20:02	20:33	20:57	20:57	20:28	19:40	18:51	17:11	17:00
14	07:48	07:22	06:41	06:51	06:12	05:55	06:07	06:35	07:05	07:35	07:10	07:41
	17:22	17:59	18:31	20:03	20:34	20:57	20:56	20:26	19:38	18:49	17:10	17:00
15	07:48	07:21	06:39	06:49	06:11	05:55	06:08	06:36	07:06	07:36	07:11	07:41
	17:23	18:00	18:32	20:04	20:35	20:58	20:56	20:25	19:37	18:48	17:09	17:00
16	07:47	07:20	06:38	06:48	06:10	05:55	06:08	06:37	07:07	07:37	07:12	07:42
	17:24	18:01	18:33	20:05	20:36	20:58	20:55	20:23	19:35	18:46	17:09	17:00
17	07:47	07:18	06:36	06:46	06:09	05:55	06:09	06:38	07:08	07:38	07:13	07:43
	17:25	18:03	18:34	20:06	20:37	20:58	20:55	20:22	19:33	18:45	17:08	17:01
18	07:46	07:17	06:34	06:45	06:08	05:55	06:10	06:39	07:09	07:39	07:15	07:43
	17:26	18:04	18:35	20:07	20:38	20:59	20:54	20:21	19:32	18:43	17:07	17:01
19	07:46	07:16	06:33	06:43	06:07	05:55	06:11	06:40	07:10	07:40	07:16	07:44
	17:28	18:05	18:36	20:08	20:39	20:59	20:53	20:19	19:30	18:42	17:06	17:01
20	07:45	07:14	06:31	06:42	06:06	05:55	06:12	06:41	07:11	07:41	07:17	07:45
	17:29	18:06	18:37	20:09	20:39	20:59	20:53	20:18	19:28	18:40	17:06	17:02
21	07:45	07:13	06:29	06:40	06:05	05:56	06:12	06:42	07:12	07:42	07:18	07:45
	17:30	18:07	18:38	20:10	20:40	21:00	20:52	20:16	19:26	18:39	17:05	17:02
22	07:44	07:11	06:28	06:39	06:04	05:56	06:13	06:43	07:13	07:43	07:19	07:46
	17:31	18:08	18:39	20:11	20:41	21:00	20:51	20:15	19:25	18:37	17:04	17:03
23	07:44	07:10	06:26	06:37	06:04	05:56	06:14	06:44	07:14	07:44	07:20	07:46
	17:32	18:10	18:40	20:12	20:42	21:00	20:50	20:13	19:23	18:36	17:04	17:03
24	07:43	07:09	06:25	06:36	06:03	05:56	06:15	06:45	07:15	07:46	07:21	07:47
	17:33	18:11	18:41	20:13	20:43	21:00	20:49	20:12	19:21	18:34	17:03	17:04
25	07:42	07:07	06:23	06:35	06:02	05:57	06:16	06:46	07:15	07:47	07:23	07:47
	17:35	18:12	18:42	20:14	20:44	21:00	20:49	20:10	19:20	17:33	17:03	17:04
26	07:42	07:06	06:21	06:33	06:02	05:57	06:17	06:46	07:16	07:48	07:24	07:48
	17:36	18:13	18:43	20:16	20:45	21:00	20:48	20:09	19:18	17:32	17:02	17:05
27	07:41	07:04	06:20	06:32	06:01	05:57	06:18	06:47	07:17	07:49	07:25	07:48
	17:37	18:14	18:44	20:17	20:46	21:00	20:47	20:07	19:16	17:30	17:02	17:06
28	07:40	07:03	06:18	06:30	06:00	05:58	06:19	06:48	07:18	07:50	07:26	07:48
	17:38	18:15	18:46	20:18	20:46	21:00	20:46	20:06	19:15	17:29	17:01	17:06
29	07:39		07:16	06:29	06:00	05:58	06:20	06:49	07:19	07:51	07:27	07:49
	17:40		19:47	20:19	20:47	21:00	20:45	20:04	19:13	17:28	17:01	17:07
30	07:38		07:15	06:28	05:59	05:58	06:20	06:50	07:20	07:52	07:28	07:49
	17:41		19:48	20:20	20:48	21:00	20:44	20:03	19:11	17:26	17:01	17:08
31	07:37		07:13		05:59		06:21	06:51		06:54		07:49
	17:42		19:49		20:49		20:43	20:01		17:25		17:08
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: J - R41

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June		
1	07:49	08:13 (6)	07:36	08:14 (6)	07:01	07:11	06:26	05:58
	17:09	30 08:43 (6)	17:43	47 09:01 (6)	18:16	19:50	20:21	20:50
2	07:49	08:13 (6)	07:36	08:14 (6)	07:00	07:10	06:25	05:58
	17:10	31 08:44 (6)	17:44	47 09:01 (6)	18:18	19:51	20:22	20:50
3	07:50	08:13 (6)	07:35	08:15 (6)	06:58	07:08	06:24	05:57
	17:11	32 08:45 (6)	17:46	45 09:00 (6)	18:19	19:52	20:23	20:51
4	07:50	08:13 (6)	07:34	08:16 (6)	06:57	07:07	06:23	05:57
	17:12	33 08:46 (6)	17:47	44 09:00 (6)	18:20	19:53	20:24	20:52
5	07:50	08:13 (6)	07:33	08:16 (6)	06:55	07:05	06:21	05:57
	17:13	34 08:47 (6)	17:48	44 09:00 (6)	18:21	19:54	20:25	20:52
6	07:50	08:12 (6)	07:31	08:17 (6)	06:54	07:03	06:20	05:56
	17:14	35 08:47 (6)	17:49	42 08:59 (6)	18:22	19:55	20:26	20:53
7	07:50	08:12 (6)	07:30	08:18 (6)	06:52	07:02	06:19	05:56
	17:15	36 08:48 (6)	17:50	40 08:58 (6)	18:23	19:56	20:27	20:54
8	07:49	08:12 (6)	07:29	08:19 (6)	06:50	07:00	06:18	05:56
	17:16	37 08:49 (6)	17:52	39 08:58 (6)	18:24	19:57	20:28	20:54
9	07:49	08:12 (6)	07:28	08:21 (6)	06:49	06:58	06:17	05:56
	17:17	38 08:50 (6)	17:53	36 08:57 (6)	18:25	19:58	20:29	20:55
10	07:49	08:12 (6)	07:27	08:21 (6)	06:47	06:57	06:16	05:55
	17:18	39 08:51 (6)	17:54	34 08:55 (6)	18:26	19:59	20:30	20:55
11	07:49	08:11 (6)	07:26	08:23 (6)	06:46	06:55	06:15	05:55
	17:19	41 08:52 (6)	17:55	30 08:53 (6)	18:28	20:00	20:31	20:56
12	07:49	08:12 (6)	07:25	08:25 (6)	06:44	06:54	06:14	05:55
	17:20	41 08:53 (6)	17:57	27 08:52 (6)	18:29	20:01	20:32	20:56
13	07:48	08:12 (6)	07:23	08:27 (6)	06:43	06:52	06:12	05:55
	17:21	42 08:54 (6)	17:58	23 08:50 (6)	18:30	20:02	20:33	20:57
14	07:48	08:11 (6)	07:22	08:30 (6)	06:41	06:51	06:11	05:55
	17:22	43 08:54 (6)	17:59	16 08:46 (6)	18:31	20:03	20:34	20:57
15	07:48	08:12 (6)	07:21	06:39	06:49	06:11	05:55	07:35 (4)
	17:23	43 08:55 (6)	18:00	18:32	20:04	20:35	20:58	14 07:49 (4)
16	07:47	08:11 (6)	07:20	06:38	06:48	06:10	05:55	07:35 (4)
	17:24	45 08:56 (6)	18:01	18:33	20:05	20:36	20:58	15 07:50 (4)
17	07:47	08:12 (6)	07:18	06:36	06:46	06:09	05:55	07:34 (4)
	17:25	45 08:57 (6)	18:03	18:34	20:06	20:37	20:59	17 07:51 (4)
18	07:47	08:11 (6)	07:17	06:34	06:45	06:08	05:55	07:34 (4)
	17:26	46 08:57 (6)	18:04	18:35	20:07	20:38	20:59	17 07:51 (4)
19	07:46	08:12 (6)	07:16	06:33	06:43	06:07	05:55	07:34 (4)
	17:28	46 08:58 (6)	18:05	18:36	20:08	20:39	20:59	18 07:52 (4)
20	07:45	08:11 (6)	07:14	06:31	06:42	06:06	05:55	07:34 (4)
	17:29	47 08:58 (6)	18:06	18:37	20:09	20:39	20:59	18 07:52 (4)
21	07:45	08:11 (6)	07:13	06:29	06:40	06:05	05:56	07:35 (4)
	17:30	48 08:59 (6)	18:07	18:38	20:10	20:40	21:00	18 07:53 (4)
22	07:44	08:12 (6)	07:12	06:28	06:39	06:04	05:56	07:35 (4)
	17:31	48 09:00 (6)	18:08	18:39	20:11	20:41	21:00	18 07:53 (4)
23	07:44	08:12 (6)	07:10	06:26	06:37	06:04	05:56	07:35 (4)
	17:32	48 09:00 (6)	18:10	18:40	20:12	20:42	21:00	18 07:53 (4)
24	07:43	08:12 (6)	07:09	06:25	06:36	06:03	05:56	07:35 (4)
	17:33	48 09:00 (6)	18:11	18:41	20:13	20:43	21:00	18 07:53 (4)
25	07:42	08:12 (6)	07:07	06:23	06:34	06:02	05:56	07:36 (4)
	17:35	49 09:01 (6)	18:12	18:42	20:14	20:44	21:00	17 07:53 (4)
26	07:42	08:12 (6)	07:06	06:21	06:33	06:02	05:57	07:37 (4)
	17:36	49 09:01 (6)	18:13	18:43	20:16	20:45	21:00	16 07:53 (4)
27	07:41	08:13 (6)	07:04	06:20	06:32	06:01	05:57	07:37 (4)
	17:37	48 09:01 (6)	18:14	18:44	20:17	20:46	21:00	15 07:52 (4)
28	07:40	08:13 (6)	07:03	06:18	06:30	06:00	05:58	07:39 (4)
	17:38	48 09:01 (6)	18:15	18:46	20:18	20:46	21:01	13 07:52 (4)
29	07:39	08:13 (6)		07:16	06:29	06:00	05:58	07:40 (4)
	17:39	48 09:01 (6)		19:47	20:19	20:47	21:00	10 07:50 (4)
30	07:38	08:13 (6)		07:15	06:28	05:59	05:58	07:42 (4)
	17:41	48 09:01 (6)		19:48	20:20	20:48	21:00	7 07:49 (4)
31	07:37	08:13 (6)		07:13		05:59		
	17:42	48 09:01 (6)		19:49		20:49		
Potential sun hours	299	298	370	398	447	450		
Total, worst case	1314	514				276		
Sun reduction	0,40	0,45				0,66		
Oper. time red.	0,78	0,78				0,78		
Wind dir. red.	0,62	0,62				0,66		
Total reduction	0,19	0,22				0,34		
Total, real	252	111				93		

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: J - R41

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:59 21:00	06:22 20:42	06:52 20:00	07:21 19:10	06:55 17:24	07:29 07:54 (6)
2	05:59 21:00	06:23 20:41	06:53 19:58	07:22 19:08	06:56 17:23	07:30 07:54 (6)
3	06:00 21:00	06:24 20:40	06:54 19:56	07:23 19:07	06:57 17:22	07:31 08:33 (6)
4	06:00 21:00	06:25 20:39	06:55 19:55	07:24 19:05	06:58 17:20	07:32 08:33 (6)
5	06:01 21:00	06:26 20:37	06:56 19:53	07:25 19:03	06:59 17:19	07:33 08:33 (6)
6	06:01 20:59	06:27 20:36	06:57 19:51	07:27 19:02	07:01 17:18	07:34 08:33 (6)
7	06:02 20:59	06:28 20:35	06:58 19:50	07:28 19:00	07:02 17:17	07:35 08:33 (6)
8	06:03 20:59	06:29 20:34	06:59 19:48	07:29 18:58	07:03 17:16	07:36 08:00 (6)
9	06:03 20:59	06:30 20:33	07:00 19:47	07:30 18:57	07:04 17:15	07:37 08:01 (6)
10	06:04 20:58	06:31 20:31	07:01 19:45	07:31 18:55	07:05 17:14	07:38 08:02 (6)
11	06:05 20:58	06:32 20:30	07:02 19:43	07:32 18:54	07:06 17:13	07:38 08:03 (6)
12	06:05 20:57	06:33 20:29	07:03 19:42	07:33 18:52	07:08 17:12	07:39 08:04 (6)
13	06:06 20:57	06:34 20:28	07:04 19:40	07:34 18:51	07:09 17:11	07:40 08:04 (6)
14	06:07 20:56	06:35 20:26	07:05 19:38	07:35 18:49	07:10 17:10	07:41 08:05 (6)
15	06:08 20:56	06:36 20:25	07:06 19:37	07:36 18:47	07:11 17:09	07:42 08:06 (6)
16	06:08 20:55	06:37 20:23	07:07 19:35	07:37 18:46	07:12 17:09	07:42 08:06 (6)
17	06:09 20:55	06:38 20:22	07:08 19:33	07:38 18:44	07:13 17:08	07:43 08:07 (6)
18	06:10 20:54	06:39 20:21	07:09 19:32	07:39 18:43	07:15 17:07	07:44 08:09 (6)
19	06:11 20:53	06:40 20:19	07:10 19:30	07:40 18:42	07:16 17:06	07:44 08:09 (6)
20	06:12 20:53	06:41 20:18	07:11 19:28	07:41 18:40	07:17 17:06	07:45 08:10 (6)
21	06:12 20:52	06:42 20:16	07:12 19:26	07:42 18:39	07:18 17:05	07:45 08:10 (6)
22	06:13 20:51	06:43 20:15	07:13 19:25	07:43 18:37	07:19 17:04	07:46 08:11 (6)
23	06:14 20:50	06:44 20:13	07:14 19:23	07:44 18:36	07:20 17:04	07:46 08:11 (6)
24	06:15 20:49	06:44 20:12	07:14 19:21	07:46 18:34	07:21 17:03	07:47 08:12 (6)
25	06:16 20:49	06:45 20:10	07:15 19:20	07:47 18:33	07:23 17:03	07:47 08:12 (6)
26	06:17 20:48	06:46 20:09	07:16 19:18	07:48 18:32	07:24 17:02	07:48 08:11 (6)
27	06:18 20:47	06:47 20:07	07:17 19:16	07:49 18:30	07:25 17:02	07:48 08:12 (6)
28	06:19 20:46	06:48 20:06	07:18 19:15	07:50 18:29	07:26 17:01	07:48 08:12 (6)
29	06:19 20:45	06:49 20:04	07:19 19:13	07:51 18:28	07:27 17:01	07:49 08:12 (6)
30	06:20 20:44	06:50 20:03	07:20 19:11	07:53 18:26	07:28 17:01	07:49 08:12 (6)
31	06:21 20:43	06:51 20:01	07:21 19:10	07:54 18:25	07:29 17:00	07:49 08:12 (6)
Potential sun hours	457	427	375	346	299	290
Total, worst case				106	1348	918
Sun reduction				0,57	0,48	0,42
Oper. time red.				0,78	0,78	0,78
Wind dir. red.				0,62	0,62	0,62
Total reduction				0,28	0,23	0,20
Total, real				29	314	185

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:58 / 19

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 IT-09028 Sestu
 +390702358125
 BrunoManca / ingbrunomanca@gmail.com
 Calculated:
 07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progetto Shadow receptor: K - R27

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
 N NE E SE S SW W NW Sum
 704 820 622 355 622 1.039 1.312 1.360 6.834
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49 17:10	07:36 17:43	07:01 18:16	07:11 19:50	06:26 20:21	05:58 20:49	05:59 21:00	06:22 20:42	06:52 20:00	07:21 19:10	06:55 17:24	07:29 17:00
2	07:49 17:10	07:35 17:44	07:00 18:18	07:10 19:51	06:25 20:22	05:58 20:50	05:59 21:00	06:23 20:41	06:53 19:58	07:22 19:08	06:56 17:23	07:30 17:00
3	07:49 17:11	07:35 17:46	06:58 18:19	07:08 19:52	06:24 20:23	05:57 20:51	06:00 21:00	06:24 20:40	06:54 19:56	07:23 19:07	06:57 17:22	07:31 17:00
4	07:50 17:12	07:34 17:47	06:57 18:20	07:07 19:53	06:23 20:24	05:57 20:52	06:00 21:00	06:25 20:39	06:55 19:55	07:24 19:05	06:58 17:20	07:32 17:00
5	07:50 17:13	07:32 17:48	06:55 18:21	07:05 19:54	06:21 20:25	05:57 20:52	06:01 21:00	06:26 20:37	06:56 19:53	07:25 19:03	06:59 17:19	07:33 17:00
6	07:50 17:14	07:31 17:49	06:54 18:22	07:03 19:55	06:20 20:26	05:56 20:53	06:02 20:59	06:27 20:36	06:57 19:51	07:26 19:02	07:01 17:18	07:34 16:59
7	07:49 17:15	07:30 17:51	06:52 18:23	07:02 19:56	06:19 20:27	05:56 20:54	06:02 20:59	06:28 20:35	06:58 19:50	07:28 19:00	07:02 17:17	07:35 16:59
8	07:49 17:16	07:29 17:52	06:50 18:24	07:00 19:57	06:18 20:28	05:56 20:54	06:03 20:59	06:29 20:34	06:59 19:48	07:29 18:58	07:03 17:16	07:36 16:59
9	07:49 17:17	07:28 17:53	06:49 18:25	06:59 19:58	06:17 20:29	05:56 20:55	06:03 20:58	06:30 20:33	07:00 19:47	07:30 18:57	07:04 17:15	07:37 16:59
10	07:49 17:18	07:27 17:54	06:47 18:26	06:57 19:59	06:16 20:30	05:55 20:55	06:04 20:58	06:31 20:31	07:01 19:45	07:31 18:55	07:05 17:14	07:37 16:59
11	07:49 17:19	07:26 17:55	06:46 18:28	06:55 20:00	06:15 20:31	05:55 20:56	06:05 20:58	06:32 20:30	07:02 19:43	07:32 18:54	07:06 17:13	07:38 16:59
12	07:49 17:20	07:25 17:57	06:44 18:29	06:54 20:01	06:14 20:32	05:55 20:56	06:05 20:57	06:33 20:29	07:03 19:42	07:33 18:52	07:08 17:12	07:39 16:59
13	07:48 17:21	07:23 17:58	06:43 18:30	06:52 20:02	06:13 20:33	05:55 20:57	06:06 20:57	06:34 20:27	07:04 19:40	07:34 18:51	07:09 17:11	07:40 17:00
14	07:48 17:22	07:22 17:59	06:41 18:31	06:51 20:03	06:12 20:34	05:55 20:57	06:07 20:56	06:35 20:26	07:05 19:38	07:35 18:49	07:10 17:10	07:41 17:00
15	07:48 17:23	07:21 18:00	06:39 18:32	06:49 20:04	06:11 20:35	05:55 20:58	06:08 20:56	06:36 20:25	07:06 19:37	07:36 18:48	07:11 17:09	07:41 17:00
16	07:47 17:24	07:20 18:01	06:38 18:33	06:48 20:05	06:10 20:36	05:55 20:58	06:08 20:55	06:37 20:23	07:07 19:35	07:37 18:46	07:12 17:09	07:42 17:00
17	07:47 17:25	07:18 18:03	06:36 18:34	06:46 20:06	06:09 20:37	05:55 20:58	06:09 20:54	06:38 20:22	07:08 19:33	07:38 18:44	07:13 17:08	07:43 17:01
18	07:46 17:26	07:17 18:04	06:34 18:35	06:45 20:07	06:08 20:38	05:55 20:59	06:10 20:54	06:39 20:21	07:09 19:32	07:39 18:43	07:15 17:07	07:43 17:01
19	07:46 17:28	07:16 18:05	06:33 18:36	06:43 20:08	06:07 20:38	05:55 20:59	06:11 20:53	06:40 20:19	07:10 19:30	07:40 18:42	07:16 17:06	07:44 17:01
20	07:45 17:29	07:14 18:06	06:31 18:37	06:42 20:09	06:06 20:39	05:55 20:59	06:12 20:52	06:41 20:18	07:11 19:28	07:41 18:40	07:17 17:06	07:45 17:02
21	07:45 17:30	07:13 18:07	06:29 18:38	06:40 20:10	06:05 20:40	05:56 21:00	06:12 20:52	06:42 20:16	07:12 19:26	07:42 18:39	07:18 17:05	07:45 17:02
22	07:44 17:31	07:11 18:08	06:28 18:39	06:39 20:11	06:04 20:41	05:56 21:00	06:13 20:51	06:43 20:15	07:13 19:25	07:43 18:37	07:19 17:04	07:46 17:03
23	07:44 17:32	07:10 18:10	06:26 18:40	06:37 20:12	06:04 20:42	05:56 21:00	06:14 20:50	06:44 20:13	07:14 19:23	07:45 18:36	07:20 17:04	07:46 17:03
24	07:43 17:33	07:09 18:11	06:25 18:41	06:36 20:13	06:03 20:43	05:56 21:00	06:15 20:49	06:45 20:12	07:14 19:21	07:46 18:34	07:21 17:03	07:47 17:04
25	07:42 17:35	07:07 18:12	06:23 18:42	06:35 20:14	06:02 20:44	05:57 21:00	06:16 20:49	06:46 20:10	07:15 19:20	07:47 18:33	07:23 17:03	07:47 17:04
26	07:41 17:36	07:06 18:13	06:21 18:43	06:33 20:15	06:02 20:45	05:57 21:00	06:17 20:48	06:46 20:09	07:16 19:18	07:48 18:32	07:24 17:02	07:48 17:05
27	07:41 17:37	07:04 18:14	06:20 18:44	06:32 20:17	06:01 20:46	05:57 21:00	06:18 20:47	06:47 20:07	07:17 19:16	07:49 18:30	07:25 17:02	07:48 17:06
28	07:40 17:38	07:03 18:15	06:18 18:45	06:30 20:18	06:00 20:46	05:58 21:00	06:19 20:46	06:48 20:06	07:18 19:15	07:50 18:29	07:26 17:01	07:48 17:06
29	07:39 17:40	07:02 18:16	06:16 18:46	06:29 20:19	06:00 20:47	05:58 21:00	06:20 20:45	06:49 20:04	07:19 19:13	07:51 18:28	07:27 17:01	07:49 17:07
30	07:38 17:41	07:01 18:17	06:15 18:47	06:28 20:20	05:59 20:48	05:58 21:00	06:20 20:44	06:50 20:03	07:20 19:11	07:52 18:26	07:28 17:01	07:49 17:08
31	07:37 17:42	07:00 18:18	06:13 18:48	06:27 20:21	05:59 20:49	05:59 21:00	06:21 20:43	06:51 20:01	07:21 19:10	07:53 18:25	07:29 17:01	07:49 17:08
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:58 / 20

Licensed user:

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: L - R42

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49	08:12 (6) 07:36	08:16 (6) 07:01	07:11	06:26	05:58	05:59	06:22	06:52	07:21	06:55	07:54 (6) 07:29
17:09	42	08:54 (6) 17:43	09:07 (6) 18:16	19:50	20:21	20:50	21:00	20:42	20:00	19:10	17:24	35 08:29 (6) 17:00
2	07:49	08:12 (6) 07:36	08:16 (6) 07:00	07:10	06:25	05:58	05:59	06:23	06:53	07:22	06:56	07:52 (6) 07:30
17:10	43	08:55 (6) 17:44	09:06 (6) 18:18	19:51	20:22	20:50	21:00	20:41	19:58	19:08	17:23	38 08:30 (6) 17:00
3	07:50	08:12 (6) 07:35	08:17 (6) 06:58	07:08	06:24	05:57	06:00	06:24	06:54	07:23	06:57	07:52 (6) 07:31
17:11	44	08:56 (6) 17:46	09:06 (6) 18:19	19:52	20:23	20:51	21:00	20:40	19:56	19:07	17:22	40 08:32 (6) 17:00
4	07:50	08:12 (6) 07:34	08:18 (6) 06:57	07:07	06:23	05:57	06:00	06:25	06:55	07:24	06:58	07:50 (6) 07:32
17:12	45	08:57 (6) 17:47	09:05 (6) 18:20	19:53	20:24	20:52	21:00	20:39	19:55	19:05	17:20	43 08:33 (6) 17:00
5	07:50	08:12 (6) 07:33	08:19 (6) 06:55	07:05	06:21	05:57	06:01	06:26	06:56	07:25	06:59	07:49 (6) 07:33
17:13	45	08:57 (6) 17:48	09:05 (6) 18:21	19:54	20:25	20:52	21:00	20:37	19:53	19:03	17:19	45 08:34 (6) 16:59
6	07:50	08:11 (6) 07:31	08:20 (6) 06:54	07:03	06:20	05:56	06:01	06:27	06:57	07:26	07:01	07:48 (6) 07:34
17:14	46	08:57 (6) 17:49	09:04 (6) 18:22	19:55	20:26	20:53	20:59	20:36	19:51	19:02	17:18	47 08:35 (6) 16:59
7	07:50	08:11 (6) 07:30	08:21 (6) 06:52	07:02	06:19	05:56	06:02	06:28	06:58	07:28	07:02	07:48 (6) 07:35
17:15	47	08:58 (6) 17:50	09:03 (6) 18:23	19:56	20:27	20:54	20:59	20:35	19:50	19:00	17:17	48 08:36 (6) 16:59
8	07:49	08:11 (6) 07:29	08:22 (6) 06:50	07:00	06:18	05:56	06:03	06:29	06:59	07:29	07:03	07:48 (6) 07:36
17:16	48	08:59 (6) 17:52	09:02 (6) 18:24	19:57	20:28	20:54	20:59	20:34	19:48	18:58	17:16	49 08:37 (6) 16:59
9	07:49	08:11 (6) 07:28	08:24 (6) 06:49	06:58	06:17	05:56	06:03	06:30	07:00	07:30	07:04	07:47 (6) 07:37
17:17	49	09:00 (6) 17:53	09:01 (6) 18:25	19:58	20:29	20:55	20:59	20:33	19:47	18:57	17:15	50 08:37 (6) 16:59
10	07:49	08:11 (6) 07:27	08:24 (6) 06:47	06:57	06:16	05:55	06:04	06:31	07:01	07:31	07:05	07:46 (6) 07:38
17:18	50	09:01 (6) 17:54	08:59 (6) 18:26	19:59	20:30	20:55	20:58	20:31	19:45	18:55	17:14	52 08:38 (6) 16:59
11	07:49	08:10 (6) 07:26	08:26 (6) 06:46	06:55	06:15	05:55	06:05	06:32	07:02	07:32	07:06	07:47 (6) 07:38
17:19	51	09:01 (6) 17:55	08:58 (6) 18:28	20:00	20:31	20:56	20:58	20:30	19:43	18:54	17:13	52 08:39 (6) 16:59
12	07:49	08:11 (6) 07:25	08:28 (6) 06:44	06:54	06:14	05:55	06:05	06:33	07:03	07:33	07:08	07:46 (6) 07:39
17:20	51	09:02 (6) 17:57	08:56 (6) 18:29	20:01	20:32	20:56	20:57	20:29	19:42	18:52	17:12	53 08:39 (6) 16:59
13	07:48	08:11 (6) 07:23	08:31 (6) 06:43	06:52	06:12	05:55	06:06	06:34	07:04	07:34	07:09	07:46 (6) 07:40
17:21	52	09:03 (6) 17:58	08:53 (6) 18:30	20:02	20:33	20:57	20:57	20:28	19:40	18:51	17:11	53 08:39 (6) 17:00
14	07:48	08:11 (6) 07:22	08:34 (6) 06:41	06:51	06:11	05:55	06:07	06:35	07:05	07:35	07:10	07:46 (6) 07:41
17:22	52	09:03 (6) 17:59	08:49 (6) 18:31	20:03	20:34	20:57	20:56	20:26	19:38	18:49	17:10	54 08:40 (6) 17:00
15	07:48	08:11 (6) 07:21	08:39	06:49	06:11	05:55	06:08	06:36	07:06	07:36	07:11	07:47 (6) 07:42
17:23	53	09:04 (6) 18:00	18:32	20:04	20:35	20:58	20:56	20:25	19:37	18:47	17:09	54 08:41 (6) 17:00
16	07:47	08:11 (6) 07:20	08:38	06:48	06:10	05:55	06:08	06:37	07:07	07:37	07:12	07:46 (6) 07:42
17:24	53	09:04 (6) 18:01	18:33	20:05	20:36	20:58	20:55	20:23	19:35	18:46	17:09	55 08:41 (6) 17:00
17	07:47	08:11 (6) 07:18	08:36	06:46	06:09	05:55	06:09	06:38	07:08	07:38	07:13	07:46 (6) 07:43
17:25	54	09:05 (6) 18:03	18:34	20:06	20:37	20:59	20:55	20:22	19:33	18:44	17:08	55 08:41 (6) 17:01
18	07:46	08:11 (6) 07:17	08:34	06:45	06:08	05:55	06:10	06:39	07:09	07:39	07:15	07:46 (6) 07:44
17:26	54	09:05 (6) 18:04	18:35	20:07	20:38	20:59	20:54	20:21	19:32	18:43	17:07	55 08:41 (6) 17:01
19	07:46	08:12 (6) 07:16	08:33	06:43	06:07	05:55	06:11	06:40	07:10	07:40	07:16	07:47 (6) 07:44
17:28	54	09:06 (6) 18:05	18:36	20:08	20:39	20:59	20:53	20:19	19:30	18:41	17:06	55 08:42 (6) 17:01
20	07:45	08:12 (6) 07:14	08:31	06:42	06:06	05:55	06:12	06:41	07:11	07:41	07:17	07:47 (6) 07:45
17:29	54	09:06 (6) 18:06	18:37	20:09	20:39	20:59	20:53	20:18	19:28	18:40	17:06	55 08:42 (6) 17:02
21	07:45	08:11 (6) 07:13	08:29	06:40	06:05	05:56	06:12	06:42	07:12	07:42	07:18	07:47 (6) 07:45
17:30	55	09:06 (6) 18:07	18:38	20:10	20:40	21:00	20:52	20:16	19:26	18:39	17:05	55 08:42 (6) 17:02
22	07:44	08:12 (6) 07:11	08:28	06:39	06:04	05:56	06:13	06:43	07:13	07:43	07:19	07:48 (6) 07:46
17:31	55	09:07 (6) 18:08	18:39	20:11	20:41	21:00	20:51	20:15	19:25	18:37	17:04	54 08:42 (6) 17:03
23	07:44	08:12 (6) 07:10	08:26	06:37	06:04	05:56	06:14	06:44	07:14	07:45	07:20	07:48 (6) 07:46
17:32	55	09:07 (6) 18:10	18:40	20:12	20:42	21:00	20:50	20:13	19:23	18:36	17:04	54 08:42 (6) 17:03
24	07:43	08:12 (6) 07:09	08:25	06:36	06:03	05:56	06:15	06:44	07:14	07:46	07:21	07:49 (6) 07:47
17:33	55	09:07 (6) 18:11	18:41	20:13	20:43	21:00	20:49	20:12	19:21	18:34	17:03	54 08:43 (6) 17:04
25	07:42	08:13 (6) 07:07	08:23	06:34	06:02	05:56	06:16	06:45	07:15	07:47	07:23	07:49 (6) 07:47
17:35	55	09:08 (6) 18:12	18:42	20:14	20:44	21:00	20:49	20:10	19:20	17:33	17:03	54 08:43 (6) 17:04
26	07:42	08:13 (6) 07:06	08:21	06:33	06:02	05:57	06:17	06:46	07:16	07:48	07:24	07:50 (6) 07:48
17:36	55	09:08 (6) 18:13	18:43	20:16	20:45	21:00	20:48	20:09	19:18	17:32	17:02	53 08:43 (6) 17:05
27	07:41	08:14 (6) 07:04	08:20	06:32	06:01	05:57	06:18	06:47	07:17	07:49	07:25	07:50 (6) 07:48
17:37	54	09:08 (6) 18:14	18:44	20:17	20:46	21:00	20:47	20:07	19:16	17:30	17:02	53 08:43 (6) 17:05
28	07:40	08:14 (6) 07:03	08:18	06:30	06:00	05:58	06:19	06:48	07:18	07:50	07:19	07:51 (6) 07:48
17:38	54	09:08 (6) 18:15	18:45	20:18	20:46	21:01	20:46	20:06	19:15	17:29	17	08:03 (6) 07:35
29	07:39	08:14 (6)	07:16	06:29	06:00	05:58	06:19	06:49	07:19	07:51	17	08:20 (6) 17:01
17:39	53	09:07 (6)	19:47	20:19	20:47	21:00	20:45	20:04	19:13	17:28	24	08:23 (6) 17:01
30	07:38	08:15 (6)	07:15	06:28	05:59	05:58	06:20	06:50	07:20	07:53	52	08:43 (6) 17:07
17:41	52	09:07 (6)	19:48	20:20	20:48	21:00	20:44	20:03	19:11	17:26	28	08:26 (6) 17:01
31	07:37	08:15 (6)	07:13	06:25	05:59	05:59	06:21	06:51	07:21	07:54	51	08:43 (6) 17:08
17:42	52	09:07 (6)	19:49	20:49	20:49	20:43	20:01	06:54	07:25	07:58 (6)	17:25	32 08:28 (6)
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Total, worst case	1582	538								101	1520	1311
Sun reduction	0.40	0.45								0.57	0.48	0.42
Oper. time red.	0.78	0.78								0.78	0.78	0.78
Wind dir. red.	0.62	0.62								0.62	0.62	0.62
Total reduction	0.19	0.22								0.28	0.23	0.20
Total, real	305	117								28	356	266

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:58 / 21

Licensed user:

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: M - R39

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June		
1	07:49	08:36 (7)	07:36	07:01	07:11	06:26		05:58
	17:09	16:36 (1)	17:43	18:16	19:50	20:21		20:50
2	07:49	08:36 (7)	07:36	07:00	07:10	06:25		05:58
	17:10	16:37 (1)	17:44	18:18	19:51	20:22		20:50
3	07:50	08:36 (7)	07:35	06:58	07:08	06:24		05:57
	17:11	16:37 (1)	17:46	18:19	19:52	20:23		20:51
4	07:50	08:37 (7)	07:34	06:57	07:07	06:23		05:57
	17:12	16:37 (1)	17:47	18:20	19:53	20:24		20:52
5	07:50	08:37 (7)	07:33	06:55	07:05	06:21		05:57
	17:13	16:37 (1)	17:48	18:21	19:54	20:25		20:52
6	07:50	08:36 (7)	07:31	06:54	07:03	06:20		05:56
	17:14	16:36 (1)	17:49	18:22	19:55	20:26		20:53
7	07:50	08:37 (7)	07:30	06:52	07:02	06:19		05:56
	17:15	16:36 (1)	17:50	18:23	19:56	20:27	13	07:39 (6)
8	07:49	08:37 (7)	07:29	06:50	07:00	06:18		05:56
	17:16	16:37 (1)	17:52	18:24	19:57	20:28	21	07:42 (6)
9	07:49	08:37 (7)	07:28	06:49	06:58	06:17		05:56
	17:17	16:37 (1)	17:53	18:25	19:58	20:29	27	07:45 (6)
10	07:49	08:38 (7)	07:27	06:47	06:57	06:16		05:55
	17:18	16:37 (1)	17:54	18:26	19:59	20:30	32	07:48 (6)
11	07:49	08:37 (7)	07:26	06:46	06:55	06:15		05:55
	17:19	16:36 (1)	17:55	18:28	20:00	20:31	35	07:49 (6)
12	07:49	08:38 (7)	07:25	06:44	06:54	06:14		05:55
	17:20	16:36 (1)	17:57	18:29	20:01	20:32	39	07:51 (6)
13	07:48	08:39 (7)	07:23	06:43	06:52	06:13		05:55
	17:21	16:36 (1)	17:58	18:30	20:02	20:33	41	07:52 (6)
14	07:48	08:38 (7)	07:22	06:41	06:51	06:11		05:55
	17:22	16:35 (1)	17:59	18:31	20:03	20:34	43	07:53 (6)
15	07:48	08:39 (7)	07:21	06:39	06:49	06:11		05:55
	17:23	16:34 (1)	18:00	18:32	20:04	20:35	46	07:55 (6)
16	07:47	08:39 (7)	07:20	06:38	06:48	06:10		05:55
	17:24	16:33 (1)	18:01	18:33	20:05	20:36	48	07:56 (6)
17	07:47	08:40 (7)	07:18	06:36	06:46	06:09		05:55
	17:25	16:32 (1)	18:03	18:34	20:06	20:37	50	07:57 (6)
18	07:46	08:40 (7)	07:17	06:34	06:45	06:08		05:55
	17:26	16:30 (1)	18:04	18:35	20:07	20:38	51	07:57 (6)
19	07:46	08:41 (7)	07:16	06:33	06:43	06:07		05:55
	17:28	16:26 (1)	18:05	18:36	20:08	20:39	53	07:58 (6)
20	07:45	08:41 (7)	07:14	06:31	06:42	06:06		05:55
	17:29	09:11 (7)	18:06	18:37	20:09	20:39	53	07:58 (6)
21	07:45	08:41 (7)	07:13	06:29	06:40	06:05		05:56
	17:30	09:11 (7)	18:07	18:38	20:10	20:40	55	08:00 (6)
22	07:44	08:42 (7)	07:11	06:28	06:39	06:04		05:56
	17:31	09:12 (7)	18:08	18:39	20:11	20:41	56	08:00 (6)
23	07:44	08:43 (7)	07:10	06:26	06:37	06:04		05:56
	17:32	09:11 (7)	18:10	18:40	20:12	20:42	57	08:00 (6)
24	07:43	08:43 (7)	07:09	06:25	06:36	06:03		05:56
	17:33	09:11 (7)	18:11	18:41	20:13	20:43	58	08:01 (6)
25	07:42	08:45 (7)	07:07	06:23	06:34	06:02		05:57
	17:35	09:11 (7)	18:12	18:42	20:14	20:44	58	08:01 (6)
26	07:42	08:46 (7)	07:06	06:21	06:33	06:02		05:57
	17:36	09:10 (7)	18:13	18:43	20:16	20:45	59	08:01 (6)
27	07:41	08:47 (7)	07:04	06:20	06:32	06:01		05:57
	17:37	09:09 (7)	18:14	18:44	20:17	20:46	60	08:02 (6)
28	07:40	08:48 (7)	07:03	06:18	06:30	06:00		05:58
	17:38	09:08 (7)	18:15	18:45	20:18	20:46	60	08:02 (6)
29	07:39	08:50 (7)		07:16	06:29	06:00		05:58
	17:39	09:06 (7)		19:47	20:19	20:47	61	08:03 (6)
30	07:38	08:52 (7)		07:15	06:28	05:59		05:58
	17:41	09:04 (7)		19:48	20:20	20:48	62	08:03 (6)
31	07:37	08:57 (7)		07:13		05:59		07:02 (6)
	17:42	09:00 (7)		19:49		20:49	62	08:04 (6)
Potential sun hours	299	298	370	398	447		450	
Total, worst case	1398					1200		1925
Sun reduction	0,40					0,57		0,66
Oper. time red.	0,78					0,78		0,78
Wind dir. red.	0,65					0,67		0,67
Total reduction	0,20					0,30		0,34
Total, real	282					356		659

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: M - R39

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834

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

	July	August	September	October	November	December	
1	05:59 21:00	07:06 (6) 08:10 (6)	06:22 20:42	07:24 (6) 08:01 (6)	06:52 20:00	07:21 19:10	06:55 17:24
2	05:59 21:00	07:07 (6) 08:11 (6)	06:23 20:41	07:25 (6) 07:59 (6)	06:53 19:58	07:22 19:08	06:56 17:23
3	06:00 21:00	07:07 (6) 08:11 (6)	06:24 20:40	07:27 (6) 07:57 (6)	06:54 19:56	07:23 19:07	06:57 17:22
4	06:00 21:00	07:07 (6) 08:11 (6)	06:25 20:39	07:30 (6) 07:55 (6)	06:55 19:55	07:24 19:05	06:58 17:20
5	06:01 21:00	07:07 (6) 08:11 (6)	06:26 20:37	07:33 (6) 07:52 (6)	06:56 19:53	07:25 19:03	06:59 17:19
6	06:01 20:59	07:08 (6) 08:11 (6)	06:27 20:36	07:39 (6) 07:46 (6)	06:57 19:51	07:26 19:02	07:01 17:18
7	06:02 20:59	07:08 (6) 08:11 (6)	06:28 20:35	07:40 (6) 07:47 (6)	06:58 19:50	07:27 19:00	07:02 17:17
8	06:03 20:59	07:08 (6) 08:11 (6)	06:29 20:34	07:41 (6) 07:48 (6)	06:59 19:49	07:28 18:58	07:03 17:16
9	06:03 20:59	07:09 (6) 08:12 (6)	06:30 20:33	07:42 (6) 07:49 (6)	07:00 19:47	07:30 18:57	07:04 17:15
10	06:04 20:58	07:09 (6) 08:11 (6)	06:31 20:31	07:43 (6) 07:50 (6)	07:01 19:45	07:31 18:55	07:05 17:14
11	06:05 20:58	07:09 (6) 08:12 (6)	06:32 20:30	07:44 (6) 07:51 (6)	07:02 19:43	07:32 18:54	07:06 17:13
12	06:05 20:57	07:10 (6) 08:12 (6)	06:33 20:29	07:45 (6) 07:52 (6)	07:03 19:42	07:33 18:52	07:08 17:12
13	06:06 20:57	07:10 (6) 08:11 (6)	06:34 20:28	07:46 (6) 07:53 (6)	07:04 19:40	07:34 18:51	07:09 17:11
14	06:07 20:56	07:10 (6) 08:11 (6)	06:35 20:26	07:47 (6) 07:54 (6)	07:05 19:38	07:35 18:49	07:10 17:10
15	06:08 20:56	07:11 (6) 08:12 (6)	06:36 20:25	07:48 (6) 07:55 (6)	07:06 19:37	07:36 18:47	07:11 17:09
16	06:08 20:55	07:12 (6) 08:12 (6)	06:37 20:23	07:49 (6) 07:56 (6)	07:07 19:35	07:37 18:46	07:12 17:09
17	06:09 20:55	07:11 (6) 08:11 (6)	06:38 20:22	07:50 (6) 07:57 (6)	07:08 19:33	07:38 18:44	07:13 17:08
18	06:10 20:54	07:12 (6) 08:11 (6)	06:39 20:21	07:51 (6) 07:58 (6)	07:09 19:32	07:39 18:43	07:15 17:07
19	06:11 20:53	07:13 (6) 08:11 (6)	06:40 20:19	07:52 (6) 07:59 (6)	07:10 19:30	07:40 18:42	07:16 17:06
20	06:12 20:53	07:13 (6) 08:11 (6)	06:41 20:18	07:53 (6) 07:59 (6)	07:11 19:28	07:41 18:40	07:17 17:06
21	06:12 20:52	07:14 (6) 08:11 (6)	06:42 20:16	07:54 (6) 07:59 (6)	07:12 19:26	07:42 18:39	07:18 17:05
22	06:13 20:51	07:14 (6) 08:09 (6)	06:43 20:15	07:55 (6) 07:59 (6)	07:13 19:25	07:43 18:37	07:19 17:04
23	06:14 20:50	07:15 (6) 08:09 (6)	06:44 20:13	07:56 (6) 07:59 (6)	07:14 19:23	07:45 18:36	07:20 17:04
24	06:15 20:49	07:15 (6) 08:09 (6)	06:44 20:12	07:57 (6) 07:59 (6)	07:14 19:21	07:46 18:34	07:21 17:03
25	06:16 20:49	07:16 (6) 08:08 (6)	06:45 20:10	07:58 (6) 07:59 (6)	07:15 19:20	07:47 18:33	07:23 17:03
26	06:17 20:48	07:17 (6) 08:08 (6)	06:46 20:09	07:59 (6) 07:59 (6)	07:16 19:18	07:48 18:32	07:24 17:02
27	06:18 20:47	07:18 (6) 08:07 (6)	06:47 20:07	08:00 (6) 07:59 (6)	07:17 19:16	07:49 18:30	07:25 17:02
28	06:19 20:46	07:19 (6) 08:06 (6)	06:48 20:06	08:01 (6) 07:58 (6)	07:18 19:15	07:50 18:29	07:26 17:01
29	06:19 20:45	07:19 (6) 08:04 (6)	06:49 20:04	08:02 (6) 07:57 (6)	07:19 19:13	07:51 18:28	07:27 17:01
30	06:20 20:44	07:21 (6) 08:03 (6)	06:50 20:03	08:03 (6) 07:56 (6)	07:20 19:11	06:53 17:26	07:28 17:01
31	06:21 20:43	07:22 (6) 08:02 (6)	06:51 20:01	08:04 (6) 07:55 (6)	07:21 19:10	06:54 17:25	07:29 17:00
Potential sun hours	457	427	375	346	299	290	2028
Total, worst case	1783	152	683	683	683	683	2028
Sun reduction	0,74	0,72	0,48	0,48	0,48	0,48	0,42
Oper. time red.	0,78	0,78	0,78	0,78	0,78	0,78	0,78
Wind dir. red.	0,67	0,67	0,64	0,64	0,64	0,64	0,66
Total reduction	0,38	0,37	0,24	0,24	0,24	0,24	0,22
Total, real	684	57	164	164	164	437	437

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: N - R40

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June				
1	07:49	08:36 (7)	07:36	08:41 (7)	07:01	07:11	06:26		05:58	07:04 (6)
	17:09	51 16:44 (1)	17:43	24 09:05 (7)	18:16	19:50	20:21		20:50	15 07:19 (6)
2	07:49	08:35 (7)	07:36	08:42 (7)	07:00	07:10	06:25		05:58	07:03 (6)
	17:10	54 16:45 (1)	17:44	22 09:04 (7)	18:18	19:51	20:22		20:50	19 07:22 (6)
3	07:50	08:35 (7)	07:35	08:44 (7)	06:58	07:08	06:24		05:57	07:01 (6)
	17:11	55 16:46 (1)	17:46	19 09:03 (7)	18:19	19:52	20:23		20:51	23 07:24 (6)
4	07:50	08:35 (7)	07:34	08:46 (7)	06:57	07:07	06:23		05:57	06:59 (6)
	17:12	57 16:47 (1)	17:47	15 09:01 (7)	18:20	19:53	20:24		20:52	26 07:25 (6)
5	07:50	08:34 (7)	07:33	08:49 (7)	06:55	07:05	06:21		05:57	06:59 (6)
	17:13	58 16:47 (1)	17:48	9 08:58 (7)	18:21	19:54	20:25		20:52	28 07:27 (6)
6	07:50	08:34 (7)	07:31		06:54	07:03	06:20		05:56	06:58 (6)
	17:14	60 16:48 (1)	17:49		18:22	19:55	20:26		20:53	30 07:28 (6)
7	07:50	08:34 (7)	07:30		06:52	07:02	06:19		05:56	06:58 (6)
	17:15	61 16:49 (1)	17:50		18:23	19:56	20:27		20:54	31 07:29 (6)
8	07:49	08:34 (7)	07:29		06:50	07:00	06:18		05:56	06:56 (6)
	17:16	63 16:50 (1)	17:52		18:24	19:57	20:28		20:54	33 07:29 (6)
9	07:49	08:34 (7)	07:28		06:49	06:58	06:17		05:56	06:56 (6)
	17:17	64 16:51 (1)	17:53		18:25	19:58	20:29		20:55	34 07:30 (6)
10	07:49	08:34 (7)	07:27		06:47	06:57	06:16		05:55	06:56 (6)
	17:18	66 16:53 (1)	17:54		18:26	19:59	20:30		20:55	35 07:31 (6)
11	07:49	08:34 (7)	07:26		06:46	06:55	06:15		05:55	06:55 (6)
	17:19	66 16:53 (1)	17:55		18:28	20:00	20:31		20:56	37 07:32 (6)
12	07:49	08:34 (7)	07:25		06:44	06:54	06:14		05:55	06:55 (6)
	17:20	69 16:55 (1)	17:57		18:29	20:01	20:32		20:56	38 07:33 (6)
13	07:48	08:34 (7)	07:23		06:43	06:52	06:13		05:55	06:55 (6)
	17:21	71 16:56 (1)	17:58		18:30	20:02	20:33		20:57	38 07:33 (6)
14	07:48	08:34 (7)	07:22		06:41	06:51	06:11		05:55	06:55 (6)
	17:22	72 16:57 (1)	17:59		18:31	20:03	20:34		20:57	39 07:34 (6)
15	07:48	08:34 (7)	07:21		06:39	06:49	06:11		05:55	06:55 (6)
	17:23	73 16:58 (1)	18:00		18:32	20:04	20:35		20:58	40 07:35 (6)
16	07:47	08:34 (7)	07:20		06:38	06:48	06:10		05:55	06:55 (6)
	17:24	73 16:59 (1)	18:01		18:33	20:05	20:36		20:58	40 07:35 (6)
17	07:47	08:34 (7)	07:18		06:36	06:46	06:09		05:55	06:55 (6)
	17:25	73 16:59 (1)	18:03		18:34	20:06	20:37		20:58	40 07:35 (6)
18	07:46	08:34 (7)	07:17		06:34	06:45	06:08		05:55	06:55 (6)
	17:26	73 16:59 (1)	18:04		18:35	20:07	20:38		20:59	40 07:35 (6)
19	07:46	08:35 (7)	07:16		06:33	06:43	06:07		05:55	06:55 (6)
	17:28	72 16:59 (1)	18:05		18:36	20:08	20:39		20:59	41 07:36 (6)
20	07:45	08:34 (7)	07:14		06:31	06:42	06:06		05:55	06:55 (6)
	17:29	72 16:59 (1)	18:06		18:37	20:09	20:39		20:59	41 07:36 (6)
21	07:45	08:34 (7)	07:13		06:29	06:40	06:05		05:56	06:56 (6)
	17:30	71 16:58 (1)	18:07		18:38	20:10	20:40		21:00	41 07:37 (6)
22	07:44	08:35 (7)	07:11		06:28	06:39	06:04		05:56	06:56 (6)
	17:31	69 16:58 (1)	18:08		18:39	20:11	20:41		21:00	41 07:37 (6)
23	07:44	08:35 (7)	07:10		06:26	06:37	06:04		05:56	06:56 (6)
	17:32	68 16:58 (1)	18:10		18:40	20:12	20:42		21:00	41 07:37 (6)
24	07:43	08:35 (7)	07:09		06:25	06:36	06:03		05:56	06:56 (6)
	17:33	66 16:57 (1)	18:11		18:41	20:13	20:43		21:00	41 07:37 (6)
25	07:42	08:36 (7)	07:07		06:23	06:34	06:02		05:57	06:57 (6)
	17:35	64 16:57 (1)	18:12		18:42	20:14	20:44		21:00	40 07:37 (6)
26	07:42	08:37 (7)	07:06		06:21	06:33	06:02		05:57	06:57 (6)
	17:36	61 16:56 (1)	18:13		18:43	20:16	20:45		21:00	40 07:37 (6)
27	07:41	08:37 (7)	07:04		06:20	06:32	06:01		05:57	06:57 (6)
	17:37	57 16:54 (1)	18:14		18:44	20:17	20:46		21:00	40 07:37 (6)
28	07:40	08:38 (7)	07:03		06:18	06:30	06:00		05:58	06:58 (6)
	17:38	53 16:53 (1)	18:15		18:45	20:18	20:46		21:00	39 07:37 (6)
29	07:39	08:38 (7)			07:16	06:29	06:00		05:58	06:58 (6)
	17:39	48 16:51 (1)			19:47	20:19	20:47		21:00	39 07:37 (6)
30	07:38	08:39 (7)			07:15	06:28	05:59		05:58	06:59 (6)
	17:41	41 16:48 (1)			19:48	20:20	20:48		21:00	38 07:37 (6)
31	07:37	08:40 (7)			07:13		05:59		07:09 (6)	
	17:42	26 09:06 (7)			19:49		20:49	7	07:16 (6)	
Potential sun hours	299		298		370	398	447		450	
Total, worst case		1927		89				7		1068
Sun reduction		0,40		0,45				0,57		0,66
Oper. time red.		0,78		0,78				0,78		0,78
Wind dir. red.		0,66		0,62				0,66		0,66
Total reduction		0,20		0,22				0,29		0,34
Total, real		393		19				2		363

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:58 / 24

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BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: N - R40

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December
1	05:59	06:59 (6)	06:22	06:52	07:21	06:55
	21:00	37 07:36 (6)	20:42	20:00	19:10	17:24
2	05:59	07:00 (6)	06:23	06:53	07:22	06:56
	21:00	37 07:37 (6)	20:41	19:58	19:08	17:23
3	06:00	07:01 (6)	06:24	06:54	07:23	06:57
	21:00	35 07:36 (6)	20:40	19:56	19:07	17:22
4	06:00	07:02 (6)	06:25	06:55	07:24	06:58
	21:00	34 07:36 (6)	20:39	19:55	19:05	17:20
5	06:01	07:02 (6)	06:26	06:56	07:25	06:59
	21:00	33 07:35 (6)	20:37	19:53	19:03	17:19
6	06:01	07:04 (6)	06:27	06:57	07:26	07:01
	20:59	31 07:35 (6)	20:36	19:51	19:02	17:18
7	06:02	07:04 (6)	06:28	06:58	07:28	07:02
	20:59	29 07:33 (6)	20:35	19:50	19:00	17:17
8	06:03	07:06 (6)	06:29	06:59	07:29	07:03
	20:59	27 07:33 (6)	20:34	19:48	18:58	17:16
9	06:03	07:08 (6)	06:30	07:00	07:30	07:04
	20:59	24 07:32 (6)	20:33	19:47	18:57	17:15
10	06:04	07:09 (6)	06:31	07:01	07:31	07:05
	20:58	21 07:30 (6)	20:31	19:45	18:55	17:14
11	06:05	07:11 (6)	06:32	07:02	07:32	07:06
	20:58	17 07:28 (6)	20:30	19:43	18:54	17:13
12	06:05	07:15 (6)	06:33	07:03	07:33	07:08
	20:57	11 07:26 (6)	20:29	19:42	18:52	17:12
13	06:06		06:34	07:04	07:34	07:09
	20:57		20:28	19:40	18:51	17:11
14	06:07		06:35	07:05	07:35	07:10
	20:56		20:26	19:38	18:49	17:10
15	06:08		06:36	07:06	07:36	07:11
	20:56		20:25	19:37	18:47	17:09
16	06:08		06:37	07:07	07:37	07:12
	20:55		20:23	19:35	18:46	17:09
17	06:09		06:38	07:08	07:38	07:13
	20:55		20:22	19:33	18:44	17:08
18	06:10		06:39	07:09	07:39	07:15
	20:54		20:21	19:32	18:43	17:07
19	06:11		06:40	07:10	07:40	07:16
	20:53		20:19	19:30	18:42	17:06
20	06:12		06:41	07:11	07:41	07:17
	20:53		20:18	19:28	18:40	17:06
21	06:12		06:42	07:12	07:42	07:18
	20:52		20:16	19:26	18:39	17:05
22	06:13		06:43	07:13	07:43	07:19
	20:51		20:15	19:25	18:37	17:04
23	06:14		06:44	07:14	07:44	07:20
	20:50		20:13	19:23	18:36	17:04
24	06:15		06:44	07:14	07:44	07:21
	20:49		20:12	19:21	18:34	17:03
25	06:16		06:45	07:15	07:45	07:23
	20:49		20:10	19:20	17:33	17:03
26	06:17		06:46	07:16	07:46	07:24
	20:48		20:09	19:18	17:32	17:02
27	06:18		06:47	07:17	07:47	07:25
	20:47		20:07	19:16	17:30	17:02
28	06:19		06:48	07:18	07:48	07:26
	20:46		20:06	19:15	17:29	17:01
29	06:19		06:49	07:19	07:49	07:27
	20:45		20:04	19:13	17:28	17:01
30	06:20		06:50	07:20	07:50	07:28
	20:44		20:03	19:11	17:26	17:01
31	06:21		06:51	07:21	07:51	07:29
	20:43		20:01	19:10	17:25	17:00
Potential sun hours	457	427	375	346	299	290
Total, worst case	336				1362	1536
Sun reduction	0,74				0,48	0,42
Oper. time red.	0,78				0,78	0,78
Wind dir. red.	0,66				0,65	0,66
Total reduction	0,38				0,25	0,22
Total, real	128				335	334

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progetto Shadow receptor: O - R28

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49	07:36	07:01	07:11	06:26	05:58	05:59	06:22	06:52	07:21	06:55	07:29
	17:09	17:43	18:16	19:50	20:21	20:49	21:00	20:42	20:00	19:10	17:24	17:00
2	07:49	07:35	07:00	07:10	06:25	05:58	05:59	06:23	06:53	07:22	06:56	07:30
	17:10	17:44	18:18	19:51	20:22	20:50	21:00	20:41	19:58	19:08	17:23	17:00
3	07:49	07:35	06:58	07:08	06:24	05:57	06:00	06:24	06:54	07:23	06:57	07:31
	17:11	17:46	18:19	19:52	20:23	20:51	21:00	20:40	19:56	19:07	17:22	17:00
4	07:50	07:34	06:57	07:07	06:23	05:57	06:00	06:25	06:55	07:24	06:58	07:32
	17:12	17:47	18:20	19:53	20:24	20:52	21:00	20:39	19:55	19:05	17:20	17:00
5	07:50	07:32	06:55	07:05	06:21	05:57	06:01	06:26	06:56	07:25	06:59	07:33
	17:13	17:48	18:21	19:54	20:25	20:52	21:00	20:37	19:53	19:03	17:19	16:59
6	07:50	07:31	06:54	07:03	06:20	05:56	06:02	06:27	06:57	07:26	07:01	07:34
	17:14	17:49	18:22	19:55	20:26	20:53	20:59	20:36	19:51	19:02	17:18	16:59
7	07:49	07:30	06:52	07:02	06:19	05:56	06:02	06:28	06:58	07:28	07:02	07:35
	17:15	17:51	18:23	19:56	20:27	20:54	20:59	20:35	19:50	19:00	17:17	16:59
8	07:49	07:29	06:50	07:00	06:18	05:56	06:03	06:29	06:59	07:29	07:03	07:36
	17:16	17:52	18:24	19:57	20:28	20:54	20:59	20:34	19:48	18:58	17:16	16:59
9	07:49	07:28	06:49	06:59	06:17	05:56	06:03	06:30	07:00	07:30	07:04	07:37
	17:17	17:53	18:25	19:58	20:29	20:55	20:58	20:33	19:47	18:57	17:15	16:59
10	07:49	07:27	06:47	06:57	06:16	05:55	06:04	06:31	07:01	07:31	07:05	07:37
	17:18	17:54	18:26	19:59	20:30	20:55	20:58	20:31	19:45	18:55	17:14	16:59
11	07:49	07:26	06:46	06:55	06:15	05:55	06:05	06:32	07:02	07:32	07:06	07:38
	17:19	17:55	18:28	20:00	20:31	20:56	20:58	20:30	19:43	18:54	17:13	16:59
12	07:49	07:25	06:44	06:54	06:14	05:55	06:05	06:33	07:03	07:33	07:08	07:39
	17:20	17:57	18:29	20:01	20:32	20:56	20:57	20:29	19:42	18:52	17:12	16:59
13	07:48	07:23	06:43	06:52	06:13	05:55	06:06	06:34	07:04	07:34	07:09	07:40
	17:21	17:58	18:30	20:02	20:33	20:57	20:57	20:27	19:40	18:51	17:11	17:00
14	07:48	07:22	06:41	06:51	06:12	05:55	06:07	06:35	07:05	07:35	07:10	07:41
	17:22	17:59	18:31	20:03	20:34	20:57	20:56	20:26	19:38	18:49	17:10	17:00
15	07:48	07:21	06:39	06:49	06:11	05:55	06:08	06:36	07:06	07:36	07:11	07:41
	17:23	18:00	18:32	20:04	20:35	20:58	20:56	20:25	19:37	18:47	17:09	17:00
16	07:47	07:20	06:38	06:48	06:10	05:55	06:08	06:37	07:07	07:37	07:12	07:42
	17:24	18:01	18:33	20:05	20:36	20:58	20:55	20:23	19:35	18:46	17:09	17:00
17	07:47	07:18	06:36	06:46	06:09	05:55	06:09	06:38	07:08	07:38	07:13	07:43
	17:25	18:03	18:34	20:06	20:37	20:58	20:54	20:22	19:33	18:44	17:08	17:01
18	07:46	07:17	06:34	06:45	06:08	05:55	06:10	06:39	07:09	07:39	07:15	07:43
	17:26	18:04	18:35	20:07	20:38	20:59	20:54	20:21	19:32	18:43	17:07	17:01
19	07:46	07:16	06:33	06:43	06:07	05:55	06:11	06:40	07:10	07:40	07:16	07:44
	17:28	18:05	18:36	20:08	20:38	20:59	20:53	20:19	19:30	18:42	17:06	17:01
20	07:45	07:14	06:31	06:42	06:06	05:55	06:12	06:41	07:11	07:41	07:17	07:45
	17:29	18:06	18:37	20:09	20:39	20:59	20:52	20:18	19:28	18:40	17:06	17:02
21	07:45	07:13	06:29	06:40	06:05	05:56	06:12	06:42	07:12	07:42	07:18	07:45
	17:30	18:07	18:38	20:10	20:40	21:00	20:52	20:16	19:26	18:39	17:05	17:02
22	07:44	07:11	06:28	06:39	06:04	05:56	06:13	06:43	07:13	07:43	07:19	07:46
	17:31	18:08	18:39	20:11	20:41	21:00	20:51	20:15	19:25	18:37	17:04	17:03
23	07:44	07:10	06:26	06:37	06:04	05:56	06:14	06:44	07:14	07:44	07:20	07:46
	17:32	18:10	18:40	20:12	20:42	21:00	20:50	20:13	19:23	18:36	17:04	17:03
24	07:43	07:09	06:25	06:36	06:03	05:56	06:15	06:45	07:14	07:46	07:21	07:47
	17:33	18:11	18:41	20:13	20:43	21:00	20:49	20:12	19:21	18:34	17:03	17:04
25	07:42	07:07	06:23	06:34	06:02	05:57	06:16	06:46	07:15	07:47	07:23	07:47
	17:35	18:12	18:42	20:14	20:44	21:00	20:49	20:10	19:20	17:33	17:03	17:04
26	07:41	07:06	06:21	06:33	06:02	05:57	06:17	06:46	07:16	07:48	07:24	07:48
	17:36	18:13	18:43	20:15	20:45	21:00	20:48	20:09	19:18	17:32	17:02	17:05
27	07:41	07:04	06:20	06:32	06:01	05:57	06:18	06:47	07:17	07:49	07:25	07:48
	17:37	18:14	18:44	20:17	20:46	21:00	20:47	20:07	19:16	17:30	17:02	17:06
28	07:40	07:03	06:18	06:30	06:00	05:58	06:19	06:48	07:18	07:50	07:26	07:48
	17:38	18:15	18:45	20:18	20:46	21:00	20:46	20:06	19:15	17:29	17:01	17:06
29	07:39		07:16	06:29	06:00	05:58	06:20	06:49	07:19	07:51	07:27	07:49
	17:40		19:47	20:19	20:47	21:00	20:45	20:04	19:13	17:28	17:01	17:07
30	07:38		07:15	06:28	05:59	05:58	06:20	06:50	07:20	07:52	07:28	07:49
	17:41		19:48	20:20	20:48	21:00	20:44	20:03	19:11	17:26	17:01	17:08
31	07:37		07:13		05:59		06:21	06:51		06:54		07:49
	17:42		19:49		20:49		20:43	20:01		17:25		17:08
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: P - R25

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	
1	07:49	14:59 (3) 07:36	14:53 (3) 07:01	15:10 (3) 07:11	06:26	07:19 (5) 05:58	06:59 (5)
	17:09	85 16:36 (2) 17:43	84 16:17 (3) 18:16	58 16:08 (3) 19:50	20:21	81 08:40 (5) 20:49	116 08:55 (5)
2	07:49	15:00 (3) 07:35	14:53 (3) 07:00	15:13 (3) 07:10	06:25	07:17 (5) 05:58	06:59 (5)
	17:10	85 16:37 (2) 17:44	84 16:17 (3) 18:18	54 16:07 (3) 19:51	20:22	83 08:40 (5) 20:50	117 08:56 (5)
3	07:50	15:00 (3) 07:35	14:53 (3) 06:58	15:14 (3) 07:08	06:24	07:16 (5) 05:57	06:59 (5)
	17:11	86 16:38 (2) 17:46	84 16:17 (3) 18:19	50 16:04 (3) 19:52	20:23	86 08:42 (5) 20:51	117 08:56 (5)
4	07:50	15:00 (3) 07:34	14:53 (3) 06:57	15:16 (3) 07:06	06:23	07:14 (5) 05:57	06:59 (5)
	17:12	87 16:38 (2) 17:47	85 16:18 (3) 18:20	46 16:02 (3) 19:53	20:24	89 08:43 (5) 20:52	117 08:56 (5)
5	07:50	14:59 (3) 07:32	14:53 (3) 06:55	15:19 (3) 07:05	06:21	07:13 (5) 05:57	06:59 (5)
	17:13	87 16:37 (2) 17:48	85 16:18 (3) 18:21	41 16:00 (3) 19:54	20:25	91 08:44 (5) 20:52	117 08:56 (5)
6	07:50	14:59 (3) 07:31	14:53 (3) 06:54	15:22 (3) 07:03	06:20	07:12 (5) 05:56	06:59 (5)
	17:14	87 16:37 (2) 17:49	86 16:19 (3) 18:22	35 15:57 (3) 19:55	20:26	93 08:45 (5) 20:53	118 08:57 (5)
7	07:50	14:59 (3) 07:30	14:54 (3) 06:52	15:26 (3) 07:02	06:19	07:11 (5) 05:56	07:00 (5)
	17:15	87 16:37 (2) 17:50	85 16:19 (3) 18:23	28 15:54 (3) 19:56	20:27	95 08:46 (5) 20:54	117 08:57 (5)
8	07:49	14:59 (3) 07:29	14:54 (3) 06:50	15:31 (3) 07:00	06:18	07:09 (5) 05:56	06:59 (5)
	17:16	88 16:38 (2) 17:52	85 16:19 (3) 18:24	18 15:49 (3) 19:57	20:28	97 08:46 (5) 20:54	118 08:57 (5)
9	07:49	14:59 (3) 07:28	14:54 (3) 06:49	06:58	06:17	07:08 (5) 05:56	06:59 (5)
	17:17	89 16:38 (2) 17:53	86 16:20 (3) 18:25	19:58	20:29	99 08:47 (5) 20:55	118 08:57 (5)
10	07:49	14:59 (3) 07:27	14:54 (3) 06:47	06:57	06:16	07:07 (5) 05:55	06:59 (5)
	17:18	89 16:38 (2) 17:54	85 16:19 (3) 18:26	19:59	20:30	101 08:48 (5) 20:55	118 08:57 (5)
11	07:49	14:58 (3) 07:26	14:54 (3) 06:46	06:55	06:15	07:07 (5) 05:55	07:00 (5)
	17:19	89 16:37 (2) 17:55	85 16:19 (3) 18:28	20:00	20:31	101 08:48 (5) 20:56	118 08:58 (5)
12	07:49	14:58 (3) 07:25	14:55 (3) 06:44	06:54	06:14	07:06 (5) 05:55	07:00 (5)
	17:20	89 16:37 (2) 17:57	84 16:19 (3) 18:29	20:01	20:32	103 08:49 (5) 20:56	118 08:58 (5)
13	07:48	14:58 (3) 07:23	14:55 (3) 06:42	06:52	06:13	07:05 (5) 05:55	07:00 (5)
	17:21	89 16:37 (2) 17:58	84 16:19 (3) 18:30	20:02	20:33	104 08:49 (5) 20:57	118 08:58 (5)
14	07:48	14:57 (3) 07:22	14:55 (3) 06:41	06:51	06:12	07:04 (5) 05:55	07:00 (5)
	17:22	88 16:36 (2) 17:59	84 16:19 (3) 18:31	20:03	20:34	106 08:50 (5) 20:57	118 08:58 (5)
15	07:48	14:57 (3) 07:21	14:56 (3) 06:39	06:49	06:11	07:05 (5) 05:55	07:00 (5)
	17:23	88 16:36 (2) 18:00	83 16:19 (3) 18:32	20:04	20:35	106 08:51 (5) 20:58	119 08:59 (5)
16	07:47	14:56 (3) 07:20	14:57 (3) 06:38	06:48	06:10	07:04 (5) 05:55	07:00 (5)
	17:24	86 16:34 (2) 18:01	82 16:19 (3) 18:33	20:05	20:36	107 08:51 (5) 20:58	119 08:59 (5)
17	07:47	14:56 (3) 07:18	14:57 (3) 06:36	06:46	06:09	07:03 (5) 05:55	07:01 (5)
	17:25	84 16:33 (2) 18:03	81 16:18 (3) 18:34	20:06	20:37	109 08:52 (5) 20:58	118 08:59 (5)
18	07:46	14:56 (3) 07:17	14:58 (3) 06:34	06:45	06:08	07:02 (5) 05:55	07:01 (5)
	17:26	79 16:30 (2) 18:04	80 16:18 (3) 18:35	20:07	20:38	110 08:52 (5) 20:59	118 08:59 (5)
19	07:46	14:56 (3) 07:16	14:59 (3) 06:33	06:43	06:07	07:02 (5) 05:55	07:01 (5)
	17:28	72 16:08 (3) 18:05	78 16:17 (3) 18:36	20:08	20:39	110 08:52 (5) 20:59	118 08:59 (5)
20	07:45	14:55 (3) 07:14	14:59 (3) 06:31	06:42	06:06	07:01 (5) 05:55	07:01 (5)
	17:29	73 16:08 (3) 18:06	77 16:16 (3) 18:37	20:09	20:39	111 08:52 (5) 20:59	118 08:59 (5)
21	07:45	14:55 (3) 07:13	15:00 (3) 06:29	06:40	06:05	07:02 (5) 05:56	07:02 (5)
	17:30	74 16:09 (3) 18:07	76 16:16 (3) 18:38	20:10	26 07:48 (5) 06:05	111 08:53 (5) 21:00	118 09:00 (5)
22	07:44	14:55 (3) 07:11	15:01 (3) 06:28	06:39	06:04	07:01 (5) 05:56	07:02 (5)
	17:31	75 16:10 (3) 18:08	74 16:15 (3) 18:39	20:11	37 08:19 (5) 20:41	112 08:53 (5) 21:00	118 09:00 (5)
23	07:44	14:55 (3) 07:10	15:02 (3) 06:26	06:37	06:04	07:00 (5) 05:56	07:02 (5)
	17:32	76 16:11 (3) 18:10	73 16:15 (3) 18:40	20:12	45 08:23 (5) 20:42	113 08:53 (5) 21:00	118 09:00 (5)
24	07:43	14:54 (3) 07:09	15:04 (3) 06:25	06:36	06:03	07:01 (5) 05:56	07:02 (5)
	17:33	78 16:12 (3) 18:11	70 16:14 (3) 18:41	20:13	51 08:26 (5) 20:43	113 08:54 (5) 21:00	118 09:00 (5)
25	07:42	14:55 (3) 07:07	15:04 (3) 06:23	06:34	06:02	07:00 (5) 05:57	07:03 (5)
	17:35	78 16:13 (3) 18:12	69 16:13 (3) 18:42	20:14	57 08:28 (5) 20:44	114 08:54 (5) 21:00	118 09:01 (5)
26	07:41	14:54 (3) 07:06	15:06 (3) 06:21	06:33	06:02	06:59 (5) 05:57	07:02 (5)
	17:36	80 16:14 (3) 18:13	66 16:12 (3) 18:43	20:15	62 08:31 (5) 20:45	115 08:54 (5) 21:00	119 09:01 (5)
27	07:41	14:54 (3) 07:04	15:07 (3) 06:20	06:32	06:01	07:00 (5) 05:57	07:02 (5)
	17:37	80 16:14 (3) 18:14	63 16:10 (3) 18:44	20:17	66 08:33 (5) 20:46	115 08:55 (5) 21:00	119 09:01 (5)
28	07:40	14:54 (3) 07:03	15:09 (3) 06:18	06:30	06:00	06:59 (5) 05:58	07:03 (5)
	17:38	81 16:15 (3) 18:15	61 16:10 (3) 18:45	20:18	71 08:35 (5) 20:46	115 08:54 (5) 21:00	118 09:01 (5)
29	07:39	14:53 (3) 07:02	15:11 (3) 06:16	06:29	06:00	07:00 (5) 05:58	07:03 (5)
	17:39	82 16:15 (3) 18:16	62 16:11 (3) 18:44	20:19	74 08:36 (5) 20:47	115 08:55 (5) 21:00	118 09:01 (5)
30	07:38	14:53 (3) 07:01	15:12 (3) 06:15	06:28	05:59	06:59 (5) 05:58	07:04 (5)
	17:41	83 16:16 (3) 18:17	63 16:11 (3) 18:45	20:20	77 08:38 (5) 20:48	116 08:55 (5) 21:00	118 09:02 (5)
31	07:37	14:53 (3) 07:00	15:13 (3) 06:14	06:27	05:58	06:59 (5) 05:57	07:04 (5)
	17:42	83 16:16 (3) 18:18	64 16:12 (3) 18:46	20:21	78 08:39 (5) 20:49	116 08:55 (5) 21:00	118 09:02 (5)
Potential sun hours	299	298	370	398	447	450	3537
Total, worst case	2577	2219	330	566	3237	3537	0,66
Sun reduction	0,40	0,45	0,49	0,52	0,57	0,66	0,78
Oper. time red.	0,78	0,78	0,78	0,78	0,78	0,78	0,67
Wind dir. red.	0,68	0,68	0,68	0,67	0,67	0,67	0,35
Total reduction	0,21	0,24	0,26	0,27	0,30	0,35	1225
Total, real	550	533	86	155	972	1225	

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: P - R25

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December		
1	05:59	07:04 (5) 06:22	07:17 (5) 06:52	07:21	06:55	14:23 (3) 07:29	14:40 (3)	
	21:00	118 09:02 (5) 20:42	102 08:59 (5) 20:00	19:10		17:24	15:49 (3) 17:00	88 16:19 (2)
2	05:59	07:05 (5) 06:23	07:18 (5) 06:53	07:22	06:56	14:23 (3) 07:30	14:41 (3)	
	21:00	117 09:02 (5) 20:41	101 08:59 (5) 19:58	19:08	17:23	85 15:48 (3) 17:00	89 16:20 (2)	
3	06:00	07:04 (5) 06:24	07:18 (5) 06:54	07:23	06:57	14:24 (3) 07:31	14:42 (3)	
	21:00	118 09:02 (5) 20:40	100 08:58 (5) 19:56	19:07	17:22	85 15:49 (3) 17:00	89 16:21 (2)	
4	06:00	07:05 (5) 06:25	07:19 (5) 06:55	07:24	06:58	14:23 (3) 07:32	14:43 (3)	
	21:00	118 09:03 (5) 20:39	98 08:57 (5) 19:55	19:05	17:20	86 15:49 (3) 17:00	88 16:22 (2)	
5	06:01	07:05 (5) 06:26	07:20 (5) 06:56	07:25	16:11 (3) 06:59	14:23 (3) 07:33	14:44 (3)	
	21:00	117 09:02 (5) 20:37	96 08:56 (5) 19:53	19:03	11 16:22 (3) 17:19	85 15:48 (3) 16:59	87 16:22 (2)	
6	06:02	07:05 (5) 06:27	07:21 (5) 06:57	07:26	16:04 (3) 07:01	14:23 (3) 07:34	14:45 (3)	
	20:59	118 09:03 (5) 20:36	94 08:55 (5) 19:51	19:02	24 16:28 (3) 17:18	85 15:48 (3) 16:59	87 16:23 (2)	
7	06:02	07:05 (5) 06:28	07:22 (5) 06:58	07:28	15:59 (3) 07:02	14:24 (3) 07:35	14:46 (3)	
	20:59	117 09:02 (5) 20:35	93 08:55 (5) 19:50	19:00	32 16:31 (3) 17:17	85 15:49 (3) 16:59	87 16:24 (2)	
8	06:03	07:06 (5) 06:29	07:23 (5) 06:59	07:29	15:56 (3) 07:03	14:24 (3) 07:36	14:47 (3)	
	20:59	117 09:03 (5) 20:34	90 08:53 (5) 19:48	18:58	38 16:34 (3) 17:16	84 15:48 (3) 16:59	87 16:25 (2)	
9	06:03	07:07 (5) 06:30	07:23 (5) 07:00	07:30	15:53 (3) 07:04	14:24 (3) 07:37	14:48 (3)	
	20:58	117 09:04 (5) 20:33	88 08:51 (5) 19:47	18:57	44 16:37 (3) 17:15	84 15:48 (3) 16:59	86 16:26 (2)	
10	06:04	07:06 (5) 06:31	07:25 (5) 07:01	07:31	15:50 (3) 07:05	14:24 (3) 07:38	14:49 (3)	
	20:58	117 09:03 (5) 20:31	85 08:50 (5) 19:45	18:55	48 16:38 (3) 17:14	83 15:47 (3) 16:59	85 16:26 (2)	
11	06:05	07:07 (5) 06:32	07:26 (5) 07:02	07:32	15:48 (3) 07:06	14:25 (3) 07:38	14:50 (3)	
	20:58	116 09:03 (5) 20:30	83 08:49 (5) 19:43	18:54	52 16:40 (3) 17:13	83 15:48 (3) 16:59	85 16:27 (2)	
12	06:05	07:08 (5) 06:33	07:27 (5) 07:03	07:33	15:45 (3) 07:08	14:25 (3) 07:39	14:52 (3)	
	20:57	116 09:04 (5) 20:29	80 08:47 (5) 19:42	18:52	56 16:41 (3) 17:12	83 15:48 (3) 16:59	83 16:28 (2)	
13	06:06	07:07 (5) 06:34	07:29 (5) 07:04	07:34	15:43 (3) 07:09	14:25 (3) 07:40	14:52 (3)	
	20:57	116 09:03 (5) 20:27	77 08:46 (5) 19:40	18:51	59 16:42 (3) 17:11	82 15:47 (3) 17:00	83 16:28 (2)	
14	06:07	07:08 (5) 06:35	07:30 (5) 07:05	07:35	15:41 (3) 07:10	14:26 (3) 07:41	14:53 (3)	
	20:56	115 09:03 (5) 20:26	74 08:44 (5) 19:38	18:49	61 16:42 (3) 17:10	81 15:47 (3) 17:00	82 16:29 (2)	
15	06:08	07:08 (5) 06:36	07:32 (5) 07:06	07:36	15:39 (3) 07:11	14:27 (3) 07:41	14:54 (3)	
	20:56	116 09:04 (5) 20:25	70 08:42 (5) 19:37	18:47	64 16:43 (3) 17:09	80 15:47 (3) 17:00	81 16:29 (2)	
16	06:08	07:09 (5) 06:37	07:34 (5) 07:07	07:37	15:37 (3) 07:12	14:27 (3) 07:42	14:54 (3)	
	20:55	115 09:04 (5) 20:23	66 08:40 (5) 19:35	18:46	67 16:44 (3) 17:09	80 15:47 (3) 17:00	81 16:29 (2)	
17	06:09	07:09 (5) 06:38	07:36 (5) 07:08	07:38	15:35 (3) 07:13	14:28 (3) 07:43	14:55 (3)	
	20:55	114 09:03 (5) 20:22	61 08:37 (5) 19:33	18:44	69 16:44 (3) 17:08	78 15:46 (3) 17:01	81 16:30 (2)	
18	06:10	07:09 (5) 06:39	07:39 (5) 07:09	07:39	15:34 (3) 07:15	14:28 (3) 07:43	14:56 (3)	
	20:54	114 09:03 (5) 20:21	56 08:35 (5) 19:32	18:43	71 16:45 (3) 17:07	78 15:46 (3) 17:01	80 16:31 (2)	
19	06:11	07:10 (5) 06:40	07:41 (5) 07:10	07:40	15:33 (3) 07:16	14:29 (3) 07:44	14:56 (3)	
	20:53	114 09:04 (5) 20:19	51 08:32 (5) 19:30	18:42	73 16:46 (3) 17:06	76 15:45 (3) 17:01	80 16:31 (2)	
20	06:12	07:11 (5) 06:41	07:45 (5) 07:11	07:41	15:32 (3) 07:17	14:30 (3) 07:45	14:57 (3)	
	20:53	113 09:04 (5) 20:18	43 08:28 (5) 19:28	18:40	75 16:47 (3) 17:06	75 15:45 (3) 17:02	80 16:32 (2)	
21	06:12	07:11 (5) 06:42	07:49 (5) 07:12	07:42	15:31 (3) 07:18	14:31 (3) 07:45	14:57 (3)	
	20:52	113 09:04 (5) 20:16	35 08:24 (5) 19:26	18:39	76 16:47 (3) 17:05	74 15:45 (3) 17:02	80 16:32 (2)	
22	06:13	07:11 (5) 06:43	07:54 (5) 07:13	07:43	15:29 (3) 07:19	14:31 (3) 07:46	14:58 (3)	
	20:51	112 09:03 (5) 20:15	23 08:17 (5) 19:25	18:37	78 16:47 (3) 17:04	73 15:44 (3) 17:03	80 16:33 (2)	
23	06:14	07:11 (5) 06:44	07:13	07:45	15:28 (3) 07:20	14:32 (3) 07:46	14:58 (3)	
	20:50	112 09:03 (5) 20:13	19:23	18:36	79 16:47 (3) 17:04	72 15:44 (3) 17:03	80 16:33 (2)	
24	06:15	07:12 (5) 06:45	07:14	07:46	15:27 (3) 07:21	14:33 (3) 07:47	14:59 (3)	
	20:49	111 09:03 (5) 20:12	19:21	18:34	80 16:47 (3) 17:03	78 16:07 (2) 17:04	80 16:34 (2)	
25	06:16	07:13 (5) 06:45	07:15	06:47	14:27 (3) 07:23	14:34 (3) 07:47	14:59 (3)	
	20:49	109 09:02 (5) 20:10	19:20	17:33	81 15:48 (3) 17:03	84 16:11 (2) 17:04	80 16:34 (2)	
26	06:17	07:13 (5) 06:46	07:16	06:48	14:26 (3) 07:24	14:35 (3) 07:48	14:59 (3)	
	20:48	109 09:02 (5) 20:09	19:18	17:32	82 15:48 (3) 17:02	86 16:13 (2) 17:05	80 16:34 (2)	
27	06:18	07:14 (5) 06:47	07:17	06:49	14:25 (3) 07:25	14:36 (3) 07:48	15:00 (3)	
	20:47	108 09:02 (5) 20:07	19:16	17:30	83 15:48 (3) 17:02	88 16:15 (2) 17:06	81 16:35 (2)	
28	06:19	07:15 (5) 06:48	07:18	06:50	14:25 (3) 07:26	14:37 (3) 07:48	15:00 (3)	
	20:46	107 09:02 (5) 20:06	19:15	17:29	83 15:48 (3) 17:01	89 16:16 (2) 17:06	81 16:35 (2)	
29	06:19	07:14 (5) 06:49	07:19	06:51	14:24 (3) 07:27	14:38 (3) 07:49	15:00 (3)	
	20:45	106 09:00 (5) 20:04	19:13	17:28	84 15:48 (3) 17:01	88 16:17 (2) 17:07	81 16:35 (2)	
30	06:20	07:15 (5) 06:50	07:20	06:52	14:24 (3) 07:28	14:39 (3) 07:49	15:00 (3)	
	20:44	105 09:00 (5) 20:03	19:11	17:26	85 15:49 (3) 17:01	89 16:18 (2) 17:08	83 16:36 (2)	
31	06:21	07:16 (5) 06:51	06:54		14:24 (3)	14:39 (3) 07:49	15:00 (3)	
	20:43	104 09:00 (5) 20:01	17:25	85 15:49 (3)		17:08	83 16:36 (2)	
Potential sun hours	457	427	375	346	299	290		
Total, worst case	3519	1666	1740	2465	2578			
Sun reduction	0,74	0,72	0,57	0,48	0,42			
Oper. time red.	0,78	0,78	0,78	0,78	0,78			
Wind dir. red.	0,67	0,67	0,68	0,68	0,68			
Total reduction	0,39	0,38	0,31	0,26	0,22			
Total, real	1365	630	534	638	579			

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

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

Project:

Giave WindPro - fotosimulazioni

Printed/Page

09/12/2022 09:58 / 28

Licensed user:

Ing. Bruno Manca
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IT-09028 Sestu
+390702358125
BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: Q - R26

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June								
1	07:49	16:13 (2)	07:36	15:39 (3)	07:01	15:22 (3)	07:11	06:26	05:58					
	17:09	30	16:43 (2)	17:43	49	16:28 (3)	18:16	86	16:48 (3)	19:50	20:21	20:49		
2	07:49	16:14 (2)	07:35	15:37 (3)	07:00	15:22 (3)	07:10	06:25	05:58	07:15 (5)				
	17:10	31	16:45 (2)	17:44	53	16:30 (3)	18:18	86	16:48 (3)	19:51	20:22	20:50	15	07:30 (5)
3	07:50	16:14 (2)	07:35	15:36 (3)	06:58	15:22 (3)	07:08	06:24	05:57	07:11 (5)				
	17:11	32	16:46 (2)	17:46	56	16:32 (3)	18:19	86	16:48 (3)	19:52	20:23	20:51	23	07:34 (5)
4	07:50	16:15 (2)	07:34	15:35 (3)	06:57	15:22 (3)	07:06	06:23	05:57	07:08 (5)				
	17:12	32	16:47 (2)	17:47	58	16:33 (3)	18:20	85	16:47 (3)	19:53	20:24	20:52	29	07:37 (5)
5	07:50	16:14 (2)	07:32	15:33 (3)	06:55	15:23 (3)	07:05	06:21	05:57	07:06 (5)				
	17:13	33	16:47 (2)	17:48	62	16:35 (3)	18:21	84	16:47 (3)	19:54	20:25	20:52	33	07:39 (5)
6	07:50	16:15 (2)	07:31	15:32 (3)	06:54	15:23 (3)	07:03	06:20	05:56	07:05 (5)				
	17:14	33	16:48 (2)	17:49	64	16:36 (3)	18:22	83	16:46 (3)	19:55	20:26	20:53	37	07:42 (5)
7	07:50	16:15 (2)	07:30	15:31 (3)	06:52	15:24 (3)	07:02	06:19	05:56	07:04 (5)				
	17:15	34	16:49 (2)	17:50	67	16:38 (3)	18:23	82	16:46 (3)	19:56	20:27	20:54	40	07:44 (5)
8	07:49	16:16 (2)	07:29	15:30 (3)	06:50	15:24 (3)	07:00	06:18	05:56	07:02 (5)				
	17:16	34	16:50 (2)	17:52	69	16:39 (3)	18:24	81	16:45 (3)	19:57	20:28	20:54	42	07:44 (5)
9	07:49	16:17 (2)	07:28	15:30 (3)	06:49	15:25 (3)	06:58	06:17	05:56	07:01 (5)				
	17:17	35	16:52 (2)	17:53	70	16:40 (3)	18:25	80	16:45 (3)	19:58	20:29	20:55	45	07:46 (5)
10	07:49	16:17 (2)	07:27	15:28 (3)	06:47	15:26 (3)	06:57	06:16	05:55	07:00 (5)				
	17:18	36	16:53 (2)	17:54	73	16:41 (3)	18:26	78	16:44 (3)	19:59	20:30	20:55	47	07:47 (5)
11	07:49	16:17 (2)	07:26	15:27 (3)	06:46	15:26 (3)	06:55	06:15	05:55	07:00 (5)				
	17:19	36	16:53 (2)	17:55	75	16:42 (3)	18:28	76	16:42 (3)	20:00	20:31	20:56	49	07:49 (5)
12	07:49	16:18 (2)	07:25	15:27 (3)	06:44	15:28 (3)	06:54	06:14	05:55	06:59 (5)				
	17:20	37	16:55 (2)	17:57	76	16:43 (3)	18:29	74	16:42 (3)	20:01	20:32	20:56	51	07:50 (5)
13	07:48	16:19 (2)	07:23	15:26 (3)	06:42	15:28 (3)	06:52	06:13	05:55	06:59 (5)				
	17:21	37	16:56 (2)	17:58	78	16:44 (3)	18:30	73	16:41 (3)	20:02	20:33	20:57	52	07:51 (5)
14	07:48	16:19 (2)	07:22	15:25 (3)	06:41	15:29 (3)	06:51	06:12	05:55	06:58 (5)				
	17:22	37	16:56 (2)	17:59	79	16:44 (3)	18:31	70	16:39 (3)	20:03	20:34	20:57	53	07:51 (5)
15	07:48	16:20 (2)	07:21	15:25 (3)	06:39	15:31 (3)	06:49	06:11	05:55	06:58 (5)				
	17:23	37	16:57 (2)	18:00	80	16:45 (3)	18:32	68	16:39 (3)	20:04	20:35	20:58	54	07:52 (5)
16	07:47	16:20 (2)	07:20	15:24 (3)	06:38	15:32 (3)	06:48	06:10	05:55	06:58 (5)				
	17:24	36	16:56 (2)	18:01	82	16:46 (3)	18:33	65	16:37 (3)	20:05	20:36	20:58	55	07:53 (5)
17	07:47	16:21 (2)	07:18	15:23 (3)	06:36	15:33 (3)	06:46	06:09	05:55	06:57 (5)				
	17:25	36	16:57 (2)	18:03	83	16:46 (3)	18:34	62	16:35 (3)	20:06	20:37	20:58	56	07:53 (5)
18	07:46	16:21 (2)	07:17	15:23 (3)	06:34	15:35 (3)	06:45	06:08	05:55	06:57 (5)				
	17:26	35	16:56 (2)	18:04	84	16:47 (3)	18:35	59	16:34 (3)	20:07	20:38	20:59	56	07:53 (5)
19	07:46	16:22 (2)	07:16	15:23 (3)	06:33	15:36 (3)	06:43	06:07	05:55	06:57 (5)				
	17:28	35	16:57 (2)	18:05	85	16:48 (3)	18:36	57	16:33 (3)	20:08	20:39	20:59	57	07:54 (5)
20	07:45	16:23 (2)	07:14	15:22 (3)	06:31	15:38 (3)	06:42	06:06	05:55	06:57 (5)				
	17:29	33	16:56 (2)	18:06	85	16:47 (3)	18:37	53	16:31 (3)	20:09	20:39	20:59	57	07:54 (5)
21	07:45	16:23 (2)	07:13	15:22 (3)	06:29	15:40 (3)	06:40	06:05	05:56	06:58 (5)				
	17:30	33	16:56 (2)	18:07	86	16:48 (3)	18:38	49	16:29 (3)	20:10	20:40	21:00	57	07:55 (5)
22	07:44	16:25 (2)	07:11	15:21 (3)	06:28	15:42 (3)	06:39	06:04	05:56	06:58 (5)				
	17:31	31	16:56 (2)	18:08	87	16:48 (3)	18:39	45	16:27 (3)	20:11	20:41	21:00	57	07:55 (5)
23	07:44	16:26 (2)	07:10	15:22 (3)	06:26	15:45 (3)	06:37	06:04	05:56	06:58 (5)				
	17:32	29	16:55 (2)	18:10	86	16:48 (3)	18:40	40	16:25 (3)	20:12	20:42	21:00	57	07:55 (5)
24	07:43	16:27 (2)	07:09	15:22 (3)	06:25	15:47 (3)	06:36	06:03	05:56	06:58 (5)				
	17:33	27	16:54 (2)	18:11	87	16:49 (3)	18:41	34	16:21 (3)	20:13	20:43	21:00	57	07:55 (5)
25	07:42	16:29 (2)	07:07	15:21 (3)	06:23	15:51 (3)	06:34	06:02	05:57	06:59 (5)				
	17:35	25	16:54 (2)	18:12	87	16:48 (3)	18:42	27	16:18 (3)	20:14	20:44	21:00	56	07:55 (5)
26	07:41	15:56 (3)	07:06	15:22 (3)	06:21	15:56 (3)	06:33	06:02	05:57	07:00 (5)				
	17:36	37	16:53 (2)	18:13	87	16:49 (3)	18:43	17	16:13 (3)	20:15	20:45	21:00	55	07:55 (5)
27	07:41	15:51 (3)	07:04	15:21 (3)	06:20	15:57 (3)	06:32	06:01	05:57	07:00 (5)				
	17:37	44	16:52 (2)	18:14	87	16:48 (3)	18:44	11	16:08 (3)	20:16	20:46	21:00	54	07:54 (5)
28	07:40	15:48 (3)	07:03	15:22 (3)	06:18	15:58 (3)	06:31	06:00	05:58	07:01 (5)				
	17:38	46	16:50 (2)	18:15	87	16:49 (3)	18:45	6	16:03 (3)	20:17	20:46	21:00	54	07:55 (5)
29	07:39	15:45 (3)	07:02	15:23 (3)	06:17	15:59 (3)	06:30	06:00	05:58	07:01 (5)				
	17:39	46	16:47 (2)	18:16	87	16:49 (3)	18:46	1	16:00 (3)	20:18	20:47	21:00	53	07:54 (5)
30	07:38	15:43 (3)	07:01	15:24 (3)	06:16	16:00 (3)	06:29	06:00	05:59	07:03 (5)				
	17:41	41	16:24 (3)	18:17	87	16:49 (3)	18:47	0	16:00 (3)	20:19	20:48	21:00	51	07:54 (5)
31	07:37	15:41 (3)	07:00	15:25 (3)	06:15	16:01 (3)	06:28	06:00	05:59	07:03 (5)				
	17:42	45	16:26 (3)	18:18	87	16:49 (3)	18:48	0	16:00 (3)	20:20	20:48	21:00	51	07:54 (5)
Potential sun hours	299		298		370		398		447		450		1402	
Total, worst case	1093		2122		1700								1402	
Sun reduction	0,40		0,45		0,49								0,66	
Oper. time red.	0,78		0,78		0,78								0,78	
Wind dir. red.	0,68		0,68		0,68								0,67	
Total reduction	0,21		0,24		0,26								0,35	
Total, real	232		506		439								486	

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:58 / 29

Licensed user:

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IT-09028 Sestu
+390702358125
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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: Q - R26

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December		
1	05:59	07:03 (5)	06:22	06:52	07:21	16:07 (3) 06:55	14:58 (3) 07:29	15:59 (2)
	21:00	50 07:53 (5)	20:42	20:00	19:10	73 17:20 (3) 17:24	72 16:10 (3) 17:00	36 16:35 (2)
2	05:59	07:05 (5)	06:23	06:53	07:22	16:05 (3) 06:56	14:59 (3) 07:30	15:59 (2)
	21:00	48 07:53 (5)	20:41	19:58	19:08	76 17:21 (3) 17:23	70 16:09 (3) 17:00	36 16:35 (2)
3	06:00	07:06 (5)	06:24	06:54	07:23	16:04 (3) 06:57	15:00 (3) 07:31	16:00 (2)
	21:00	46 07:52 (5)	20:40	19:56	19:07	77 17:21 (3) 17:22	69 16:09 (3) 17:00	35 16:35 (2)
4	06:00	07:07 (5)	06:25	06:55	07:24	16:02 (3) 06:58	15:01 (3) 07:32	16:00 (2)
	21:00	44 07:51 (5)	20:39	19:55	19:05	79 17:21 (3) 17:20	66 16:07 (3) 17:00	34 16:34 (2)
5	06:01	07:08 (5)	06:26	06:56	07:25	16:01 (3) 06:59	15:02 (3) 07:33	16:00 (2)
	21:00	42 07:50 (5)	20:37	19:53	19:03	80 17:21 (3) 17:19	64 16:06 (3) 16:59	34 16:34 (2)
6	06:02	07:10 (5)	06:27	06:57	07:26	16:00 (3) 07:01	15:03 (3) 07:34	16:01 (2)
	20:59	39 07:49 (5)	20:36	19:51	19:02	81 17:21 (3) 17:18	62 16:05 (3) 16:59	33 16:34 (2)
7	06:02	07:12 (5)	06:28	06:58	07:28	15:59 (3) 07:02	15:06 (3) 07:35	16:01 (2)
	20:59	35 07:47 (5)	20:35	19:50	19:00	82 17:21 (3) 17:17	58 16:04 (3) 16:59	33 16:34 (2)
8	06:03	07:14 (5)	06:29	06:59	07:29	15:58 (3) 07:03	15:07 (3) 07:36	16:02 (2)
	20:59	31 07:45 (5)	20:34	19:48	18:58	83 17:21 (3) 17:16	55 16:02 (3) 16:59	32 16:34 (2)
9	06:03	07:17 (5)	06:30	07:00	07:30	15:58 (3) 07:04	15:08 (3) 07:37	16:02 (2)
	20:58	26 07:43 (5)	20:33	19:47	18:57	84 17:22 (3) 17:15	53 16:01 (3) 16:59	32 16:34 (2)
10	06:04	07:20 (5)	06:31	07:01	07:31	15:57 (3) 07:05	15:10 (3) 07:38	16:03 (2)
	20:58	19 07:39 (5)	20:31	19:45	18:55	85 17:22 (3) 17:14	49 15:59 (3) 16:59	31 16:34 (2)
11	06:05	07:27 (5)	06:32	07:02	07:32	15:56 (3) 07:06	15:13 (3) 07:38	16:04 (2)
	20:58	6 07:33 (5)	20:30	19:43	18:54	86 17:22 (3) 17:13	45 15:58 (3) 16:59	30 16:34 (2)
12	06:05	06:33	07:03	07:33	07:33	15:55 (3) 07:08	15:15 (3) 07:39	16:04 (2)
	20:57	20:29	19:42	18:52	87 17:22 (3) 17:12	41 15:56 (3) 16:59	31 16:35 (2)	
13	06:06	06:34	07:04	07:34	07:34	15:55 (3) 07:09	15:17 (3) 07:40	16:04 (2)
	20:57	20:27	19:40	18:51	86 17:21 (3) 17:11	47 16:19 (2) 17:00	30 16:34 (2)	
14	06:07	06:35	07:05	07:35	07:35	15:54 (3) 07:10	15:20 (3) 07:41	16:05 (2)
	20:56	20:26	19:38	18:49	87 17:21 (3) 17:10	46 16:22 (2) 17:00	29 16:34 (2)	
15	06:08	06:36	07:06	07:36	07:36	15:54 (3) 07:11	15:24 (3) 07:41	16:06 (2)
	20:56	20:25	19:37	18:47	87 17:21 (3) 17:09	44 16:25 (2) 17:00	29 16:35 (2)	
16	06:08	06:37	07:07	07:37	07:37	15:53 (3) 07:12	15:29 (3) 07:42	16:06 (2)
	20:55	20:23	19:35	18:46	87 17:20 (3) 17:09	37 16:26 (2) 17:00	28 16:34 (2)	
17	06:09	06:38	07:08	16:46 (3) 07:38	15:53 (3) 07:13	16:02 (2) 07:43	16:06 (2)	
	20:55	20:22	19:33	14 17:00 (3) 18:44	87 17:20 (3) 17:08	26 16:28 (2) 17:01	29 16:35 (2)	
18	06:10	06:39	07:09	16:40 (3) 07:39	15:52 (3) 07:15	16:01 (2) 07:43	16:07 (2)	
	20:54	20:21	19:32	25 17:05 (3) 18:43	87 17:19 (3) 17:07	27 16:28 (2) 17:01	29 16:36 (2)	
19	06:11	06:40	07:10	16:36 (3) 07:40	15:53 (3) 07:16	16:00 (2) 07:44	16:07 (2)	
	20:53	20:19	19:30	32 17:08 (3) 18:42	87 17:20 (3) 17:06	29 16:29 (2) 17:01	29 16:36 (2)	
20	06:12	06:41	07:11	16:31 (3) 07:41	15:53 (3) 07:17	16:00 (2) 07:45	16:08 (2)	
	20:53	20:18	19:28	38 17:09 (3) 18:40	86 17:19 (3) 17:06	31 16:31 (2) 17:02	28 16:36 (2)	
21	06:12	06:42	07:12	16:28 (3) 07:42	15:53 (3) 07:18	15:59 (2) 07:45	16:08 (2)	
	20:52	20:16	19:26	43 17:11 (3) 18:39	85 17:18 (3) 17:05	33 16:32 (2) 17:02	28 16:36 (2)	
22	06:13	06:43	07:13	16:25 (3) 07:43	15:53 (3) 07:19	15:59 (2) 07:46	16:09 (2)	
	20:51	20:15	19:25	48 17:13 (3) 18:37	85 17:18 (3) 17:04	33 16:32 (2) 17:03	28 16:37 (2)	
23	06:14	06:44	07:13	16:22 (3) 07:45	15:53 (3) 07:20	15:58 (2) 07:46	16:09 (2)	
	20:50	20:13	19:23	52 17:14 (3) 18:36	84 17:17 (3) 17:04	35 16:33 (2) 17:03	28 16:37 (2)	
24	06:15	06:45	07:14	16:20 (3) 07:46	15:53 (3) 07:21	15:58 (2) 07:47	16:10 (2)	
	20:49	20:12	19:21	55 17:15 (3) 18:34	83 17:16 (3) 17:03	35 16:33 (2) 17:04	28 16:38 (2)	
25	06:16	06:45	07:15	16:18 (3) 06:47	14:54 (3) 07:23	15:59 (2) 07:47	16:10 (2)	
	20:49	20:10	19:20	59 17:17 (3) 17:33	82 16:16 (3) 17:03	36 16:35 (2) 17:04	29 16:39 (2)	
26	06:17	06:46	07:16	16:16 (3) 06:48	14:54 (3) 07:24	15:59 (2) 07:48	16:10 (2)	
	20:48	20:09	19:18	61 17:17 (3) 17:32	82 16:16 (3) 17:02	36 16:35 (2) 17:05	29 16:39 (2)	
27	06:18	06:47	07:17	16:14 (3) 06:49	14:54 (3) 07:25	15:59 (2) 07:48	16:11 (2)	
	20:47	20:07	19:16	64 17:18 (3) 17:30	81 16:15 (3) 17:02	37 16:36 (2) 17:06	29 16:40 (2)	
28	06:19	06:48	07:18	16:12 (3) 06:50	14:55 (3) 07:26	15:59 (2) 07:48	16:12 (2)	
	20:46	20:06	19:15	67 17:19 (3) 17:29	79 16:14 (3) 17:01	37 16:36 (2) 17:06	29 16:41 (2)	
29	06:19	06:49	07:19	16:10 (3) 06:51	14:55 (3) 07:27	15:59 (2) 07:49	16:12 (2)	
	20:45	20:04	19:13	69 17:19 (3) 17:28	78 16:13 (3) 17:01	37 16:36 (2) 17:07	29 16:41 (2)	
30	06:20	06:50	07:20	16:08 (3) 06:52	14:57 (3) 07:28	15:59 (2) 07:49	16:12 (2)	
	20:44	20:03	19:11	72 17:20 (3) 17:26	76 16:13 (3) 17:01	37 16:36 (2) 17:08	30 16:42 (2)	
31	06:21	06:51	07:21	16:06 (3) 06:54	14:57 (3) 07:29	15:59 (2) 07:49	16:12 (2)	
	20:43	20:01	19:10	74 17:25 (3) 17:25	74 16:11 (3) 17:01	37 16:36 (2) 17:08	30 16:42 (2)	
Potential sun hours	457	427	375	346	299	290		
Total, worst case	386		699	2556	1347	945		
Sun reduction	0,74		0,65	0,57	0,48	0,42		
Oper. time red.	0,78		0,78	0,78	0,78	0,78		
Wind dir. red.	0,67		0,68	0,68	0,68	0,68		
Total reduction	0,39		0,35	0,30	0,26	0,22		
Total, real	150		242	778	347	211		

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: R - R24

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June
1	07:49 17:09	07:36 17:43	07:01 18:16	08:49 (7) 19:50	09:30 (7) 19:50	06:26 20:49
2	07:49 17:10	07:35 17:44	07:00 18:18	08:48 (7) 19:51	09:30 (7) 19:51	06:25 20:50
3	07:50 17:11	07:35 17:46	06:58 18:19	08:46 (7) 19:52	09:31 (7) 19:52	06:24 20:51
4	07:50 17:12	07:34 17:47	06:57 18:20	08:44 (7) 19:53	09:32 (7) 19:53	06:23 20:52
5	07:50 17:13	07:32 17:48	06:55 18:21	08:43 (7) 19:54	09:32 (7) 19:54	06:21 20:52
6	07:50 17:14	07:31 17:49	06:54 18:22	08:41 (7) 19:55	09:34 (7) 19:55	06:20 20:53
7	07:50 17:15	07:30 17:50	06:52 18:23	08:40 (7) 19:56	09:35 (7) 19:56	06:19 20:54
8	07:49 17:16	07:29 17:52	06:50 18:24	08:39 (7) 19:57	09:36 (7) 19:57	06:18 20:54
9	07:49 17:17	07:28 17:53	06:49 18:25	08:38 (7) 19:58	09:38 (7) 19:58	06:17 20:55
10	07:49 17:18	07:27 17:54	06:47 18:26	08:37 (7) 19:59	09:39 (7) 19:59	06:16 20:55
11	07:49 17:19	07:26 17:55	06:46 18:28	08:35 (7) 19:59	09:42 (7) 19:59	06:15 20:55
12	07:49 17:20	07:25 17:57	06:44 18:29	08:35 (7) 20:01	09:45 (7) 20:01	06:14 20:56
13	07:48 17:21	07:23 17:58	06:42 18:30	08:34 (7) 20:02	09:48 (7) 20:02	06:12 20:57
14	07:48 17:22	07:22 17:59	06:41 18:31	08:33 (7) 20:03	09:47 (7) 20:03	06:11 20:57
15	07:48 17:23	07:21 18:00	06:39 18:32	08:33 (7) 20:04	09:47 (7) 20:04	06:10 20:58
16	07:47 17:24	07:20 18:01	06:38 18:33	08:32 (7) 20:05	09:48 (7) 20:05	06:10 20:58
17	07:47 17:25	07:18 18:03	06:36 18:34	08:31 (7) 20:06	09:46 (7) 20:06	06:09 20:58
18	07:46 17:26	07:17 18:04	06:34 18:35	08:31 (7) 20:07	09:45 (7) 20:07	06:08 20:59
19	07:46 17:28	07:16 18:05	06:33 18:36	08:30 (7) 20:08	09:44 (7) 20:08	06:07 20:59
20	07:45 17:29	07:14 18:06	06:31 18:37	08:30 (7) 20:09	09:43 (7) 20:09	06:06 20:59
21	07:45 17:30	07:13 18:07	06:29 18:38	08:30 (7) 20:10	09:42 (7) 20:10	06:05 21:00
22	07:44 17:31	07:11 18:08	06:28 18:39	08:29 (7) 20:11	09:41 (7) 20:11	06:04 21:00
23	07:44 17:32	07:10 18:10	06:26 18:40	08:30 (7) 20:12	09:40 (7) 20:12	06:04 21:00
24	07:43 17:33	07:09 18:11	09:05 (7) 09:26 (7)	06:24 18:41	08:29 (7) 18:21 (1)	06:36 20:13
25	07:42 17:35	07:07 18:12	09:00 (7) 09:30 (7)	06:23 18:42	08:29 (7) 18:21 (1)	06:34 20:14
26	07:41 17:36	07:06 18:13	08:57 (7) 09:34 (7)	06:21 18:43	08:29 (7) 18:23 (1)	06:33 20:15
27	07:41 17:37	07:04 18:14	08:54 (7) 09:36 (7)	06:20 18:44	08:29 (7) 18:24 (1)	06:32 20:17
28	07:40 17:38	07:03 18:15	08:52 (7) 09:38 (7)	06:18 18:45	08:29 (7) 18:24 (1)	06:30 20:18
29	07:39 17:39		07:16 19:47	87 18:24 (1) 09:29 (7)	20:18 20:19	21:00 21:00
30	07:38 17:41		07:15 19:48	89 19:26 (1) 09:29 (7)	20:19 20:28	21:00 21:00
31	07:37 17:42		07:13 19:49	88 19:27 (1) 09:29 (7)	20:20 20:49	21:00 21:00
Potential sun hours	299	298	370	398	447	450
Total, worst case		176	2332	588		
Sun reduction		0,45	0,49	0,52		
Oper. time red.		0,78	0,78	0,78		
Wind dir. red.		0,61	0,61	0,61		
Total reduction		0,21	0,23	0,25		
Total, real		37	541	147		

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: R - R24

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:59 21:00	06:22 20:42	06:52 20:00	09:41 (7) 19:10	09:13 (7) 17:24	06:55 17:00
2	05:59 21:00	06:23 20:41	06:53 19:58	09:38 (7) 19:08	09:14 (7) 17:23	06:56 17:00
3	06:00 21:00	06:24 20:40	06:54 19:56	09:36 (7) 19:06	09:14 (7) 17:22	06:57 17:00
4	06:00 21:00	06:25 20:39	06:55 19:55	09:34 (7) 19:05	09:14 (7) 17:20	06:58 17:00
5	06:01 21:00	06:26 20:37	06:56 19:53	09:32 (7) 19:03	09:15 (7) 17:19	06:59 16:59
6	06:01 20:59	06:27 20:36	06:57 19:51	09:29 (7) 19:02	09:15 (7) 17:18	07:01 16:59
7	06:02 20:59	06:28 20:35	06:58 19:50	09:28 (7) 19:00	09:16 (7) 17:17	07:02 16:59
8	06:03 20:59	06:29 20:34	06:59 19:48	09:26 (7) 18:58	09:17 (7) 17:16	07:03 16:59
9	06:03 20:58	06:30 20:33	07:00 19:47	09:25 (7) 18:57	09:19 (7) 17:15	07:04 16:59
10	06:04 20:58	06:31 20:31	07:01 19:45	09:24 (7) 18:55	09:20 (7) 17:14	07:05 16:59
11	06:05 20:58	06:32 20:30	07:02 19:43	09:23 (7) 18:54	09:21 (7) 17:13	07:06 16:59
12	06:05 20:57	06:33 20:29	07:03 19:42	09:22 (7) 18:52	09:22 (7) 17:12	07:08 16:59
13	06:06 20:57	06:34 20:27	07:04 19:40	09:21 (7) 18:51	09:24 (7) 17:11	07:09 17:00
14	06:07 20:56	06:35 20:26	07:05 19:38	09:20 (7) 18:49	09:25 (7) 17:10	07:10 17:00
15	06:08 20:56	06:36 20:25	07:06 19:37	09:19 (7) 18:47	09:27 (7) 17:09	07:11 17:00
16	06:08 20:55	06:37 20:23	07:07 19:35	09:18 (7) 18:46	09:30 (7) 17:09	07:12 17:00
17	06:09 20:55	06:38 20:22	07:08 19:33	09:18 (7) 18:44	09:33 (7) 17:09	07:13 17:01
18	06:10 20:54	06:39 20:21	07:09 19:31	09:17 (7) 18:43	09:38 (7) 17:15	07:15 17:01
19	06:11 20:53	06:40 20:19	07:10 19:30	09:16 (7) 18:41	09:55 (7) 17:07	07:16 17:01
20	06:12 20:53	06:41 20:18	07:11 19:28	09:15 (7) 18:40		07:17 17:02
21	06:12 20:52	06:42 20:16	07:12 19:26	09:14 (7) 18:39		07:18 17:02
22	06:13 20:51	06:43 20:15	07:13 19:25	09:14 (7) 18:37		07:19 17:03
23	06:14 20:50	06:44 20:13	07:13 19:23	09:14 (7) 18:36		07:20 17:03
24	06:15 20:49	06:44 20:12	07:14 19:21	09:14 (7) 18:34		07:21 17:03
25	06:16 20:49	06:45 20:10	07:15 19:20	09:13 (7) 18:33		07:23 17:04
26	06:17 20:48	06:46 20:09	07:16 19:18	09:13 (7) 18:32		07:24 17:05
27	06:18 20:47	06:47 20:07	07:17 19:16	09:13 (7) 18:30		07:25 17:05
28	06:19 20:46	06:48 20:06	07:18 19:15	09:13 (7) 18:29		07:26 17:06
29	06:19 20:45	06:49 20:04	07:19 19:13	09:13 (7) 18:28		07:27 17:07
30	06:20 20:44	06:50 20:03	07:20 19:11	09:13 (7) 18:26		07:28 17:08
31	06:21 20:43	06:51 20:01	09:45 (7) 10:02 (7)	10:27 (7) 17:26	06:54 17:25	07:49 17:08
Potential sun hours	457	427	375	346	299	290
Total, worst case		17	2135	988		
Sun reduction		0,72	0,65	0,57		
Oper. time red.		0,78	0,78	0,78		
Wind dir. red.		0,61	0,61	0,61		
Total reduction		0,34	0,31	0,27		
Total, real		6	667	268		

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: S - R23

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June
1	07:49 17:09	07:36 17:43	09:39 (7) 18:16	07:01 18:16	09:33 (7) 19:50	07:11 20:21
2	07:49 17:10	07:35 17:44	09:38 (7) 18:18	07:00 18:18	09:34 (7) 19:51	07:10 20:22
3	07:50 17:11	07:35 17:46	09:37 (7) 18:19	06:58 18:19	09:34 (7) 19:52	07:08 20:23
4	07:50 17:12	07:34 17:47	09:37 (7) 18:20	06:57 18:20	09:35 (7) 19:53	07:06 20:24
5	07:50 17:13	07:32 17:48	09:36 (7) 18:21	06:55 18:21	09:36 (7) 19:54	07:05 20:25
6	07:50 17:14	07:31 17:49	09:36 (7) 18:22	06:54 18:22	09:36 (7) 19:55	07:03 20:26
7	07:50 17:15	07:30 17:50	09:35 (7) 18:23	06:52 18:23	09:38 (7) 19:56	07:02 20:27
8	07:49 17:16	07:29 17:52	09:35 (7) 18:24	06:50 18:24	09:39 (7) 19:57	07:00 20:28
9	07:49 17:17	07:28 17:53	09:35 (7) 18:25	06:49 18:25	09:41 (7) 19:58	06:58 20:29
10	07:49 17:18	07:27 17:54	09:34 (7) 18:26	06:47 18:26	09:42 (7) 19:59	06:57 20:30
11	07:49 17:19	07:26 17:55	09:33 (7) 18:28	06:46 18:28	09:44 (7) 20:00	06:55 20:31
12	07:49 17:20	07:25 17:57	09:33 (7) 18:29	06:44 18:29	09:48 (7) 20:01	06:54 20:32
13	07:48 17:21	07:23 17:58	09:33 (7) 18:30	06:42 18:30	18:08 (1) 20:02	18:08 (1) 20:33
14	07:48 17:22	07:22 17:59	09:32 (7) 18:31	06:41 18:31	09:54 (7) 20:03	06:52 20:34
15	07:48 17:23	07:21 18:00	09:32 (7) 18:32	06:39 18:32	17:56 (1) 20:04	17:56 (1) 20:35
16	07:47 17:24	07:20 18:01	09:32 (7) 18:33	06:38 18:33	18:11 (1) 20:05	18:11 (1) 20:36
17	07:47 17:25	07:18 18:03	09:32 (7) 18:34	06:36 18:34	17:55 (1) 20:06	17:55 (1) 20:37
18	07:46 17:26	09:59 (7) 18:04	07:17 18:04	09:32 (7) 18:35	17:55 (1) 20:07	17:55 (1) 20:38
19	07:46 17:28	09:56 (7) 18:05	07:16 18:05	09:32 (7) 18:36	17:55 (1) 20:08	17:55 (1) 20:39
20	07:45 17:29	09:54 (7) 18:06	07:14 18:06	09:31 (7) 18:37	17:56 (1) 20:09	17:56 (1) 20:39
21	07:45 17:30	09:51 (7) 18:07	07:13 18:07	09:32 (7) 18:38	17:56 (1) 20:10	17:56 (1) 20:40
22	07:44 17:31	09:50 (7) 18:08	07:11 18:08	09:31 (7) 18:39	18:17 (1) 20:11	18:17 (1) 20:41
23	07:44 17:32	09:49 (7) 18:10	07:10 18:10	09:32 (7) 18:40	17:59 (1) 20:12	17:59 (1) 20:42
24	07:43 17:33	09:47 (7) 18:11	07:09 18:11	09:32 (7) 18:41	18:15 (1) 20:13	18:15 (1) 20:43
25	07:42 17:35	09:46 (7) 18:12	07:07 18:12	09:32 (7) 18:42	18:01 (1) 20:14	18:01 (1) 20:44
26	07:41 17:36	09:45 (7) 18:13	07:06 18:13	09:33 (7) 18:43	18:11 (1) 20:15	18:11 (1) 20:45
27	07:41 17:37	09:44 (7) 18:14	07:04 18:14	09:32 (7) 18:44	18:11 (1) 20:16	18:11 (1) 20:46
28	07:40 17:38	09:43 (7) 18:15	07:03 18:15	09:33 (7) 18:45	18:11 (1) 20:17	18:11 (1) 20:47
29	07:39 17:39	09:42 (7) 18:16	07:02 18:16	09:34 (7) 18:46	18:11 (1) 20:18	18:11 (1) 20:48
30	07:38 17:41	09:41 (7) 18:17	07:01 18:17	09:35 (7) 18:47	18:11 (1) 20:19	18:11 (1) 20:49
31	07:37 17:42	09:40 (7) 18:18	07:00 18:18	09:36 (7) 18:48	18:11 (1) 20:20	18:11 (1) 20:50
Potential sun hours	299	298	370	398	447	450
Total, worst case	590	2025	821			
Sun reduction	0,40	0,45	0,49			
Oper. time red.	0,78	0,78	0,78			
Wind dir. red.	0,62	0,62	0,64			
Total reduction	0,19	0,22	0,24			
Total, real	114	440	198			

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: S - R23

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December		
1	05:59 21:00	06:22 20:42	06:52 20:00	07:21 19:10	10:29 (7) 18:47 (1)	06:55 17:24	09:03 (7) 10:17 (7)	07:29 17:00
2	05:59 21:00	06:23 20:41	06:53 19:58	07:22 19:08	10:24 (7) 18:45 (1)	06:56 17:23	09:04 (7) 10:17 (7)	07:30 17:00
3	06:00 21:00	06:24 20:40	06:54 19:56	07:23 19:06	10:21 (7) 18:44 (1)	06:57 17:22	09:05 (7) 10:17 (7)	07:31 17:00
4	06:00 21:00	06:25 20:39	06:55 19:55	07:24 19:05	10:18 (7) 18:42 (1)	06:58 17:20	09:05 (7) 10:16 (7)	07:32 17:00
5	06:01 21:00	06:26 20:37	06:56 19:53	07:25 19:03	10:16 (7) 11:00 (7)	06:59 17:19	09:06 (7) 10:15 (7)	07:33 16:59
6	06:01 20:59	06:27 20:36	06:57 19:51	07:26 19:02	10:14 (7) 11:02 (7)	07:01 17:18	09:06 (7) 10:15 (7)	07:34 16:59
7	06:02 20:59	06:28 20:35	06:58 19:50	07:27 19:00	10:13 (7) 11:04 (7)	07:02 17:17	09:08 (7) 10:15 (7)	07:35 16:59
8	06:03 20:59	06:29 20:34	06:59 19:48	07:29 18:58	10:11 (7) 11:06 (7)	07:03 17:16	09:08 (7) 10:14 (7)	07:36 16:59
9	06:03 20:58	06:30 20:33	07:00 19:47	07:30 18:57	10:11 (7) 11:08 (7)	07:04 17:15	09:09 (7) 10:13 (7)	07:37 16:59
10	06:04 20:58	06:31 20:31	07:01 19:45	07:31 18:55	10:10 (7) 11:10 (7)	07:05 17:14	09:10 (7) 10:12 (7)	07:38 16:59
11	06:05 20:58	06:32 20:30	07:02 19:43	07:32 18:54	10:08 (7) 11:11 (7)	07:06 17:13	09:12 (7) 10:12 (7)	07:38 16:59
12	06:05 20:57	06:33 20:29	07:03 19:42	07:33 18:52	10:07 (7) 11:12 (7)	07:08 17:12	09:13 (7) 10:11 (7)	07:39 16:59
13	06:06 20:57	06:34 20:27	07:04 19:40	07:34 18:51	10:06 (7) 11:13 (7)	07:09 17:11	09:14 (7) 10:10 (7)	07:40 17:00
14	06:07 20:56	06:35 20:26	07:05 19:38	07:35 18:49	10:05 (7) 11:14 (7)	07:10 17:10	09:15 (7) 10:08 (7)	07:41 17:00
15	06:08 20:56	06:36 20:25	07:06 19:37	07:36 18:47	10:05 (7) 11:15 (7)	07:11 17:09	09:17 (7) 10:08 (7)	07:41 17:00
16	06:08 20:55	06:37 20:23	07:07 19:35	07:37 18:46	10:04 (7) 11:15 (7)	07:12 17:09	09:18 (7) 10:07 (7)	07:42 17:00
17	06:09 20:55	06:38 20:22	07:08 19:33	07:38 18:44	10:03 (7) 11:16 (7)	07:13 17:08	09:19 (7) 10:05 (7)	07:43 17:01
18	06:10 20:54	06:39 20:21	07:09 19:31	07:39 18:43	10:03 (7) 11:16 (7)	07:15 17:07	09:21 (7) 10:04 (7)	07:43 17:01
19	06:11 20:53	06:40 20:19	07:10 19:30	18:49 (1) 07:40 18:41	10:03 (7) 11:17 (7)	07:16 17:06	09:23 (7) 10:02 (7)	07:44 17:01
20	06:12 20:53	06:41 20:18	07:11 19:28	18:45 (1) 07:41 18:40	10:03 (7) 11:18 (7)	07:17 17:06	09:25 (7) 10:01 (7)	07:45 17:02
21	06:12 20:52	06:42 20:16	07:12 19:26	18:43 (1) 07:42 18:39	10:02 (7) 11:18 (7)	07:18 17:05	09:27 (7) 10:00 (7)	07:45 17:02
22	06:13 20:51	06:43 20:15	07:13 19:25	18:41 (1) 07:43 18:37	10:02 (7) 11:18 (7)	07:19 17:04	09:30 (7) 09:57 (7)	07:46 17:03
23	06:14 20:50	06:43 20:13	07:13 19:23	18:40 (1) 07:45 18:36	10:02 (7) 11:18 (7)	07:20 17:04	09:32 (7) 09:55 (7)	07:46 17:03
24	06:15 20:49	06:44 20:12	07:14 19:21	18:38 (1) 07:46 18:34	10:01 (7) 11:18 (7)	07:21 17:03	09:36 (7) 09:51 (7)	07:47 17:04
25	06:16 20:49	06:45 20:10	07:15 19:20	18:38 (1) 06:47 18:33	09:02 (7) 10:19 (7)	07:23 17:03	07:47 17:04	
26	06:17 20:48	06:46 20:09	07:16 19:18	18:37 (1) 06:48 18:32	09:02 (7) 10:19 (7)	07:24 17:02	07:48 17:05	
27	06:18 20:47	06:47 20:07	07:17 19:16	18:36 (1) 06:49 18:30	09:02 (7) 10:18 (7)	07:25 17:02	07:48 17:05	
28	06:19 20:46	06:48 20:06	07:18 19:15	18:36 (1) 06:50 18:29	09:02 (7) 10:18 (7)	07:26 17:01	07:48 17:06	
29	06:19 20:45	06:49 20:04	07:19 19:13	18:36 (1) 06:51 18:28	09:02 (7) 10:18 (7)	07:27 17:01	07:49 17:07	
30	06:20 20:44	06:50 20:03	07:20 19:11	18:36 (1) 06:52 18:26	09:03 (7) 10:18 (7)	07:28 17:01	07:49 17:08	
31	06:21 20:43	06:51 20:01	07:21 19:10	18:49 (1) 17:26 17:25	09:03 (7) 10:18 (7)	07:29 17:00	07:49 17:08	
Potential sun hours	457	427	375	346	299	290		
Total, worst case			205	1998	1276			
Sun reduction			0,65	0,57	0,48			
Oper. time red.			0,78	0,78	0,78			
Wind dir. red.			0,68	0,62	0,62			
Total reduction			0,34	0,28	0,23			
Total, real			71	555	299			

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: T - R29

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49 17:09	07:36 17:43	07:01 18:16	07:11 19:50	06:26 20:21	05:58 20:49	18:50 (3) 21:00	06:22 20:42	19:03 (3) 19:59	06:52 19:10	07:21 17:24	06:55 17:00
2	07:49 17:10	07:35 17:44	07:00 18:18	07:10 19:51	06:25 20:22	05:58 20:50	18:50 (3) 21:00	06:23 20:41	19:04 (3) 19:58	06:53 19:08	07:22 17:23	06:56 17:00
3	07:49 17:11	07:34 17:46	06:58 18:19	07:08 19:52	06:24 20:23	05:57 20:51	18:51 (3) 21:00	06:24 20:40	19:06 (3) 19:56	06:54 19:06	07:23 17:22	06:57 17:00
4	07:50 17:12	07:33 17:47	06:57 18:20	07:06 19:53	06:23 20:24	05:57 20:52	18:51 (3) 21:00	06:25 20:39	19:07 (3) 19:55	06:55 19:05	07:24 17:20	06:58 17:00
5	07:50 17:13	07:32 17:48	06:55 18:21	07:05 19:54	06:21 20:25	05:57 20:52	18:51 (3) 21:00	06:26 20:37	19:09 (3) 19:53	06:56 19:03	07:25 17:19	06:59 16:59
6	07:50 17:14	07:31 17:49	06:54 18:22	07:03 19:55	06:20 20:26	05:56 20:53	18:52 (3) 20:59	06:27 20:36	19:11 (3) 19:51	06:57 19:02	07:26 17:18	07:01 16:59
7	07:49 17:15	07:30 17:50	06:52 18:23	07:02 19:56	06:19 20:27	05:56 20:54	18:52 (3) 20:59	06:28 20:35	19:14 (3) 19:50	06:58 19:00	07:27 17:17	07:02 16:59
8	07:49 17:16	07:29 17:52	06:50 18:24	07:00 19:57	06:18 20:28	05:56 20:54	18:52 (3) 20:59	06:29 20:34	19:15 (3) 19:48	06:59 18:58	07:29 17:16	07:03 16:59
9	07:49 17:17	07:28 17:53	06:49 18:25	06:58 19:58	06:17 20:29	05:56 20:55	18:52 (3) 20:58	06:30 20:33	19:16 (3) 19:46	07:00 18:57	07:30 17:15	07:04 16:59
10	07:49 17:18	07:27 17:54	06:47 18:26	06:57 19:59	06:16 20:30	05:55 20:55	18:53 (3) 20:58	06:31 20:31	19:17 (3) 19:45	07:01 18:55	07:31 17:14	07:05 16:59
11	07:49 17:19	07:26 17:55	06:46 18:28	06:55 20:00	06:15 20:31	05:55 20:56	18:53 (3) 20:58	06:32 20:30	19:18 (3) 19:43	07:02 18:54	07:32 17:13	07:06 16:59
12	07:49 17:20	07:25 17:57	06:44 18:29	06:54 20:01	06:14 20:32	05:55 20:56	18:53 (3) 20:57	06:33 20:29	19:19 (3) 19:42	07:03 18:52	07:33 17:12	07:08 16:59
13	07:48 17:21	07:23 17:58	06:42 18:30	06:52 20:02	06:13 20:33	05:55 20:57	18:52 (3) 20:57	06:34 20:27	19:20 (3) 19:40	07:04 18:51	07:34 17:11	07:09 17:00
14	07:48 17:22	07:22 17:59	06:41 18:31	06:51 20:03	06:11 20:34	05:55 20:57	18:51 (3) 20:56	06:35 20:26	19:21 (3) 19:38	07:05 18:49	07:35 17:10	07:10 17:00
15	07:48 17:23	07:21 18:00	06:39 18:32	06:49 20:04	06:11 20:35	05:55 20:58	18:51 (3) 20:58	06:36 20:25	19:22 (3) 19:37	07:06 18:47	07:36 17:09	07:11 17:00
16	07:47 17:24	07:20 18:01	06:38 18:33	06:48 20:05	06:10 20:36	05:55 20:58	18:51 (3) 20:58	06:37 20:23	19:23 (3) 19:43	07:07 18:46	07:37 17:09	07:12 17:00
17	07:47 17:25	07:18 18:03	06:36 18:34	06:46 20:06	06:09 20:37	05:55 20:58	18:50 (3) 20:58	06:38 20:22	19:24 (3) 19:33	07:08 18:44	07:38 17:08	07:13 17:01
18	07:46 17:26	07:17 18:04	06:34 18:35	06:45 20:07	06:08 20:38	05:55 20:59	18:50 (3) 20:54	06:39 20:21	19:25 (3) 19:31	07:09 18:43	07:39 17:07	07:15 17:01
19	07:46 17:27	07:16 18:05	06:33 18:36	06:43 20:08	06:07 20:38	05:55 20:59	18:49 (3) 20:53	06:40 20:19	19:26 (3) 19:30	07:10 18:41	07:40 17:06	07:16 17:01
20	07:45 17:28	07:14 18:06	06:31 18:37	06:42 20:09	06:06 20:39	05:55 20:59	18:49 (3) 20:52	06:41 20:18	19:27 (3) 19:28	07:11 18:40	07:41 17:06	07:17 17:02
21	07:45 17:29	07:13 18:06	06:29 18:37	06:40 20:09	06:05 20:39	05:56 20:59	18:49 (3) 20:52	06:42 20:18	19:28 (3) 19:29	07:12 18:40	07:42 17:06	07:18 17:02
22	07:44 17:30	07:11 18:07	06:28 18:38	06:39 20:10	06:04 20:40	05:56 21:00	18:49 (3) 20:52	06:43 20:16	19:29 (3) 19:30	07:12 18:40	07:43 17:05	07:19 17:02
23	07:44 17:31	07:10 18:08	06:26 18:39	06:37 20:11	06:04 20:41	05:56 21:00	18:49 (3) 20:51	06:44 20:15	19:30 (3) 19:31	07:13 18:40	07:45 17:04	07:20 17:03
24	07:43 17:32	07:09 18:10	06:24 18:40	06:36 20:12	06:03 20:42	05:56 21:00	18:49 (3) 20:50	06:44 20:13	19:31 (3) 19:32	07:14 18:40	07:46 17:04	07:21 17:03
25	07:43 17:33	07:07 18:11	06:23 18:41	06:34 20:13	06:02 20:43	05:57 21:00	18:49 (3) 20:49	06:45 20:12	19:32 (3) 19:33	07:15 18:40	07:47 17:03	07:23 17:04
26	07:41 17:35	07:06 18:12	06:21 18:42	06:33 20:14	06:02 20:44	05:57 21:00	18:49 (3) 20:49	06:46 20:10	19:33 (3) 19:34	07:16 18:40	07:48 17:03	07:24 17:04
27	07:41 17:37	07:04 18:13	06:20 18:43	06:32 20:15	06:01 20:45	05:57 21:00	18:49 (3) 20:48	06:47 20:09	19:34 (3) 19:35	07:17 18:40	07:49 17:02	07:25 17:05
28	07:40 17:38	07:03 18:14	06:18 18:44	06:30 20:16	06:00 20:46	05:58 21:00	18:49 (3) 20:47	06:48 20:07	19:35 (3) 19:36	07:18 18:40	07:50 17:02	07:26 17:06
29	07:39 17:39	18:15 18:45	06:15 18:45	06:29 20:18	06:00 20:46	05:58 21:00	18:50 (3) 20:46	06:49 20:06	19:36 (3) 19:37	07:19 18:40	07:51 17:01	07:27 17:06
30	07:38 17:41	17:46 17:15	06:14 18:46	06:29 20:19	06:00 20:47	05:58 21:00	18:50 (3) 20:45	06:50 20:04	19:37 (3) 19:38	07:20 18:40	07:52 17:01	07:28 17:07
31	07:37 17:42	17:41 17:42	06:13 19:49	06:28 20:20	05:59 20:48	05:59 20:49	18:50 (3) 19:34 (3)	06:51 20:43	19:39 (3) 19:03 (3)	06:51 20:01	06:54 17:25	07:29 17:08
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Total, worst case					986	1231	1303	177				
Sun reduction					0,57	0,66	0,74	0,72				
Oper. time red.					0,78	0,78	0,78	0,78				
Wind dir. red.					0,63	0,63	0,63	0,63				
Total reduction					0,28	0,32	0,36	0,35				
Total, real					276	397	471	62				

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progetto Shadow receptor: U - R21

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49	07:36	07:01	07:11	06:26	05:58	05:59	06:22	06:52	07:21	06:55	07:29
	17:09	17:43	18:16	19:50	20:21	20:50	21:00	20:42	20:00	19:10	17:24	17:00
2	07:49	07:36	07:00	07:10	06:25	05:58	05:59	06:23	06:53	07:22	06:56	07:30
	17:10	17:44	18:18	19:51	20:22	20:50	21:00	20:41	19:58	19:08	17:23	17:00
3	07:50	07:35	06:58	07:08	06:24	05:57	06:00	06:24	06:54	07:23	06:57	07:31
	17:11	17:45	18:19	19:52	20:23	20:51	21:00	20:40	19:56	19:06	17:22	17:00
4	07:50	07:34	06:57	07:06	06:23	05:57	06:00	06:25	06:55	07:24	06:58	07:32
	17:12	17:47	18:20	19:53	20:24	20:52	21:00	20:39	19:55	19:05	17:20	17:00
5	07:50	07:33	06:55	07:05	06:21	05:57	06:01	06:26	06:56	07:25	06:59	07:33
	17:13	17:48	18:21	19:54	20:25	20:52	21:00	20:37	19:53	19:03	17:19	16:59
6	07:50	07:31	06:54	07:03	06:20	05:56	06:01	06:27	06:57	07:26	07:01	07:34
	17:14	17:49	18:22	19:55	20:26	20:53	20:59	20:36	19:51	19:02	17:18	16:59
7	07:50	07:30	06:52	07:02	06:19	05:56	06:02	06:28	06:58	07:27	07:02	07:35
	17:15	17:50	18:23	19:56	20:27	20:54	20:59	20:35	19:50	19:00	17:17	16:59
8	07:49	07:29	06:50	07:00	06:18	05:56	06:03	06:29	06:59	07:29	07:03	07:36
	17:16	17:52	18:24	19:57	20:28	20:54	20:59	20:34	19:48	18:58	17:16	16:59
9	07:49	07:28	06:49	06:58	06:17	05:55	06:03	06:30	07:00	07:30	07:04	07:37
	17:17	17:53	18:25	19:58	20:29	20:55	20:59	20:33	19:47	18:57	17:15	16:59
10	07:49	07:27	06:47	06:57	06:16	05:55	06:04	06:31	07:01	07:31	07:05	07:38
	17:18	17:54	18:26	19:59	20:30	20:55	20:58	20:31	19:45	18:55	17:14	16:59
11	07:49	07:26	06:46	06:55	06:15	05:55	06:05	06:32	07:02	07:32	07:06	07:38
	17:19	17:55	18:27	20:00	20:31	20:56	20:58	20:30	19:43	18:54	17:13	16:59
12	07:49	07:25	06:44	06:54	06:13	05:55	06:05	06:33	07:03	07:33	07:08	07:39
	17:20	17:56	18:29	20:01	20:32	20:56	20:57	20:29	19:42	18:52	17:12	16:59
13	07:48	07:23	06:42	06:52	06:12	05:55	06:06	06:34	07:04	07:34	07:09	07:40
	17:21	17:58	18:30	20:02	20:33	20:57	20:57	20:28	19:40	18:50	17:11	16:59
14	07:48	07:22	06:41	06:51	06:11	05:55	06:07	06:35	07:05	07:35	07:10	07:41
	17:22	17:59	18:31	20:03	20:34	20:57	20:56	20:26	19:38	18:49	17:10	17:00
15	07:48	07:21	06:39	06:49	06:10	05:55	06:08	06:36	07:06	07:36	07:11	07:42
	17:23	18:00	18:32	20:04	20:35	20:58	20:56	20:25	19:37	18:47	17:09	17:00
16	07:47	07:20	06:38	06:48	06:09	05:55	06:08	06:37	07:07	07:37	07:12	07:42
	17:24	18:01	18:33	20:05	20:36	20:58	20:55	20:23	19:35	18:46	17:09	17:00
17	07:47	07:18	06:36	06:46	06:09	05:55	06:09	06:38	07:08	07:38	07:13	07:43
	17:25	18:02	18:34	20:06	20:37	20:59	20:55	20:22	19:33	18:44	17:08	17:00
18	07:46	07:17	06:34	06:45	06:08	05:55	06:10	06:39	07:09	07:39	07:15	07:44
	17:26	18:04	18:35	20:07	20:38	20:59	20:54	20:21	19:31	18:43	17:07	17:01
19	07:46	07:16	06:33	06:43	06:07	05:55	06:11	06:40	07:10	07:40	07:16	07:44
	17:27	18:05	18:36	20:08	20:39	20:59	20:53	20:19	19:30	18:41	17:06	17:01
20	07:45	07:14	06:31	06:42	06:06	05:55	06:11	06:41	07:11	07:41	07:17	07:45
	17:29	18:06	18:37	20:09	20:39	20:59	20:53	20:18	19:28	18:40	17:06	17:02
21	07:45	07:13	06:29	06:40	06:05	05:55	06:12	06:42	07:12	07:42	07:18	07:45
	17:30	18:07	18:38	20:10	20:40	21:00	20:52	20:16	19:26	18:39	17:05	17:02
22	07:44	07:11	06:28	06:39	06:04	05:56	06:13	06:42	07:12	07:43	07:19	07:46
	17:31	18:08	18:39	20:11	20:41	21:00	20:51	20:15	19:25	18:37	17:04	17:03
23	07:44	07:10	06:26	06:37	06:04	05:56	06:14	06:43	07:13	07:45	07:20	07:46
	17:32	18:10	18:40	20:12	20:42	21:00	20:50	20:13	19:23	18:36	17:04	17:03
24	07:43	07:09	06:24	06:36	06:03	05:56	06:15	06:44	07:14	07:46	07:21	07:47
	17:33	18:11	18:41	20:13	20:43	21:00	20:49	20:12	19:21	18:34	17:03	17:04
25	07:42	07:07	06:23	06:34	06:02	05:56	06:16	06:45	07:15	07:47	07:23	07:47
	17:35	18:12	18:42	20:14	20:44	21:00	20:49	20:10	19:20	18:33	17:03	17:04
26	07:42	07:06	06:21	06:33	06:01	05:57	06:17	06:46	07:16	07:48	07:24	07:48
	17:36	18:13	18:43	20:16	20:45	21:00	20:48	20:09	19:18	18:32	17:02	17:05
27	07:41	07:04	06:20	06:32	06:01	05:57	06:18	06:47	07:17	07:49	07:25	07:48
	17:37	18:14	18:44	20:17	20:46	21:00	20:47	20:07	19:16	18:30	17:02	17:05
28	07:40	07:03	06:18	06:30	06:00	05:57	06:18	06:48	07:18	07:50	07:26	07:48
	17:38	18:15	18:45	20:18	20:46	21:00	20:46	20:06	19:15	18:29	17:01	17:06
29	07:39		07:16	06:29	06:00	05:58	06:19	06:49	07:19	07:51	07:27	07:49
	17:39		19:46	20:19	20:47	21:00	20:45	20:04	19:13	18:28	17:01	17:07
30	07:38		07:15	06:28	05:59	05:58	06:20	06:50	07:20	07:52	07:28	07:49
	17:41		19:48	20:20	20:48	21:00	20:44	20:03	19:11	18:26	17:00	17:08
31	07:37		07:13		05:59		06:21	06:51		06:54		07:49
	17:42		19:49		20:49		20:43	20:01		17:25		17:08
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: V - R22

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June			
1	07:49 17:09	07:36 17:43	07:01 18:16	07:11 19:50	17:18 (6) 18:45 (6)	06:26 20:21	17:18 (6) 18:38 (6)	05:58 20:49	06:39 (8) 06:59 (8)
2	07:49 17:10	07:35 17:44	07:00 18:18	07:10 19:51	17:17 (6) 18:45 (6)	06:25 20:22	17:19 (6) 18:37 (6)	05:58 20:50	06:40 (8) 07:00 (8)
3	07:50 17:11	07:35 17:46	06:58 18:19	07:08 19:52	17:15 (6) 18:45 (6)	06:24 20:23	17:20 (6) 18:37 (6)	05:57 20:51	06:40 (8) 07:01 (8)
4	07:50 17:12	07:34 17:47	06:57 18:20	07:06 19:53	17:15 (6) 18:46 (6)	06:23 20:24	17:21 (6) 18:36 (6)	05:57 20:52	06:40 (8) 07:00 (8)
5	07:50 17:13	07:32 17:48	06:55 18:21	07:05 19:54	17:14 (6) 18:46 (6)	06:21 20:25	17:22 (6) 18:35 (6)	05:57 20:52	06:40 (8) 07:01 (8)
6	07:50 17:14	07:31 17:49	06:54 18:22	07:03 19:55	17:14 (6) 18:47 (6)	06:20 20:26	17:23 (6) 18:35 (6)	05:56 20:53	06:40 (8) 07:01 (8)
7	07:50 17:15	07:30 17:50	06:52 18:23	07:02 19:56	17:14 (6) 18:46 (6)	06:19 20:27	17:23 (6) 18:33 (6)	05:56 20:54	06:41 (8) 07:01 (8)
8	07:49 17:16	07:29 17:52	06:50 18:24	07:00 19:57	17:13 (6) 18:46 (6)	06:18 20:28	17:24 (6) 18:32 (6)	05:56 20:54	06:40 (8) 07:01 (8)
9	07:49 17:17	07:28 17:53	06:49 18:25	06:58 19:58	17:13 (6) 18:47 (6)	06:17 20:29	17:25 (6) 18:31 (6)	05:56 20:55	06:41 (8) 07:01 (8)
10	07:49 17:18	07:27 17:54	06:47 18:26	06:57 19:59	17:12 (6) 18:46 (6)	06:16 20:30	17:26 (6) 18:31 (6)	05:55 20:55	06:41 (8) 07:01 (8)
11	07:49 17:19	07:26 17:55	06:46 18:27	06:55 20:00	17:13 (6) 18:47 (6)	06:15 20:31	17:27 (6) 18:30 (6)	05:55 20:56	06:41 (8) 07:01 (8)
12	07:49 17:20	07:25 17:57	06:44 18:29	06:54 20:01	17:12 (6) 18:46 (6)	06:13 20:32	17:28 (6) 18:29 (6)	05:55 20:56	06:42 (8) 07:02 (8)
13	07:48 17:21	07:23 17:58	06:42 18:30	06:52 20:02	17:12 (6) 18:47 (6)	06:12 20:33	17:29 (6) 18:28 (6)	05:55 20:57	06:42 (8) 07:02 (8)
14	07:48 17:22	07:22 17:59	06:41 18:31	06:51 20:03	17:12 (6) 18:46 (6)	06:11 20:34	17:30 (6) 18:27 (6)	05:55 20:57	06:42 (8) 07:02 (8)
15	07:48 17:23	07:21 18:00	06:39 18:32	06:49 17:15 (6)	17:12 (6) 20:04	06:10 20:35	17:31 (6) 18:25 (6)	05:55 20:58	06:43 (8) 07:02 (8)
16	07:47 17:24	07:20 18:01	06:38 18:33	06:48 17:21 (6)	17:12 (6) 20:05	06:10 20:36	17:34 (6) 18:25 (6)	05:55 20:58	06:43 (8) 07:02 (8)
17	07:47 17:25	07:18 18:03	06:36 18:34	06:46 16:45 (6)	17:13 (6) 20:06	06:09 20:37	17:35 (6) 18:24 (6)	05:55 20:58	06:43 (8) 07:02 (8)
18	07:46 17:26	07:17 18:04	06:34 18:35	06:45 16:42 (6)	17:12 (6) 20:07	06:08 20:38	17:36 (6) 18:22 (6)	05:55 20:59	06:43 (8) 07:02 (8)
19	07:46 17:28	07:16 18:05	06:33 18:36	06:43 16:39 (6)	17:13 (6) 20:08	06:07 20:39	17:37 (6) 18:21 (6)	05:55 20:59	06:43 (8) 07:02 (8)
20	07:45 17:29	07:14 18:06	06:31 18:37	06:42 16:36 (6)	17:12 (6) 20:09	06:06 20:39	17:39 (6) 18:20 (6)	05:55 20:59	06:43 (8) 07:02 (8)
21	07:45 17:30	07:13 18:07	06:29 18:38	06:40 16:34 (6)	17:13 (6) 20:10	06:05 20:40	06:46 (8) 18:19 (6)	05:55 21:00	06:44 (8) 07:03 (8)
22	07:44 17:31	07:11 18:08	06:28 18:39	06:39 16:31 (6)	17:13 (6) 20:11	06:04 20:41	06:44 (8) 18:17 (6)	05:56 21:00	06:44 (8) 07:03 (8)
23	07:44 17:32	07:10 18:10	06:26 18:40	06:37 16:30 (6)	17:14 (6) 20:12	06:04 20:42	06:42 (8) 18:15 (6)	05:56 21:00	06:44 (8) 07:03 (8)
24	07:43 17:33	07:09 18:11	06:24 18:41	06:36 16:28 (6)	17:15 (6) 20:13	06:03 20:43	06:42 (8) 18:14 (6)	05:56 21:00	06:44 (8) 07:03 (8)
25	07:42 17:35	07:07 18:12	06:23 18:42	06:34 16:26 (6)	17:14 (6) 20:14	06:02 20:44	06:41 (8) 18:12 (6)	05:56 21:00	06:45 (8) 07:04 (8)
26	07:41 17:36	07:06 18:13	06:21 18:43	06:33 16:25 (6)	17:15 (6) 20:15	06:02 20:45	06:40 (8) 18:09 (6)	05:57 21:00	06:45 (8) 07:04 (8)
27	07:41 17:37	07:04 18:14	06:20 18:44	06:32 16:23 (6)	17:16 (6) 20:17	06:01 20:46	06:40 (8) 18:06 (6)	05:57 21:00	06:45 (8) 07:04 (8)
28	07:40 17:38	07:03 18:15	06:18 18:45	06:30 16:21 (6)	17:16 (6) 20:18	06:00 20:46	06:40 (8) 18:05 (8)	05:57 21:00	06:46 (8) 07:05 (8)
29	07:39 17:39		07:16 19:46	06:29 17:21 (6)	17:17 (6) 20:19	06:00 20:47	06:40 (8) 18:04 (8)	05:58 21:00	06:45 (8) 07:05 (8)
30	07:38 17:41		07:15 19:48	06:28 17:19 (6)	17:18 (6) 20:20	05:59 20:48	06:39 (8) 18:03 (8)	05:58 21:00	06:46 (8) 07:06 (8)
31	07:37 17:42		07:13 19:49	06:27 17:18 (6)	17:18 (6) 20:20	05:59 20:49	06:40 (8) 18:02 (8)	05:58 21:00	06:46 (8) 07:06 (8)
Potential sun hours	299	298	370	398	447	450			
Total, worst case			1068	2712	1603	590			
Sun reduction			0,49	0,52	0,57	0,66			
Oper. time red.			0,78	0,78	0,78	0,78			
Wind dir. red.			0,68	0,68	0,67	0,65			
Total reduction			0,26	0,28	0,30	0,34			
Total, real			274	747	483	199			

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: V - R22

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:59	06:46 (8) 06:22	17:38 (6) 06:52	17:12 (6) 07:21	06:55	07:29
	21:00	19 07:05 (8) 20:42	62 18:40 (6) 19:59	94 18:46 (6) 19:10	17:24	17:00
2	05:59	06:46 (8) 06:23	17:37 (6) 06:53	17:11 (6) 07:22	06:56	07:30
	21:00	20 07:06 (8) 20:41	64 18:41 (6) 19:58	94 18:45 (6) 19:08	17:23	17:00
3	06:00	06:46 (8) 06:24	17:36 (6) 06:54	17:11 (6) 07:23	06:57	07:31
	21:00	20 07:06 (8) 20:40	65 18:41 (6) 19:56	94 18:45 (6) 19:06	17:22	17:00
4	06:00	06:46 (8) 06:25	17:35 (6) 06:55	17:11 (6) 07:24	06:58	07:32
	21:00	21 07:07 (8) 20:39	67 18:42 (6) 19:55	93 18:44 (6) 19:05	17:20	17:00
5	06:01	06:46 (8) 06:26	17:34 (6) 06:56	17:10 (6) 07:25	06:59	07:33
	21:00	20 07:06 (8) 20:37	69 18:43 (6) 19:53	92 18:42 (6) 19:03	17:19	16:59
6	06:01	06:47 (8) 06:27	17:33 (6) 06:57	17:09 (6) 07:26	07:01	07:34
	20:59	20 07:07 (8) 20:36	71 18:44 (6) 19:51	93 18:42 (6) 19:02	17:18	16:59
7	06:02	06:46 (8) 06:28	17:32 (6) 06:58	17:09 (6) 07:27	07:02	07:35
	20:59	21 07:07 (8) 20:35	73 18:45 (6) 19:50	92 18:41 (6) 19:00	17:17	16:59
8	06:03	06:47 (8) 06:29	17:30 (6) 06:59	17:09 (6) 07:29	07:03	07:36
	20:59	20 07:07 (8) 20:34	74 18:44 (6) 19:48	91 18:40 (6) 18:58	17:16	16:59
9	06:03	06:47 (8) 06:30	17:29 (6) 07:00	17:09 (6) 07:30	07:04	07:37
	20:58	21 07:08 (8) 20:33	76 18:45 (6) 19:47	90 18:39 (6) 18:57	17:15	16:59
10	06:04	06:47 (8) 06:31	17:28 (6) 07:01	17:10 (6) 07:31	07:05	07:38
	20:58	20 07:07 (8) 20:31	77 18:45 (6) 19:45	88 18:38 (6) 18:55	17:14	16:59
11	06:05	06:47 (8) 06:32	17:27 (6) 07:02	17:10 (6) 07:32	07:06	07:38
	20:58	21 07:08 (8) 20:30	79 18:46 (6) 19:43	87 18:37 (6) 18:54	17:13	16:59
12	06:05	06:48 (8) 06:33	17:26 (6) 07:03	17:10 (6) 07:33	07:08	07:39
	20:57	20 07:08 (8) 20:29	80 18:46 (6) 19:42	86 18:36 (6) 18:52	17:12	16:59
13	06:06	06:48 (8) 06:34	17:25 (6) 07:04	17:10 (6) 07:34	07:09	07:40
	20:57	19 07:07 (8) 20:27	82 18:47 (6) 19:40	85 18:35 (6) 18:51	17:11	17:00
14	06:07	06:48 (8) 06:35	17:24 (6) 07:05	17:11 (6) 07:35	07:10	07:41
	20:56	20 07:08 (8) 20:26	83 18:47 (6) 19:38	83 18:34 (6) 18:49	17:10	17:00
15	06:08	06:49 (8) 06:36	17:24 (6) 07:06	17:11 (6) 07:36	07:11	07:41
	20:56	19 07:08 (8) 20:25	84 18:48 (6) 19:37	82 18:33 (6) 18:47	17:09	17:00
16	06:08	06:49 (8) 06:37	17:23 (6) 07:07	17:12 (6) 07:37	07:12	07:42
	20:55	21 18:11 (6) 20:23	85 18:48 (6) 19:35	79 18:31 (6) 18:46	17:09	17:00
17	06:09	06:49 (8) 06:38	17:22 (6) 07:08	17:13 (6) 07:38	07:13	07:43
	20:55	33 18:17 (6) 20:22	86 18:48 (6) 19:33	77 18:30 (6) 18:44	17:08	17:00
18	06:10	06:50 (8) 06:39	17:21 (6) 07:09	17:14 (6) 07:39	07:15	07:44
	20:54	38 18:20 (6) 20:21	87 18:48 (6) 19:31	74 18:28 (6) 18:43	17:07	17:01
19	06:11	06:51 (8) 06:40	17:20 (6) 07:10	17:15 (6) 07:40	07:16	07:44
	20:53	40 18:22 (6) 20:19	89 18:49 (6) 19:30	71 18:26 (6) 18:41	17:06	17:01
20	06:12	06:52 (8) 06:41	17:19 (6) 07:11	17:15 (6) 07:41	07:17	07:45
	20:53	44 18:25 (6) 20:18	90 18:49 (6) 19:28	68 18:23 (6) 18:40	17:06	17:02
21	06:12	06:53 (8) 06:42	17:19 (6) 07:12	17:16 (6) 07:42	07:18	07:45
	20:52	45 18:27 (6) 20:16	90 18:49 (6) 19:26	65 18:21 (6) 18:39	17:05	17:02
22	06:13	06:54 (8) 06:43	17:18 (6) 07:12	17:18 (6) 07:43	07:19	07:46
	20:51	46 18:28 (6) 20:15	91 18:49 (6) 19:25	61 18:19 (6) 18:37	17:04	17:03
23	06:14	06:57 (8) 06:43	17:16 (6) 07:13	17:19 (6) 07:45	07:20	07:46
	20:50	42 18:29 (6) 20:13	92 18:48 (6) 19:23	58 18:17 (6) 18:36	17:04	17:03
24	06:15	17:48 (6) 06:44	17:16 (6) 07:14	17:21 (6) 07:46	07:21	07:47
	20:49	43 18:31 (6) 20:12	92 18:48 (6) 19:21	53 18:14 (6) 18:34	17:03	17:04
25	06:16	17:47 (6) 06:45	17:15 (6) 07:15	17:24 (6) 06:47	07:23	07:47
	20:49	45 18:32 (6) 20:10	93 18:48 (6) 19:20	47 18:11 (6) 17:33	17:03	17:04
26	06:17	17:46 (6) 06:46	17:14 (6) 07:16	17:26 (6) 06:48	07:24	07:48
	20:48	48 18:34 (6) 20:09	93 18:47 (6) 19:18	42 18:08 (6) 17:32	17:02	17:05
27	06:18	17:45 (6) 06:47	17:14 (6) 07:17	17:30 (6) 06:49	07:25	07:48
	20:47	50 18:35 (6) 20:07	93 18:47 (6) 19:16	34 18:04 (6) 17:30	17:02	17:05
28	06:19	17:43 (6) 06:48	17:13 (6) 07:18	17:35 (6) 06:50	07:26	07:48
	20:46	52 18:35 (6) 20:06	94 18:47 (6) 19:15	23 17:58 (6) 17:29	17:01	17:06
29	06:19	17:41 (6) 06:49	17:13 (6) 07:19	06:51	07:27	07:49
	20:45	55 18:36 (6) 20:04	94 18:47 (6) 19:13	17:28	17:01	17:07
30	06:20	17:40 (6) 06:50	17:12 (6) 07:20	06:52	07:28	07:49
	20:44	58 18:38 (6) 20:03	94 18:46 (6) 19:11	17:26	17:01	17:08
31	06:21	17:39 (6) 06:51	17:12 (6)	06:54		07:49
	20:43	60 18:39 (6) 20:01	94 18:46 (6)	17:25		17:08
Potential sun hours	457	427	375	346	299	290
Total, worst case	1021	2563	2096			
Sun reduction	0,74	0,72	0,65			
Oper. time red.	0,78	0,78	0,78			
Wind dir. red.	0,67	0,68	0,68			
Total reduction	0,39	0,38	0,34			
Total, real	394	976	723			

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: W - R20

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June		
1	07:49	07:36	07:01	17:47 (6)	07:11	06:26	05:58	
	17:09	17:43	18:16	8 17:55 (6)	19:50	20:21	20:49	
2	07:49	07:35	07:00	17:50 (6)	07:10	06:25	05:58	
	17:10	17:44	18:17	6 17:56 (6)	19:51	20:22	20:50	
3	07:49	07:34	06:58	07:08	06:24	05:57		
	17:11	17:45	18:19	19:52	20:23	20:51		
4	07:50	07:33	06:57	07:06	06:23	05:57		
	17:12	17:47	18:20	19:53	20:24	20:52		
5	07:50	07:32	06:55	07:05	06:21	05:57		
	17:13	17:48	18:21	19:54	20:25	20:52		
6	07:50	07:31	06:54	07:03	06:20	05:56		
	17:14	17:49	18:22	19:55	20:26	20:53		
7	07:49	07:30	06:52	07:02	06:19	05:56		
	17:15	17:50	18:23	19:56	20:27	20:54		
8	07:49	07:29	06:50	07:00	06:18	05:56		
	17:16	17:52	18:24	19:57	20:28	20:54		
9	07:49	07:28	06:49	06:58	06:17	05:55		
	17:17	17:53	18:25	19:58	20:29	20:55		
10	07:49	07:27	06:47	06:57	19:29 (4)	06:16	05:55	
	17:18	17:54	18:26	19:59	6 19:35 (4)	20:30	20:55	
11	07:49	07:26	06:46	06:55	19:26 (4)	06:14	05:55	
	17:19	17:55	18:27	20:00	13 19:39 (4)	20:31	20:56	
12	07:49	07:25	06:44	06:54	19:24 (4)	06:13	05:55	
	17:20	17:56	18:29	20:01	15 19:39 (4)	20:32	20:56	
13	07:48	07:23	06:42	06:52	19:23 (4)	06:12	05:55	
	17:21	17:58	18:30	20:02	18 19:41 (4)	20:33	20:57	
14	07:48	07:22	06:41	06:51	19:21 (4)	06:11	05:55	
	17:22	17:59	18:31	20:03	20 19:41 (4)	20:34	20:57	
15	07:48	07:21	06:39	06:49	19:21 (4)	06:10	05:55	
	17:23	18:00	18:32	20:04	21 19:42 (4)	20:35	20:58	
16	07:47	07:20	06:38	06:48	19:19 (4)	06:09	05:55	
	17:24	18:01	18:33	20:05	23 19:42 (4)	20:36	20:58	
17	07:47	07:18	06:36	06:46	19:20 (4)	06:09	05:55	
	17:25	18:02	18:34	20:06	22 19:42 (4)	20:37	20:58	
18	07:46	07:17	06:34	06:44	19:19 (4)	06:08	05:55	
	17:26	18:04	18:35	20:07	23 19:42 (4)	20:38	20:59	
19	07:46	07:16	06:33	06:43	19:19 (4)	06:07	05:55	
	17:27	18:05	18:36	20:08	23 19:42 (4)	20:38	20:59	
20	07:45	07:14	17:43 (6)	06:31	06:42	19:19 (4)	06:06	05:55
	17:29	18:06	2 17:44 (6)	18:37	20:09	21 19:40 (4)	20:39	20:59
21	07:45	07:13	17:43 (6)	06:29	06:40	19:20 (4)	06:05	05:55
	17:30	18:07	3 17:46 (6)	18:38	20:10	20 19:40 (4)	20:40	21:00
22	07:44	07:11	17:42 (6)	06:28	06:39	19:20 (4)	06:04	05:56
	17:31	18:08	4 17:46 (6)	18:39	20:11	19 19:39 (4)	20:41	21:00
23	07:44	07:10	17:43 (6)	06:26	06:37	19:21 (4)	06:04	05:56
	17:32	18:09	5 17:48 (6)	18:40	20:12	17 19:38 (4)	20:42	21:00
24	07:43	07:09	17:43 (6)	06:24	06:36	19:22 (4)	06:03	05:56
	17:33	18:11	7 17:50 (6)	18:41	20:13	14 19:36 (4)	20:43	21:00
25	07:42	07:07	17:43 (6)	06:23	06:34	19:24 (4)	06:02	05:56
	17:35	18:12	7 17:50 (6)	18:42	20:14	9 19:33 (4)	20:44	21:00
26	07:41	07:06	17:44 (6)	06:21	06:33	06:01	05:57	
	17:36	18:13	8 17:52 (6)	18:43	20:15	20:45	21:00	
27	07:41	07:04	17:44 (6)	06:19	06:32	06:01	05:57	
	17:37	18:14	9 17:53 (6)	18:44	20:16	20:46	21:00	
28	07:40	07:03	17:46 (6)	06:18	06:30	06:00	05:57	
	17:38	18:15	8 17:54 (6)	18:45	20:17	20:46	21:00	
29	07:39		07:16	06:29	06:29	06:00	05:58	
	17:39		19:46	20:19	20:47	21:00		
30	07:38		07:15	06:28	06:28	05:59	05:58	
	17:41		19:47	20:20	20:48	21:00		
31	07:37		07:13	06:27	06:27	05:59		
	17:42		19:49		20:49			
Potential sun hours	299	298	370	398	447	450		
Total, worst case		53	14	284				
Sun reduction		0,45	0,49	0,52				
Oper. time red.		0,78	0,78	0,78				
Wind dir. red.		0,67	0,67	0,65				
Total reduction		0,24	0,25	0,26				
Total, real		12	4	75				

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: W - R20

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December		
1	05:59 21:00	06:22 20:42	06:52 19:59	19:25 (4) 19:38 (4)	07:21 19:10	06:55 17:24	07:29 17:00	
2	05:59 21:00	06:23 20:41	06:53 19:58	19:28 (4) 19:34 (4)	07:22 19:08	06:56 17:23	07:30 17:00	
3	06:00 21:00	06:24 20:40	06:54 19:56		07:23 19:06	06:57 17:21	07:31 17:00	
4	06:00 21:00	06:25 20:39	06:55 19:55		07:24 19:05	06:58 17:20	07:32 16:59	
5	06:01 21:00	06:26 20:37	06:56 19:53		07:25 19:03	06:59 17:19	07:33 16:59	
6	06:01 20:59	06:27 20:36	06:57 19:51		07:26 19:02	07:01 17:18	07:34 16:59	
7	06:02 20:59	06:28 20:35	06:58 19:50		07:27 19:00	07:02 17:17	07:35 16:59	
8	06:03 20:59	06:29 20:34	06:59 19:48		07:28 18:58	07:03 17:16	07:36 16:59	
9	06:03 20:58	06:30 20:33	07:00 19:46		07:29 18:57	07:04 17:15	07:37 16:59	
10	06:04 20:58	06:31 20:31	07:01 19:45		07:31 18:55	07:05 17:14	07:37 16:59	
11	06:05 20:58	06:32 20:30	07:02 19:43		07:32 18:54	07:06 17:13	07:38 16:59	
12	06:05 20:57	06:33 20:29	07:03 19:41		07:33 18:52	18:23 (6) 07:08	07:39 16:59	
13	06:06 20:57	06:34 20:27	07:04 19:40		07:34 18:50	18:30 (6) 18:28 (6)	07:40 17:11	16:59
14	06:07 20:56	06:35 20:26	07:05 19:38		07:35 18:49	18:18 (6) 18:26 (6)	07:41 17:10	17:00
15	06:07 20:56	06:36 20:25	07:06 19:36		07:36 18:47	18:16 (6) 18:25 (6)	07:41 17:09	17:00
16	06:08 20:55	06:37 20:23	07:07 19:35		07:37 18:46	18:15 (6) 18:23 (6)	07:42 17:08	17:00
17	06:09 20:54	06:38 20:22	19:34 (4) 19:37 (4) 19:33	07:08	07:38 18:44	18:14 (6) 18:21 (6)	07:43 17:08	17:00
18	06:10 20:54	06:39 20:21	19:30 (4) 19:41 (4) 19:31	07:09	07:39 18:43	18:14 (6) 18:20 (6)	07:43 17:07	17:01
19	06:11 20:53	06:40 20:19	19:28 (4) 19:43 (4) 19:30	07:10	07:40 18:41	18:14 (6) 18:19 (6)	07:44 17:06	17:01
20	06:11 20:52	06:40 20:18	19:26 (4) 19:44 (4) 19:28	07:10	07:41 18:40	18:14 (6) 18:17 (6)	07:45 17:06	17:02
21	06:12 20:52	06:41 20:16	19:25 (4) 19:45 (4) 19:26	07:11	07:42 18:39	18:14 (6) 18:16 (6)	07:45 17:05	17:02
22	06:13 20:51	06:42 20:15	19:24 (4) 19:44 (4) 19:25	07:12	07:43 18:37	07:19 17:04	07:46 17:02	17:02
23	06:14 20:50	06:43 20:13	19:23 (4) 19:44 (4) 19:23	07:13	07:45 18:36	07:20 17:04	07:46 17:03	17:03
24	06:15 20:49	06:44 20:12	19:22 (4) 19:45 (4) 19:21	07:14	07:46 18:34	07:21 17:03	07:47 17:04	17:04
25	06:16 20:49	06:45 20:10	19:22 (4) 19:44 (4) 19:20	07:15	06:47 17:33	07:22 17:03	07:47 17:04	17:04
26	06:17 20:48	06:46 20:09	19:21 (4) 19:44 (4) 19:18	07:16	06:48 17:32	07:24 17:02	07:48 17:05	17:05
27	06:18 20:47	06:47 20:07	19:21 (4) 19:44 (4) 19:16	07:17	06:49 17:30	07:25 17:02	07:48 17:05	17:05
28	06:18 20:46	06:48 20:06	19:22 (4) 19:43 (4) 19:15	07:18	06:50 17:29	07:26 17:01	07:48 17:06	17:06
29	06:19 20:45	06:49 20:04	19:22 (4) 19:42 (4) 19:13	07:19	06:51 17:28	07:27 17:01	07:49 17:07	17:07
30	06:20 20:44	06:50 20:03	19:23 (4) 19:41 (4) 19:11	07:20	06:52 17:26	07:28 17:00	07:49 17:08	17:08
31	06:21 20:43	06:51 20:01	19:24 (4) 19:39 (4)		06:54 17:25		07:49 17:08	17:08
Potential sun hours	457	427	375	346	299	290		
Total, worst case		274	19	63				
Sun reduction		0,72	0,65	0,57				
Oper. time red.		0,78	0,78	0,78				
Wind dir. red.		0,65	0,65	0,67				
Total reduction		0,37	0,33	0,30				
Total, real		100	6	19				

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: X - R19

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June				
1	07:49 17:09	07:36 17:43	07:01 18:16	07:11 19:50	07:41 (9) 08:08 (9)	06:26 20:21	08:59 (8) 12:11 (8)	05:58 20:49	08:39 (8) 241	12:40 (8)
2	07:49 17:10	07:35 17:44	07:00 18:17	07:10 19:51	07:40 (9) 08:07 (9)	06:25 20:22	08:58 (8) 12:12 (8)	05:58 20:50	08:39 (8) 242	12:41 (8)
3	07:49 17:11	07:34 17:45	06:58 18:19	07:08 19:52	07:39 (9) 08:07 (9)	06:24 20:23	08:57 (8) 12:14 (8)	05:57 20:51	08:40 (8) 241	12:41 (8)
4	07:50 17:12	07:33 17:47	06:57 18:20	07:06 19:53	07:39 (9) 08:07 (9)	06:22 20:24	08:56 (8) 12:15 (8)	05:57 20:52	08:39 (8) 242	12:41 (8)
5	07:50 17:13	07:32 17:48	06:55 18:21	07:05 19:54	07:39 (9) 10:51 (8)	06:21 20:25	08:55 (8) 12:17 (8)	05:56 20:52	08:39 (8) 243	12:42 (8)
6	07:50 17:14	07:31 17:49	06:54 18:22	07:03 19:55	07:39 (9) 11:01 (8)	06:20 20:26	08:53 (8) 12:17 (8)	05:56 20:53	08:39 (8) 244	12:43 (8)
7	07:49 17:15	07:30 17:50	06:52 18:23	07:02 19:56	07:40 (9) 11:08 (8)	06:19 20:27	08:52 (8) 12:18 (8)	05:56 20:54	08:39 (8) 243	12:42 (8)
8	07:49 17:16	07:29 17:52	06:50 18:24	07:00 19:57	07:40 (9) 11:14 (8)	06:18 20:28	08:52 (8) 12:20 (8)	05:56 20:54	08:39 (8) 244	12:43 (8)
9	07:49 17:17	07:28 17:53	06:49 18:25	06:58 19:58	07:41 (9) 11:19 (8)	06:17 20:29	08:51 (8) 12:21 (8)	05:55 20:55	08:39 (8) 244	12:43 (8)
10	07:49 17:18	07:27 17:54	06:47 18:26	06:57 19:59	07:42 (9) 11:23 (8)	06:16 20:30	08:50 (8) 12:22 (8)	05:55 20:55	08:39 (8) 245	12:44 (8)
11	07:49 17:19	07:26 17:55	06:46 18:27	06:55 20:00	07:44 (9) 11:27 (8)	06:14 20:31	08:49 (8) 12:23 (8)	05:55 20:56	08:39 (8) 245	12:44 (8)
12	07:49 17:20	07:25 17:56	06:44 18:28	06:54 20:01	07:47 (9) 11:30 (8)	06:13 20:32	08:48 (8) 12:24 (8)	05:55 20:56	08:39 (8) 246	12:45 (8)
13	07:48 17:21	07:23 17:58	06:42 18:30	06:52 20:02	09:37 (8) 11:34 (8)	06:12 20:33	08:47 (8) 12:25 (8)	05:55 20:57	08:40 (8) 245	12:45 (8)
14	07:48 17:22	07:22 17:59	06:41 18:31	06:51 20:03	09:34 (8) 11:37 (8)	06:11 20:34	08:47 (8) 12:26 (8)	05:55 20:57	08:40 (8) 245	12:45 (8)
15	07:48 17:23	07:21 18:00	06:39 18:32	06:49 20:04	09:30 (8) 11:39 (8)	06:10 20:35	08:46 (8) 12:27 (8)	05:55 20:58	08:40 (8) 246	12:46 (8)
16	07:47 17:24	07:19 18:01	06:38 18:33	06:47 20:05	09:28 (8) 11:42 (8)	06:09 20:36	08:45 (8) 12:28 (8)	05:55 20:58	08:40 (8) 246	12:46 (8)
17	07:47 17:25	07:18 18:02	06:36 18:34	06:46 20:06	09:25 (8) 11:44 (8)	06:08 20:37	08:45 (8) 12:30 (8)	05:55 20:58	08:40 (8) 246	12:46 (8)
18	07:46 17:26	07:17 18:04	06:34 18:35	06:44 20:07	09:23 (8) 11:47 (8)	06:08 20:38	08:44 (8) 12:30 (8)	05:55 20:59	08:40 (8) 246	12:46 (8)
19	07:46 17:27	07:16 18:05	06:33 18:36	06:43 20:08	09:21 (8) 11:50 (8)	06:07 20:38	08:44 (8) 12:31 (8)	05:55 20:59	08:40 (8) 246	12:46 (8)
20	07:45 17:29	07:14 18:06	06:31 18:37	06:41 20:09	09:18 (8) 11:52 (8)	06:06 20:39	08:43 (8) 12:32 (8)	05:55 20:59	08:40 (8) 246	12:46 (8)
21	07:45 17:30	07:13 18:07	06:29 18:38	06:40 20:10	09:17 (8) 11:54 (8)	06:05 20:40	08:42 (8) 12:32 (8)	05:55 21:00	08:41 (8) 246	12:47 (8)
22	07:44 17:31	07:11 18:08	06:28 18:39	06:39 20:11	09:14 (8) 11:55 (8)	06:04 20:41	08:43 (8) 12:34 (8)	05:56 21:00	08:41 (8) 246	12:47 (8)
23	07:44 17:32	07:10 18:09	06:26 18:40	06:37 20:12	09:12 (8) 11:58 (8)	06:04 20:42	08:42 (8) 12:34 (8)	05:56 21:00	08:41 (8) 246	12:47 (8)
24	07:43 17:33	07:09 18:11	06:24 18:41	06:36 20:13	09:11 (8) 12:00 (8)	06:03 20:43	08:41 (8) 12:34 (8)	05:56 21:00	08:41 (8) 246	12:47 (8)
25	07:42 17:34	07:07 18:12	06:23 18:42	06:34 20:14	09:09 (8) 12:01 (8)	06:02 20:44	08:41 (8) 12:36 (8)	05:56 21:00	08:42 (8) 246	12:48 (8)
26	07:41 17:36	07:06 18:13	06:21 18:43	06:33 20:15	09:07 (8) 12:03 (8)	06:01 20:45	08:41 (8) 12:36 (8)	05:57 21:00	08:42 (8) 246	12:48 (8)
27	07:41 17:37	07:04 18:14	06:19 18:44	06:32 20:16	09:05 (8) 12:04 (8)	06:01 20:46	08:41 (8) 12:37 (8)	05:57 21:00	08:42 (8) 246	12:48 (8)
28	07:40 17:38	07:03 18:15	06:18 18:45	06:30 20:17	09:04 (8) 12:06 (8)	06:00 20:46	08:40 (8) 12:37 (8)	05:57 21:00	08:43 (8) 246	12:49 (8)
29	07:39 17:39		07:16 19:46	07:44 (9) 20:19	09:03 (8) 12:08 (8)	06:00 20:47	08:40 (8) 12:39 (8)	05:58 21:00	08:43 (8) 245	12:48 (8)
30	07:38 17:41		07:15 19:47	07:42 (9) 20:20	09:01 (8) 12:10 (8)	05:59 20:48	08:40 (8) 12:39 (8)	05:58 21:00	08:43 (8) 246	12:49 (8)
31	07:37 17:42		07:13 19:48	07:41 (9) 20:20		05:59 20:49	08:40 (8) 12:40 (8)			
Potential sun hours	299	298	370	398	447	450				
Total, worst case			124	3718	6829	7345				
Sun reduction			0,49	0,52	0,57	0,66				
Oper. time red.			0,78	0,78	0,78	0,78				
Wind dir. red.			0,67	0,67	0,67	0,67				
Total reduction			0,25	0,27	0,30	0,35				
Total, real			32	1015	2045	2537				

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

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

Project:

Giave WindPro - fotosimulazioni

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07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: X - R19

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December						
1	05:59	08:43 (8)	06:22	08:59 (8)	06:52	07:43 (9)	07:21	06:55	07:29			
	21:00	246	12:49 (8)	20:42	215	12:34 (8)	19:59	117	11:26 (8)	19:10	17:24	17:00
2	05:59	08:43 (8)	06:23	09:00 (8)	06:53	07:41 (9)	07:22	06:56	07:30			
	21:00	245	12:48 (8)	20:41	213	12:33 (8)	19:58	114	11:22 (8)	19:08	17:23	17:00
3	06:00	08:44 (8)	06:24	09:01 (8)	06:54	07:39 (9)	07:23	06:57	07:31			
	21:00	245	12:49 (8)	20:40	211	12:32 (8)	19:56	108	11:17 (8)	19:06	17:21	17:00
4	06:00	08:45 (8)	06:25	09:02 (8)	06:55	07:37 (9)	07:24	06:58	07:32			
	21:00	244	12:49 (8)	20:38	209	12:31 (8)	19:55	101	11:11 (8)	19:05	17:20	16:59
5	06:01	08:45 (8)	06:26	09:03 (8)	06:56	07:36 (9)	07:25	06:59	07:33			
	21:00	244	12:49 (8)	20:37	207	12:30 (8)	19:53	92	11:05 (8)	19:03	17:19	16:59
6	06:01	08:45 (8)	06:27	09:03 (8)	06:57	07:35 (9)	07:26	07:01	07:34			
	20:59	244	12:49 (8)	20:36	206	12:29 (8)	19:51	78	10:57 (8)	19:02	17:18	16:59
7	06:02	08:45 (8)	06:28	09:03 (8)	06:58	07:34 (9)	07:27	07:02	07:35			
	20:59	243	12:48 (8)	20:35	203	12:28 (8)	19:50	60	10:47 (8)	19:00	17:17	16:59
8	06:03	08:46 (8)	06:29	09:04 (8)	06:59	07:34 (9)	07:28	07:03	07:36			
	20:59	243	12:49 (8)	20:34	201	12:25 (8)	19:48	27	08:01 (9)	18:58	17:16	16:59
9	06:03	08:47 (8)	06:30	09:05 (8)	07:00	07:33 (9)	07:29	07:04	07:37			
	20:58	242	12:49 (8)	20:33	199	12:24 (8)	19:46	28	08:01 (9)	18:57	17:15	16:59
10	06:04	08:47 (8)	06:31	09:06 (8)	07:01	07:33 (9)	07:31	07:05	07:37			
	20:58	241	12:48 (8)	20:31	196	12:22 (8)	19:45	28	08:01 (9)	18:55	17:14	16:59
11	06:05	08:47 (8)	06:32	09:07 (8)	07:02	07:33 (9)	07:32	07:06	07:38			
	20:58	241	12:48 (8)	20:30	193	12:20 (8)	19:43	27	08:00 (9)	18:54	17:13	16:59
12	06:05	08:48 (8)	06:33	09:08 (8)	07:03	07:33 (9)	07:33	07:08	07:39			
	20:57	240	12:48 (8)	20:29	191	12:19 (8)	19:41	26	07:59 (9)	18:52	17:12	16:59
13	06:06	08:48 (8)	06:34	09:09 (8)	07:04	07:33 (9)	07:34	07:09	07:40			
	20:57	239	12:47 (8)	20:27	188	12:17 (8)	19:40	26	07:59 (9)	18:50	17:11	16:59
14	06:07	08:49 (8)	06:35	09:11 (8)	07:05	07:34 (9)	07:35	07:10	07:41			
	20:56	238	12:47 (8)	20:26	184	12:15 (8)	19:38	23	07:57 (9)	18:49	17:10	17:00
15	06:07	08:49 (8)	06:36	09:12 (8)	07:06	07:35 (9)	07:36	07:11	07:41			
	20:56	238	12:47 (8)	20:25	182	12:14 (8)	19:36	21	07:56 (9)	18:47	17:09	17:00
16	06:08	08:49 (8)	06:37	09:13 (8)	07:07	07:36 (9)	07:37	07:12	07:42			
	20:55	237	12:46 (8)	20:23	179	12:12 (8)	19:35	18	07:54 (9)	18:46	17:08	17:00
17	06:09	08:50 (8)	06:38	09:14 (8)	07:08	07:38 (9)	07:38	07:13	07:43			
	20:54	236	12:46 (8)	20:22	176	12:10 (8)	19:33	13	07:51 (9)	18:44	17:08	17:00
18	06:10	08:51 (8)	06:39	09:16 (8)	07:09	07:41 (9)	07:39	07:15	07:43			
	20:54	234	12:45 (8)	20:21	172	12:08 (8)	19:31	5	07:46 (9)	18:43	17:07	17:01
19	06:11	08:51 (8)	06:39	09:17 (8)	07:09	07:40	07:16	07:44				
	20:53	234	12:45 (8)	20:19	168	12:05 (8)	19:30	18:41	17:06	17:01		
20	06:11	08:52 (8)	06:40	09:19 (8)	07:10	07:41	07:17	07:45				
	20:52	233	12:45 (8)	20:18	164	12:03 (8)	19:28	18:40	17:05	17:02		
21	06:12	08:52 (8)	06:41	09:20 (8)	07:11	07:42	07:18	07:45				
	20:52	231	12:43 (8)	20:16	161	12:01 (8)	19:26	18:38	17:05	17:02		
22	06:13	08:52 (8)	06:42	09:21 (8)	07:12	07:43	07:19	07:46				
	20:51	231	12:43 (8)	20:15	157	11:58 (8)	19:25	18:37	17:04	17:02		
23	06:14	08:53 (8)	06:43	09:22 (8)	07:13	07:44	07:20	07:46				
	20:50	229	12:42 (8)	20:13	153	11:55 (8)	19:23	18:36	17:04	17:03		
24	06:15	08:54 (8)	06:44	09:24 (8)	07:14	07:46	07:21	07:47				
	20:49	228	12:42 (8)	20:12	148	11:52 (8)	19:21	18:34	17:03	17:04		
25	06:16	08:55 (8)	06:45	09:26 (8)	07:15	06:47	07:22	07:47				
	20:48	226	12:41 (8)	20:10	144	11:50 (8)	19:20	17:33	17:03	17:04		
26	06:17	08:55 (8)	06:46	09:28 (8)	07:16	06:48	07:24	07:48				
	20:48	226	12:41 (8)	20:09	139	11:47 (8)	19:18	17:32	17:02	17:05		
27	06:18	08:56 (8)	06:47	09:30 (8)	07:17	06:49	07:25	07:48				
	20:47	224	12:40 (8)	20:07	134	11:44 (8)	19:16	17:30	17:02	17:05		
28	06:18	08:56 (8)	06:48	09:32 (8)	07:18	06:50	07:26	07:48				
	20:46	222	12:38 (8)	20:06	129	11:41 (8)	19:15	17:29	17:01	17:06		
29	06:19	08:57 (8)	06:49	09:35 (8)	07:19	06:51	07:27	07:48				
	20:45	220	12:37 (8)	20:04	122	11:37 (8)	19:13	17:28	17:01	17:07		
30	06:20	08:57 (8)	06:50	09:37 (8)	07:20	06:52	07:28	07:49				
	20:44	219	12:36 (8)	20:03	117	11:34 (8)	19:11	17:26	17:00	17:07		
31	06:21	08:58 (8)	06:51	07:47 (9)		06:54	07:49					
	20:43	217	12:35 (8)	20:01	117	11:30 (8)		17:25		17:08		
Potential sun hours	457		427		375		346		299		290	
Total, worst case		7280		5378		912						
Sun reduction		0,74		0,72		0,65						
Oper. time red.		0,78		0,78		0,78						
Wind dir. red.		0,67		0,67		0,67						
Total reduction		0,39		0,38		0,34						
Total, real		2818		2028		312						

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

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

Project: Giave WindPro - fotosimulazioni

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SHADOW - Calendar

Calculation: Giave progettoShadow receptor: Y - R18

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGERO] Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec 3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time N NE E SE S SW W NW Sum 704 820 622 355 622 1.039 1.312 1.360 6.834 Idle start wind speed: Cut in wind speed from power curve

Table with 12 columns (January to December) and multiple rows showing sunrise/sunset times, potential sun hours, and various reduction factors (Total, worst case, Sun, Oper. time, Wind dir., Total, Total real).

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

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

Project:

Giave WindPro - fotosimulazioni

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SHADOW - Calendar

Calculation: Giave progettoShadow receptor: Z - R13

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:49 17:09	16:02 (8) 17:43	07:36 16:59 (8)	07:01 18:16		05:58
2	07:49 17:10	16:02 (8) 17:44	07:35 16:58 (8)	07:00 18:17		05:58
3	07:49 17:11	16:02 (8) 17:45	07:34 16:57 (8)	06:58 18:19		05:57
4	07:49 17:12	16:03 (8) 17:47	07:33 16:56 (8)	06:57 18:20		05:57
5	07:50 17:13	16:03 (8) 17:48	07:32 16:54 (8)	06:55 18:21		05:56
6	07:49 17:14	16:03 (8) 17:49	07:31 16:52 (8)	06:53 18:22		05:56
7	07:49 17:15	16:48 (8) 17:50	07:30 16:49 (8)	06:52 18:23		05:56
8	07:49 17:16	08:25 (9) 17:52	07:30 16:49 (8)	06:52 18:23		05:56
9	07:49 17:17	08:23 (9) 17:52	07:29 16:42 (8)	06:50 18:24		05:56
10	07:49 17:18	08:22 (9) 17:53	07:28 16:42 (8)	06:49 18:24		05:55
11	07:49 17:19	08:21 (9) 17:54	07:27 16:41 (8)	06:47 18:25		05:55
12	07:49 17:20	08:20 (9) 17:55	07:26 16:40 (8)	06:46 18:26		05:55
13	07:48 17:21	08:20 (9) 17:56	07:24 16:39 (8)	06:44 18:27		05:55
14	07:48 17:22	08:19 (9) 17:57	07:23 16:38 (8)	06:42 18:28		05:55
15	07:48 17:23	16:56 (8) 18:00	07:22 16:37 (8)	06:41 18:29		05:55
16	07:47 17:24	08:18 (9) 18:01	07:21 16:36 (8)	06:39 18:30		05:55
17	07:47 17:25	08:17 (9) 18:02	07:19 16:35 (8)	06:37 18:31		05:55
18	07:46 17:26	08:16 (9) 18:03	07:18 16:34 (8)	06:36 18:32		05:55
19	07:46 17:27	08:16 (9) 18:04	07:17 16:33 (8)	06:34 18:33		05:55
20	07:45 17:28	08:16 (9) 18:05	07:15 16:32 (8)	06:33 18:34		05:55
21	07:45 17:29	17:03 (8) 18:06	07:14 16:31 (8)	06:32 18:35		05:55
22	07:44 17:30	08:15 (9) 18:07	07:13 16:30 (8)	06:31 18:36		05:55
23	07:44 17:31	08:15 (9) 18:08	07:11 16:29 (8)	06:29 18:37		05:56
24	07:43 17:32	08:14 (9) 18:09	07:10 16:28 (8)	06:28 18:38		05:56
25	07:42 17:33	08:14 (9) 18:10	07:09 16:27 (8)	06:27 18:39		05:56
26	07:41 17:34	08:14 (9) 18:11	07:07 16:26 (8)	06:25 18:40		05:56
27	07:41 17:35	08:14 (9) 18:12	07:06 16:25 (8)	06:24 18:41		05:57
28	07:40 17:36	08:14 (9) 18:13	07:05 16:24 (8)	06:23 18:42		05:57
29	07:39 17:37	08:14 (9) 18:14	07:04 16:23 (8)	06:22 18:43		05:57
30	07:38 17:38	08:14 (9) 18:15	07:03 16:22 (8)	06:21 18:44		05:57
31	07:37 17:39	08:14 (9) 18:16	07:02 16:21 (8)	06:20 18:45		05:57
Potential sun hours	299	298	370	398	447	450
Total, worst case	2402	1010	115	224		
Sun reduction	0,40	0,45	0,49	0,52		
Oper. time red.	0,78	0,78	0,78	0,78		
Wind dir. red.	0,66	0,63	0,67	0,67		
Total reduction	0,20	0,22	0,26	0,27		
Total, real	492	223	29	61		

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: Z - R13

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December
1	05:59 21:00	06:22 20:42	06:52 19:59	07:21 19:10	06:55 17:24	07:46 (9) 08:31 (9)
2	05:59 21:00	06:23 20:41	06:53 19:58	07:22 19:08	06:56 17:23	07:45 (9) 08:32 (9)
3	06:00 21:00	06:24 20:40	06:54 19:56	07:23 19:06	06:57 17:21	07:45 (9) 08:31 (9)
4	06:00 21:00	06:25 20:38	06:55 19:55	07:24 (11) 19:05	06:58 17:20	07:45 (9) 08:30 (9)
5	06:01 21:00	06:26 20:37	06:56 19:53	07:25 19:03	06:59 17:19	07:45 (9) 08:30 (9)
6	06:01 20:59	06:27 20:36	06:57 19:51	07:26 19:01	07:00 17:18	07:44 (9) 08:29 (9)
7	06:02 20:59	06:28 20:35	06:58 19:50	07:27 19:00	07:02 17:17	07:44 (9) 08:29 (9)
8	06:03 20:59	06:29 20:34	06:59 19:48	07:28 18:58	07:03 17:16	07:45 (9) 08:28 (9)
9	06:03 20:58	06:30 20:33	07:00 19:46	07:29 18:57	07:04 17:15	07:45 (9) 08:28 (9)
10	06:04 20:58	06:31 20:31	07:01 19:45	07:30 18:55	07:05 17:14	07:44 (9) 08:27 (9)
11	06:04 20:58	06:32 20:30	07:02 19:43	07:32 18:53	07:06 17:13	07:44 (9) 08:27 (9)
12	06:05 20:57	06:33 20:29	07:03 19:41	07:33 18:52	07:08 17:12	07:45 (9) 08:27 (9)
13	06:06 20:57	06:34 20:27	07:04 19:40	07:34 18:50	07:09 17:11	07:46 (9) 08:27 (9)
14	06:07 20:56	06:35 20:26	07:05 19:38	07:35 18:49	07:10 17:10	07:46 (9) 08:26 (9)
15	06:07 20:56	06:36 20:25	07:06 19:36	07:36 18:47	07:11 17:09	07:46 (9) 08:26 (9)
16	06:08 20:55	06:37 20:23	07:07 19:35	07:37 18:46	07:12 17:08	07:47 (9) 08:26 (9)
17	06:09 20:54	06:38 20:22	07:08 19:33	07:38 18:44	07:13 17:08	07:48 (9) 08:25 (9)
18	06:10 20:54	06:38 20:21	07:08 19:31	07:39 18:43	07:15 17:07	07:48 (9) 08:25 (9)
19	06:11 20:53	06:39 20:19	07:09 19:30	07:40 18:41	07:16 17:06	07:49 (9) 08:24 (9)
20	06:11 20:52	06:40 20:18	07:10 19:28	07:41 18:40	07:17 17:05	07:50 (9) 08:24 (9)
21	06:12 20:52	06:41 20:16	07:11 19:26	07:42 18:38	07:18 17:05	07:51 (9) 08:23 (9)
22	06:13 20:51	06:42 20:15	07:12 19:25	07:43 18:37	07:19 17:04	07:52 (9) 08:23 (9)
23	06:14 20:50	06:43 20:13	07:13 19:23	07:44 18:36	07:20 17:04	07:52 (9) 08:22 (9)
24	06:15 20:49	06:44 20:12	07:14 19:21	07:46 18:34	07:21 17:03	07:53 (9) 08:22 (9)
25	06:16 20:48	06:45 20:10	07:15 19:20	07:47 18:33	07:22 17:02	07:55 (9) 08:21 (9)
26	06:17 20:48	06:46 20:09	07:16 19:18	07:48 18:31	07:24 17:02	07:56 (9) 08:21 (9)
27	06:17 20:47	06:47 20:07	07:17 19:16	07:49 18:30	07:25 17:02	07:57 (9) 08:20 (9)
28	06:18 20:46	06:48 20:06	07:18 19:15	07:50 18:29	07:26 17:01	07:58 (9) 08:20 (9)
29	06:19 20:45	06:49 20:04	07:19 19:13	07:51 18:28	07:27 17:01	07:59 (9) 08:19 (9)
30	06:20 20:44	06:50 20:03	07:20 19:11	07:52 18:26	07:28 17:00	08:01 (9) 08:19 (9)
31	06:21 20:43	06:51 20:01		07:54 18:25	07:29 08:31 (9)	07:49 17:08
Potential sun hours	457	427	375	346	299	290
Total, worst case			345	328	2516	1390
Sun reduction			0,65	0,57	0,48	0,42
Oper. time red.			0,78	0,78	0,78	0,78
Wind dir. red.			0,67	0,62	0,65	0,68
Total reduction			0,34	0,28	0,25	0,22
Total, real			118	91	617	309

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AA - R14

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

Table with columns for months (January to December) and rows for each day of the month, showing sunrise and sunset times and shadow reduction percentages.

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

Matrix with 2 rows and 4 columns: Day in month, Sun rise (hh:mm), Sun set (hh:mm), Minutes with flicker, First time (hh:mm) with flicker, Last time (hh:mm) with flicker, (WTG causing flicker first time), (WTG causing flicker last time)

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:58 / 46

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Calculated:

07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AB - R15

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum
 704 820 622 355 622 1.039 1.312 1.360 6.834

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

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:49 17:09	07:36 17:43	07:01 18:16	07:11 19:49	06:26 20:21	19:48 (8) 19:57 (8)	05:58 20:49	05:59 21:00	06:22 20:42	20:01 (8) 20:18 (8)	06:52 19:59	07:21 19:10	06:55 17:24
2	07:49 17:10	07:35 17:44	07:00 18:17	07:10 19:51	06:25 20:22	19:48 (8) 19:59 (8)	05:58 20:50	05:59 21:00	06:23 20:41	20:00 (8) 20:17 (8)	06:53 19:58	07:22 19:08	06:56 17:23
3	07:49 17:11	07:34 17:45	06:58 18:19	07:08 19:52	06:24 20:23	19:48 (8) 20:00 (8)	05:57 20:51	06:00 21:00	06:24 20:40	19:59 (8) 20:16 (8)	06:54 19:56	07:23 19:06	06:57 17:21
4	07:49 17:12	07:33 17:47	06:57 18:20	07:06 19:53	06:22 20:24	19:48 (8) 20:01 (8)	05:57 20:52	06:00 21:00	06:25 20:38	19:59 (8) 20:16 (8)	06:55 19:55	07:24 19:05	06:58 17:20
5	07:49 17:13	07:32 17:48	06:55 18:21	07:05 19:54	06:21 20:25	19:48 (8) 20:02 (8)	05:56 20:52	06:01 21:00	06:26 20:37	19:58 (8) 20:15 (8)	06:56 19:53	07:25 19:03	06:59 17:19
6	07:49 17:14	07:31 17:49	06:53 18:22	07:03 19:55	06:20 20:26	19:47 (8) 20:02 (8)	05:56 20:53	06:01 20:59	06:27 20:36	19:57 (8) 20:12 (8)	06:57 19:51	07:26 19:01	07:00 17:18
7	07:49 17:15	07:30 17:50	06:52 18:23	07:01 19:56	06:19 20:27	19:48 (8) 20:03 (8)	05:56 20:53	06:02 20:59	06:28 20:35	19:57 (8) 20:11 (8)	06:58 19:50	07:27 19:00	07:02 17:17
8	07:49 17:16	07:29 17:52	06:50 18:24	07:00 19:57	06:18 20:28	19:48 (8) 20:04 (8)	05:56 20:54	06:03 20:59	06:29 20:34	19:57 (8) 20:10 (8)	06:59 19:48	07:28 18:58	07:03 17:16
9	07:49 17:17	07:28 17:53	06:49 18:25	06:58 19:58	06:17 20:29	19:48 (8) 20:05 (8)	05:55 20:55	06:03 20:58	06:30 20:32	19:57 (8) 20:09 (8)	07:00 19:46	07:29 18:57	07:04 17:15
10	07:49 17:18	07:27 17:54	06:47 18:26	06:57 19:59	06:15 20:30	19:49 (8) 20:06 (8)	05:55 20:55	06:04 20:58	06:31 20:31	19:57 (8) 20:08 (8)	07:01 19:45	07:30 18:55	07:05 17:14
11	07:49 17:19	07:26 17:55	06:46 18:27	06:55 20:00	06:14 20:31	19:50 (8) 20:07 (8)	05:55 20:56	06:04 20:58	06:32 20:30	19:57 (8) 20:07 (8)	07:02 19:43	07:31 18:53	07:06 17:13
12	07:49 17:20	07:24 17:56	06:44 18:28	06:54 20:01	06:13 20:32	19:50 (8) 20:08 (8)	05:55 20:56	06:05 20:57	06:33 20:29	19:57 (8) 20:06 (8)	07:03 19:41	07:33 18:52	07:07 17:12
13	07:48 17:21	07:23 17:58	06:42 18:30	06:52 20:02	06:12 20:33	19:51 (8) 20:09 (8)	05:55 20:57	06:06 20:57	06:34 20:27	19:58 (8) 20:05 (8)	07:04 19:40	07:34 18:50	07:09 17:11
14	07:48 17:22	07:22 17:59	06:41 18:31	06:50 20:03	06:11 20:34	19:52 (8) 20:10 (8)	05:55 20:56	06:07 20:56	06:35 20:26	19:58 (8) 20:03 (8)	07:05 19:38	07:35 18:49	07:10 17:00
15	07:48 17:23	07:21 18:00	06:39 18:32	06:49 20:04	06:10 20:35	19:53 (8) 20:11 (8)	05:55 20:56	06:07 20:56	06:36 20:25	19:58 (8) 20:02 (8)	07:06 19:36	07:36 18:47	07:11 17:09
16	07:47 17:24	07:19 18:01	06:37 18:33	06:47 20:05	06:09 20:36	19:55 (8) 20:10 (8)	05:55 20:55	06:08 20:55	06:37 20:23	19:59 (8) 20:01 (8)	07:07 19:35	07:37 18:46	07:12 17:08
17	07:47 17:25	07:18 18:02	06:36 18:34	06:46 20:06	06:08 20:37	19:58 (8) 20:08 (8)	05:55 20:54	06:09 20:54	06:37 20:22	20:01 (8) 19:33	07:07 18:41	07:38 18:44	07:13 17:08
18	07:46 17:26	07:17 18:04	06:34 18:35	06:44 20:07	06:08 20:37	20:01 (8) 20:04 (8)	05:55 20:54	06:10 20:54	06:38 20:21	19:33 19:31	07:08 18:43	07:39 18:41	07:14 17:01
19	07:46 17:27	07:15 18:05	06:33 18:36	06:43 20:08	06:07 20:38	20:04 (8) 20:59	05:55 20:53	06:11 20:53	06:39 20:19	19:31 19:30	07:09 18:41	07:40 18:41	07:16 17:06
20	07:45 17:29	07:14 18:06	06:31 18:37	06:41 20:09	06:06 20:39	20:05 (8) 20:59	05:55 20:52	06:11 20:52	06:40 20:18	19:30 19:28	07:10 18:40	07:41 18:40	07:17 17:01
21	07:45 17:30	07:13 18:07	06:29 18:38	06:40 20:10	06:05 20:40	20:06 (8) 20:59	05:55 20:52	06:12 20:52	06:41 20:16	19:31 19:26	07:11 18:42	07:42 18:42	07:18 17:02
22	07:44 17:31	07:11 18:08	06:28 18:39	06:39 20:11	06:04 20:41	20:07 (8) 21:00	05:56 20:51	06:13 20:51	06:42 20:15	19:32 19:25	07:12 18:37	07:43 18:43	07:19 17:02
23	07:43 17:32	07:10 18:09	06:26 18:40	06:37 20:12	06:03 20:42	20:08 (8) 21:00	05:56 20:50	06:14 20:50	06:43 20:13	19:33 19:23	07:13 18:36	07:44 18:36	07:20 17:03
24	07:43 17:33	07:08 18:11	06:24 18:41	06:36 20:13	06:03 20:43	20:09 (8) 21:00	05:56 20:49	06:15 20:49	06:44 20:12	19:34 19:21	07:14 18:34	07:45 18:34	07:21 17:03
25	07:42 17:34	07:07 18:12	06:23 18:42	06:34 20:14	06:02 20:44	20:10 (8) 21:00	05:56 20:48	06:16 20:48	06:45 20:10	19:35 19:20	07:15 18:33	07:46 18:33	07:22 17:04
26	07:41 17:36	07:06 18:13	06:21 18:43	06:33 20:15	06:01 20:45	20:11 (8) 20:48	05:57 20:45	06:17 20:48	06:46 20:09	20:10 (8) 20:17 (8)	06:46 19:18	07:47 18:31	07:23 17:02
27	07:41 17:37	07:04 18:14	06:19 18:44	06:32 20:16	06:01 20:45	20:12 (8) 20:45	05:57 20:45	06:17 20:47	06:47 20:07	20:06 (8) 20:19 (8)	06:47 19:16	07:48 18:30	07:24 17:02
28	07:40 17:38	07:03 18:15	06:18 18:45	06:30 20:17	06:00 20:46	20:13 (8) 20:46	05:57 20:46	06:18 20:46	06:48 20:06	20:05 (8) 20:21 (8)	06:48 19:15	07:49 18:29	07:25 17:01
29	07:39 17:39	07:02 18:16	06:17 18:46	06:29 20:18	06:00 20:47	20:14 (8) 20:47	05:58 20:45	06:19 20:45	06:49 20:04	20:03 (8) 20:21 (8)	06:49 19:13	07:50 18:28	07:26 17:01
30	07:38 17:40	07:01 18:17	06:16 18:47	06:28 20:19	06:00 20:48	20:15 (8) 20:48	05:58 20:48	06:20 20:44	06:50 20:03	20:02 (8) 20:20 (8)	06:50 19:11	07:51 18:26	07:27 17:07
31	07:37 17:42	07:00 18:18	06:15 18:48	06:27 20:20	06:00 20:49	20:16 (8) 20:49	05:58 20:49	06:21 20:43	06:51 20:01 (8)	20:01 (8) 20:19 (8)	06:51 19:11	07:52 17:25	07:28 17:08
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290	
Total, worst case				21	256			90	188				
Sun reduction				0,52	0,57			0,74	0,72				
Oper. time red.				0,78	0,78			0,78	0,78				
Wind dir. red.				0,61	0,61			0,61	0,61				
Total reduction				0,25	0,27			0,35	0,34				
Total, real				5	69			32	64				

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AC - R16

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834

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

	January	February	March	April	May	June	July	August	September	October	November	December		
1	07:49	07:36	07:01	07:11	06:26	05:58	20:09 (8)	05:59	06:22	20:11 (8)	06:52	07:21	06:55	07:29
2	07:49	07:35	07:00	07:10	06:25	05:58	20:23 (8)	21:00	06:23	20:11 (8)	06:53	07:22	06:56	07:30
3	07:49	07:34	06:58	07:08	06:24	05:57	20:23 (8)	21:00	06:24	20:17 (8)	06:54	07:23	06:57	07:31
4	07:49	07:33	06:57	07:06	06:22	05:57	20:21 (8)	21:00	06:25	20:16 (8)	06:55	07:24	06:58	07:32
5	07:49	07:32	06:55	07:05	06:21	05:56	20:15 (8)	21:00	06:26	20:12 (8)	06:56	07:25	06:59	07:33
6	07:49	07:31	06:53	07:03	06:20	05:56	20:19 (8)	21:00	06:27	20:15 (8)	06:57	07:26	07:00	07:34
7	07:49	07:30	06:52	07:01	06:19	05:56		06:01	06:28	20:13 (8)	06:58	07:27	07:02	07:35
8	07:49	07:29	06:50	07:00	06:18	05:56	20:02 (8)	05:56	06:29	20:11 (8)	06:59	07:28	07:03	07:36
9	07:49	07:28	06:49	06:58	06:17	05:55	20:04 (8)	20:59	06:30	20:09 (8)	06:59	07:29	07:04	07:37
10	07:49	07:27	06:47	06:57	06:15	05:55	20:05 (8)	20:58	06:31	20:27 (8)	07:00	07:30	07:05	07:38
11	07:49	07:26	06:46	06:56	06:14	05:55	20:01 (8)	20:58	06:32	20:19 (8)	07:01	07:31	07:06	07:39
12	07:49	07:24	06:44	06:54	06:13	05:55	20:06 (8)	20:55	06:33	20:29 (8)	07:02	07:32	07:07	07:40
13	07:48	07:23	06:42	06:52	06:12	05:55	20:07 (8)	20:56	06:34	20:28 (8)	07:03	07:33	07:07	07:41
14	07:48	07:22	06:41	06:50	06:11	05:55	20:08 (8)	20:56	06:35	20:31 (8)	07:04	07:34	07:08	07:42
15	07:48	07:21	06:39	06:49	06:10	05:55	20:09 (8)	20:57	06:36	20:32 (8)	07:05	07:35	07:09	07:43
16	07:47	07:19	06:37	06:47	06:09	05:55	20:10 (8)	20:57	06:37	20:15 (8)	07:06	07:36	07:11	07:44
17	07:47	07:18	06:36	06:46	06:08	05:55	20:11 (8)	20:58	06:38	20:32 (8)	07:07	07:37	07:12	07:45
18	07:46	07:17	06:34	06:44	06:08	05:55	20:00 (8)	20:55	06:39	20:30 (8)	07:08	07:38	07:13	07:46
19	07:46	07:15	06:33	06:43	06:07	05:55	20:11 (8)	20:58	06:40	20:13 (8)	07:09	07:39	07:14	07:47
20	07:45	07:14	06:31	06:41	06:06	05:55	20:12 (8)	20:59	06:41	20:30 (8)	07:10	07:40	07:15	07:48
21	07:45	07:13	06:29	06:40	06:05	05:55	20:13 (8)	20:59	06:42	20:32 (8)	07:11	07:41	07:16	07:49
22	07:44	07:11	06:28	06:39	06:04	05:56	20:14 (8)	20:59	06:43	20:16 (8)	07:12	07:42	07:17	07:50
23	07:43	07:10	06:26	06:37	06:03	05:56	20:15 (8)	20:59	06:44	20:27 (8)	07:13	07:43	07:18	07:51
24	07:43	07:08	06:24	06:36	06:03	05:56	20:16 (8)	20:59	06:45	20:11 (8)	07:14	07:44	07:19	07:52
25	07:42	07:07	06:23	06:34	06:02	05:56	20:17 (8)	21:00	06:46	20:29 (8)	07:15	07:45	07:20	07:53
26	07:41	07:06	06:21	06:33	06:01	05:57	20:02 (8)	21:00	06:47	20:18 (8)	07:16	07:46	07:21	07:54
27	07:41	07:04	06:19	06:32	06:01	05:57	20:18 (8)	21:00	06:48	20:11 (8)	07:17	07:47	07:22	07:55
28	07:40	07:03	06:18	06:30	06:00	05:57	20:03 (8)	21:00	06:49	20:25 (8)	07:18	07:48	07:23	07:56
29	07:39	07:02	06:16	06:29	06:00	05:58	20:04 (8)	21:00	06:50	20:11 (8)	07:19	07:49	07:24	07:57
30	07:38	07:01	06:15	06:28	06:00	05:58	20:05 (8)	21:00	06:51	20:24 (8)	07:20	07:50	07:25	07:58
31	07:37	07:00	06:14	06:27	06:00	05:58	20:06 (8)	21:00	06:52	20:10 (8)	07:21	07:51	07:26	07:59
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290		
Total, worst case					296	39	317	22						
Sun reduction					0,57	0,66	0,74	0,72						
Oper. time red.					0,78	0,78	0,78	0,78						
Wind dir. red.					0,59	0,59	0,59	0,59						
Total reduction					0,26	0,30	0,34	0,33						
Total, real					78	12	108	7						

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AD - R17

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49 17:09	07:36 17:43	07:01 18:16	07:11 19:49	06:26 20:21	19:53 (8) 05:58	05:59 21:00	06:22 20:42	20:05 (8) 06:52	07:21 19:10	06:55 17:24	07:29 17:00
2	07:49 17:10	07:35 17:44	07:00 18:17	07:10 19:50	06:25 20:22	19:53 (8) 05:58	05:59 21:00	06:23 20:41	20:04 (8) 06:53	07:22 19:08	06:56 17:23	07:30 17:00
3	07:49 17:11	07:34 17:45	06:58 18:19	07:08 19:52	06:24 20:23	19:53 (8) 05:57	06:00 21:00	06:24 20:40	20:03 (8) 06:54	07:23 19:06	06:57 17:21	07:31 17:00
4	07:49 17:12	07:33 17:47	06:57 18:20	07:06 19:53	06:22 20:24	19:53 (8) 05:57	06:00 21:00	06:25 20:38	20:03 (8) 06:55	07:24 19:05	06:58 17:20	07:32 16:59
5	07:49 17:13	07:32 17:48	06:55 18:21	07:05 19:54	06:21 20:25	19:53 (8) 05:56	06:01 21:00	06:26 20:37	20:03 (8) 06:56	07:25 19:03	06:59 17:19	07:33 16:59
6	07:49 17:14	07:31 17:49	06:53 18:22	07:03 19:55	06:20 20:26	19:52 (8) 05:56	06:01 20:59	06:27 20:36	20:01 (8) 06:57	07:26 19:01	07:00 17:18	07:34 16:59
7	07:49 17:15	07:30 17:50	06:52 18:23	07:01 19:56	06:19 20:27	19:52 (8) 05:56	06:02 20:59	06:28 20:35	20:01 (8) 06:58	07:27 19:00	07:02 17:17	07:35 16:59
8	07:49 17:16	07:29 17:51	06:50 18:24	07:00 19:57	06:18 20:28	19:52 (8) 05:56	06:03 20:59	06:29 20:34	20:01 (8) 06:59	07:28 18:58	07:03 17:16	07:36 16:59
9	07:49 17:17	07:28 17:53	06:49 18:25	06:58 19:58	06:17 20:29	19:53 (8) 05:55	06:03 20:58	06:30 20:32	20:01 (8) 07:00	07:29 18:57	07:04 17:15	07:37 16:59
10	07:49 17:18	07:27 17:54	06:47 18:26	06:57 19:59	06:15 20:30	19:53 (8) 05:55	06:04 20:58	06:31 20:31	20:01 (8) 07:01	07:30 18:55	07:05 17:14	07:37 16:59
11	07:49 17:19	07:26 17:55	06:46 18:27	06:55 20:00	06:14 20:31	19:54 (8) 05:55	06:04 20:58	06:32 20:30	20:02 (8) 07:02	07:31 18:53	07:06 17:13	07:38 16:59
12	07:49 17:20	07:24 17:56	06:44 18:28	06:54 20:01	06:13 20:32	19:54 (8) 05:55	06:05 20:57	06:33 20:29	20:02 (8) 07:03	07:32 18:52	07:07 17:12	07:39 16:59
13	07:48 17:21	07:23 17:58	06:42 18:30	06:52 20:02	06:12 20:33	19:55 (8) 05:55	06:06 20:57	06:34 20:27	20:02 (8) 07:04	07:33 18:50	07:09 17:11	07:40 16:59
14	07:48 17:22	07:22 17:59	06:41 18:31	06:50 20:03	06:11 20:34	19:56 (8) 05:55	06:07 20:56	06:35 20:26	20:05 (8) 07:05	07:34 18:49	07:10 17:10	07:41 17:00
15	07:48 17:23	07:21 18:00	06:39 18:32	06:49 20:04	06:10 20:35	19:57 (8) 05:55	06:07 20:56	06:36 20:25	07:06 19:36	07:36 18:47	07:11 17:09	07:41 17:00
16	07:47 17:24	07:19 18:01	06:37 18:33	06:47 20:05	06:09 20:36	19:58 (8) 05:55	06:08 20:56	06:37 20:23	07:07 19:35	07:37 18:46	07:12 17:08	07:42 17:00
17	07:47 17:25	07:18 18:02	06:36 18:34	06:46 20:06	06:08 20:36	20:02 (8) 05:55	06:09 20:54	06:37 20:22	07:07 19:33	07:38 18:44	07:13 17:08	07:43 17:00
18	07:46 17:26	07:17 18:04	06:34 18:35	06:44 20:07	06:08 20:37	20:10 (8) 05:55	06:10 20:54	06:38 20:21	07:08 19:31	07:39 18:43	07:14 17:07	07:43 17:01
19	07:46 17:27	07:15 18:05	06:33 18:36	06:43 20:08	06:07 20:38	05:55 06:11	06:11 20:53	06:39 20:19	07:09 19:30	07:40 18:41	07:16 17:06	07:44 17:01
20	07:45 17:29	07:14 18:06	06:31 18:37	06:41 20:09	06:06 20:39	05:55 06:11	06:11 20:52	06:40 20:18	07:10 19:28	07:41 18:40	07:17 17:05	07:45 17:01
21	07:45 17:30	07:13 18:07	06:29 18:38	06:40 20:10	06:05 20:40	05:55 06:12	06:12 20:52	06:41 20:16	07:11 19:26	07:42 18:38	07:18 17:05	07:45 17:02
22	07:44 17:31	07:11 18:08	06:28 18:39	06:39 20:11	06:04 20:41	05:56 06:13	06:13 20:51	06:42 20:15	07:12 19:25	07:43 18:37	07:19 17:04	07:46 17:02
23	07:43 17:32	07:10 18:09	06:26 18:40	06:37 20:12	06:03 20:42	05:56 06:14	06:14 20:50	06:43 20:13	07:13 19:23	07:44 18:36	07:20 17:04	07:46 17:03
24	07:43 17:33	07:08 18:11	06:24 18:41	06:36 20:13	06:03 20:43	05:56 06:15	06:15 20:49	06:44 20:12	07:14 19:21	07:46 18:34	07:21 17:03	07:47 17:03
25	07:42 17:34	07:07 18:12	06:23 18:42	06:34 20:14	06:02 20:44	05:56 06:16	06:16 20:48	06:45 20:10	07:15 19:20	07:47 17:33	07:22 17:02	07:47 17:04
26	07:41 17:36	07:06 18:13	06:21 18:43	06:33 20:15	06:01 20:45	05:57 06:17	06:17 20:48	06:46 20:19 (8)	07:16 19:18	07:48 17:31	07:24 17:02	07:47 17:05
27	07:41 17:37	07:04 18:14	06:19 18:44	06:32 20:16	06:01 20:45	05:57 06:17	06:17 20:47	06:47 20:10 (8)	07:17 19:16	07:49 17:30	07:25 17:02	07:48 17:05
28	07:40 17:38	07:03 18:15	06:18 18:45	06:30 20:17	06:00 20:46	05:57 06:18	06:18 20:46	06:48 20:08 (8)	07:18 19:15	07:50 17:29	07:26 17:01	07:48 17:06
29	07:39 17:39	07:01 18:46	06:19 19:46	06:31 20:18	06:00 20:47	19:55 (8) 06:00	05:58 06:19	06:49 20:07 (8)	07:19 19:13	07:51 17:28	07:27 17:01	07:48 17:07
30	07:38 17:40	07:01 19:47	06:18 20:19	06:30 20:19	06:00 20:48	19:55 (8) 05:59	05:58 06:20	06:50 20:06 (8)	07:20 19:11	07:52 17:26	07:28 17:00	07:49 17:07
31	07:37 17:42	07:03 19:48	06:18 20:17	06:30 20:17	06:00 20:49	19:57 (8) 05:58	05:58 06:21	06:51 20:05 (8)	07:21 19:11	07:53 17:25	07:29 17:08	07:49 17:08
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Total, worst case								72				
Sun reduction				0,52	182	0,57		0,74	120	0,72		
Oper. time red.				0,78	0,78			0,78		0,78		
Wind dir. red.				0,60	0,60			0,60		0,60		
Total reduction				0,25	0,27			0,35		0,34		
Total, real				1	49			25		41		

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progetto Shadow receptor: AE - R12

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:49 17:09	07:36 17:43	17:11 (8) 17:19 (8)	07:01 18:16	07:22 (11) 08:24 (11)	07:11 19:49
2	07:49 17:10	07:35 17:44	17:11 (8) 17:20 (8)	07:00 18:17	07:21 (11) 08:24 (11)	07:10 19:50
3	07:49 17:11	07:34 17:45	17:11 (8) 17:22 (8)	06:58 18:19	07:21 (11) 08:24 (11)	07:08 19:52
4	07:49 17:12	07:33 17:47	17:11 (8) 17:23 (8)	06:57 18:20	07:20 (11) 08:24 (11)	07:06 19:53
5	07:49 17:13	07:32 17:48	17:12 (8) 17:25 (8)	06:55 18:21	07:20 (11) 08:24 (11)	07:05 19:54
6	07:49 17:14	07:31 17:49	17:12 (8) 17:26 (8)	06:53 18:22	07:19 (11) 08:24 (11)	07:03 19:55
7	07:49 17:15	07:30 17:50	17:13 (8) 17:27 (8)	06:52 18:23	07:19 (11) 08:24 (11)	07:01 19:56
8	07:49 17:16	07:29 17:51	17:14 (8) 17:29 (8)	06:50 18:24	07:19 (11) 08:23 (11)	07:00 19:57
9	07:49 17:17	07:28 17:53	17:14 (8) 17:29 (8)	06:49 18:25	07:18 (11) 08:23 (11)	06:58 19:58
10	07:49 17:18	07:27 17:54	17:15 (8) 17:31 (8)	06:47 18:26	07:19 (11) 08:23 (11)	06:57 19:59
11	07:49 17:19	07:26 17:55	17:17 (8) 17:32 (8)	06:46 18:27	07:18 (11) 08:22 (11)	06:55 20:00
12	07:49 17:20	07:24 17:56	17:19 (8) 17:31 (8)	06:44 18:28	07:19 (11) 08:22 (11)	06:54 20:01
13	07:48 17:21	07:23 17:58	17:24 (8) 17:28 (8)	06:42 18:30	07:19 (11) 08:20 (11)	06:52 20:02
14	07:48 17:22	07:22 17:59	07:48 (11) 08:00 (11)	06:41 18:31	07:19 (11) 08:19 (11)	06:51 20:03
15	07:48 17:23	07:21 18:00	07:43 (11) 08:06 (11)	06:39 18:32	07:20 (11) 08:19 (11)	06:49 20:04
16	07:47 17:24	07:19 18:01	07:40 (11) 08:09 (11)	06:37 18:33	07:20 (11) 08:17 (11)	06:47 20:05
17	07:47 17:25	07:18 18:02	07:37 (11) 08:11 (11)	06:36 18:34	07:20 (11) 08:16 (11)	06:46 20:06
18	07:46 17:26	07:17 18:04	07:36 (11) 08:13 (11)	06:34 18:35	07:21 (11) 08:15 (11)	06:44 20:07
19	07:46 17:27	07:15 18:05	07:35 (11) 08:16 (11)	06:33 18:36	07:21 (11) 08:13 (11)	06:43 20:08
20	07:45 17:28	07:14 18:06	07:33 (11) 08:16 (11)	06:31 18:37	07:22 (11) 08:12 (11)	06:41 20:09
21	07:45 17:30	07:13 18:07	07:32 (11) 08:18 (11)	06:29 18:38	07:23 (11) 08:10 (11)	06:40 20:10
22	07:44 17:31	07:11 18:08	07:30 (11) 08:19 (11)	06:28 18:39	07:24 (11) 08:08 (11)	06:39 20:11
23	07:43 17:32	07:10 18:09	07:29 (11) 08:20 (11)	06:26 18:40	07:25 (11) 08:06 (11)	06:37 20:12
24	07:43 17:33	07:08 18:11	07:27 (11) 08:21 (11)	06:24 18:41	07:28 (11) 08:04 (11)	06:36 20:13
25	07:42 17:34	07:07 18:12	07:26 (11) 08:22 (11)	06:23 18:42	07:29 (11) 08:01 (11)	06:34 20:14
26	07:41 17:36	07:06 18:13	07:24 (11) 08:22 (11)	06:21 18:43	07:31 (11) 07:57 (11)	06:33 20:15
27	07:41 17:37	07:04 18:14	07:23 (11) 08:23 (11)	06:19 18:44	07:36 (11) 07:54 (11)	06:31 20:16
28	07:40 17:38	17:13 (8) 17:14 (8)	07:03 18:15	07:22 (11) 08:23 (11)	06:18 18:45	06:30 20:17
29	07:39 17:39	17:12 (8) 17:15 (8)	07:02 19:46	07:16 19:46	06:29 20:18	06:00 20:47
30	07:38 17:40	17:12 (8) 17:17 (8)	07:01 19:47	07:14 19:47	06:27 20:19	05:59 20:48
31	07:37 17:42	17:11 (8) 17:18 (8)	07:00 19:48	07:13 19:48	06:26 20:49	05:58 20:49
Potential sun hours	299	298	370	398	447	450
Total, worst case	17	812	1459			
Sun reduction	0,40	0,45	0,49			
Oper. time red.	0,78	0,78	0,78			
Wind dir. red.	0,66	0,63	0,62			
Total reduction	0,21	0,22	0,24			
Total, real	3	179	344			

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:58 / 50

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 Calculated:
 07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AE - R12

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
 N NE E SE S SW W NW Sum
 704 820 622 355 622 1.039 1.312 1.360 6.834
 Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December	
1	05:59 21:00	06:22 20:42	06:52 19:59	07:21 19:10	07:58 (11) 09:00 (11)	06:55 17:24	16:45 (8) 17:00 (8)
2	05:59 21:00	06:23 20:41	06:53 19:58	07:22 19:08	07:57 (11) 09:00 (11)	06:56 17:23	16:43 (8) 17:00 (8)
3	06:00 21:00	06:24 20:40	06:54 19:56	07:23 19:06	07:56 (11) 09:00 (11)	06:57 17:21	16:42 (8) 17:00 (8)
4	06:00 21:00	06:25 20:38	06:55 19:55	07:24 19:05	07:56 (11) 09:00 (11)	06:58 17:20	16:43 (8) 16:59 (8)
5	06:01 21:00	06:26 20:37	06:56 19:53	07:25 19:03	07:55 (11) 09:00 (11)	06:59 17:19	16:42 (8) 16:59 (8)
6	06:01 20:59	06:27 20:36	06:57 19:51	07:26 19:01	07:55 (11) 09:00 (11)	07:00 17:18	16:42 (8) 16:59 (8)
7	06:02 20:59	06:28 20:35	06:58 19:50	07:27 19:00	07:55 (11) 08:59 (11)	07:02 17:17	16:41 (8) 16:59 (8)
8	06:02 20:59	06:29 20:34	06:59 19:48	07:28 18:58	07:55 (11) 08:59 (11)	07:03 17:16	16:42 (8) 16:59 (8)
9	06:03 20:58	06:30 20:33	07:00 19:46	07:29 18:57	07:54 (11) 08:59 (11)	07:04 17:15	16:42 (8) 16:59 (8)
10	06:04 20:58	06:31 20:31	07:01 19:45	07:30 18:55	07:54 (11) 08:58 (11)	07:05 17:14	16:42 (8) 16:59 (8)
11	06:04 20:58	06:32 20:30	07:02 19:43	07:31 18:53	07:55 (11) 08:58 (11)	07:06 17:13	16:42 (8) 16:59 (8)
12	06:05 20:57	06:33 20:29	07:03 19:41	07:33 18:52	07:55 (11) 08:58 (11)	07:07 17:12	16:44 (8) 16:59 (8)
13	06:06 20:57	06:34 20:27	07:04 19:40	07:34 18:50	07:55 (11) 08:57 (11)	07:09 17:11	16:44 (8) 16:59 (8)
14	06:07 20:56	06:35 20:26	07:05 19:38	07:35 18:49	07:56 (11) 08:56 (11)	07:10 17:10	16:45 (8) 17:00 (8)
15	06:07 20:56	06:36 20:25	07:06 19:36	07:36 18:47	07:56 (11) 08:55 (11)	07:11 17:09	16:45 (8) 17:00 (8)
16	06:08 20:55	06:36 20:23	07:07 19:35	07:37 18:46	07:57 (11) 08:54 (11)	07:12 17:08	16:46 (8) 17:00 (8)
17	06:09 20:54	06:37 20:22	07:07 19:33	07:38 18:45	07:58 (11) 08:53 (11)	07:13 17:08	16:47 (8) 17:00 (8)
18	06:10 20:54	06:38 20:21	07:08 19:31	07:39 18:44	07:59 (11) 08:52 (11)	07:14 17:07	16:48 (8) 17:01 (8)
19	06:11 20:53	06:39 20:19	07:09 19:30	07:40 18:43	08:00 (11) 08:50 (11)	07:16 17:06	16:49 (8) 17:01 (8)
20	06:11 20:52	06:40 20:18	07:10 19:28	07:41 18:42	08:02 (11) 08:50 (11)	07:17 17:05	16:50 (8) 17:01 (8)
21	06:12 20:52	06:41 20:16	07:11 19:26	07:42 18:41	08:03 (11) 08:48 (11)	07:18 17:05	16:51 (8) 17:02 (8)
22	06:13 20:51	06:42 20:15	07:12 19:25	07:43 18:40	08:04 (11) 08:47 (11)	07:19 17:04	16:52 (8) 17:02 (8)
23	06:14 20:50	06:43 20:13	07:13 19:23	07:44 18:39	08:05 (11) 08:45 (11)	07:20 17:04	16:53 (8) 17:03 (8)
24	06:15 20:49	06:44 20:12	07:14 19:21	07:45 18:38	08:06 (11) 08:42 (11)	07:21 17:03	16:54 (8) 17:03 (8)
25	06:16 20:48	06:45 20:10	07:15 19:20	07:46 18:37	08:07 (11) 08:41 (11)	07:22 17:02	16:55 (8) 17:04 (8)
26	06:17 20:48	06:46 20:09	07:16 19:18	07:47 18:36	08:08 (11) 08:58 (11)	07:23 17:02	16:56 (8) 17:05 (8)
27	06:17 20:47	06:47 20:07	07:17 19:16	07:48 18:35	08:09 (11) 08:59 (11)	07:24 17:01	16:57 (8) 17:05 (8)
28	06:18 20:46	06:48 20:06	07:18 19:15	07:49 18:34	08:10 (11) 08:59 (11)	07:25 17:01	16:58 (8) 17:06 (8)
29	06:19 20:45	06:49 20:04	07:19 19:13	07:50 18:33	07:59 (11) 08:59 (11)	07:26 17:01	16:59 (8) 17:07 (8)
30	06:20 20:44	06:50 20:03	07:20 19:11	07:51 18:32	07:59 (11) 09:00 (11)	07:27 17:00	17:00 (8) 17:07 (8)
31	06:21 20:43	06:51 20:01	07:21 19:10	07:52 18:31	08:00 (11) 17:25	07:28 17:02 (8)	17:01 (8) 17:08 (8)
Potential sun hours	457	427	375	346	299	290	
Total, worst case			685	1501	141		
Sun reduction			0,65	0,57	0,48		
Oper. time red.			0,78	0,78	0,78		
Wind dir. red.			0,62	0,62	0,66		
Total reduction			0,32	0,28	0,25		
Total, real			216	417	35		

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

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 BrunoManca / ingbrunomanca@gmail.com
 Calculated:
 07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AF - R01

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
 N NE E SE S SW W NW Sum
 704 820 622 355 622 1.039 1.312 1.360 6.834
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49	07:36	07:01	07:11	06:26	05:58	05:59	06:22	06:52	07:21	06:55	07:29
	17:09	17:43	18:16	19:49	20:21	20:49	21:00	20:42	19:59	19:10	17:24	17:00
2	07:49	07:35	07:00	07:10	06:25	05:57	05:59	06:23	06:53	07:22	06:56	07:30
	17:10	17:44	18:17	19:50	20:22	20:50	21:00	20:41	19:58	19:08	17:23	17:00
3	07:49	07:34	06:58	07:08	06:24	05:57	06:00	06:24	06:54	07:23	06:57	07:31
	17:11	17:45	18:18	19:52	20:23	20:51	21:00	20:40	19:56	19:06	17:21	16:59
4	07:49	07:33	06:57	07:06	06:22	05:57	06:00	06:25	06:55	07:24	06:58	07:32
	17:12	17:47	18:20	19:53	20:24	20:52	21:00	20:38	19:55	19:05	17:20	16:59
5	07:49	07:32	06:55	07:05	06:21	05:56	06:01	06:26	06:56	07:25	06:59	07:33
	17:13	17:48	18:21	19:54	20:25	20:52	21:00	20:37	19:53	19:03	17:19	16:59
6	07:49	07:31	06:53	07:03	06:20	05:56	06:01	06:27	06:57	07:26	07:00	07:34
	17:14	17:49	18:22	19:55	20:26	20:53	20:59	20:36	19:51	19:01	17:18	16:59
7	07:49	07:30	06:52	07:01	06:19	05:56	06:02	06:28	06:58	07:27	07:02	07:35
	17:14	17:50	18:23	19:56	20:27	20:53	20:59	20:35	19:50	19:00	17:17	16:59
8	07:49	07:29	06:50	07:00	06:18	05:56	06:02	06:29	06:59	07:28	07:03	07:36
	17:15	17:51	18:24	19:57	20:28	20:54	20:59	20:34	19:48	18:58	17:16	16:59
9	07:49	07:28	06:49	06:58	06:17	05:55	06:03	06:30	07:00	07:29	07:04	07:37
	17:16	17:53	18:25	19:58	20:29	20:55	20:58	20:33	19:46	18:57	17:15	16:59
10	07:49	07:27	06:47	06:57	06:15	05:55	06:04	06:31	07:01	07:30	07:05	07:37
	17:17	17:54	18:26	19:59	20:30	20:55	20:58	20:31	19:45	18:55	17:14	16:59
11	07:49	07:26	06:46	06:55	06:14	05:55	06:04	06:32	07:02	07:31	07:06	07:38
	17:18	17:55	18:27	20:00	20:31	20:56	20:58	20:30	19:43	18:53	17:13	16:59
12	07:49	07:24	06:44	06:54	06:13	05:55	06:05	06:33	07:03	07:33	07:07	07:39
	17:20	17:56	18:28	20:01	20:32	20:56	20:57	20:29	19:41	18:52	17:12	16:59
13	07:48	07:23	06:42	06:52	06:12	05:55	06:06	06:34	07:04	07:34	07:09	07:40
	17:21	17:58	18:29	20:02	20:33	20:57	20:57	20:27	19:40	18:50	17:11	16:59
14	07:48	07:22	06:41	06:50	06:11	05:55	06:07	06:35	07:05	07:35	07:10	07:41
	17:22	17:59	18:31	20:03	20:34	20:57	20:56	20:26	19:38	18:49	17:10	16:59
15	07:48	07:21	06:39	06:49	06:10	05:55	06:07	06:35	07:06	07:36	07:11	07:41
	17:23	18:00	18:32	20:04	20:35	20:58	20:56	20:25	19:36	18:47	17:09	17:00
16	07:47	07:19	06:37	06:47	06:09	05:55	06:08	06:36	07:06	07:37	07:12	07:42
	17:24	18:01	18:33	20:05	20:36	20:58	20:55	20:23	19:35	18:46	17:08	17:00
17	07:47	07:18	06:36	06:46	06:08	05:55	06:09	06:37	07:07	07:38	07:13	07:43
	17:25	18:02	18:34	20:06	20:37	20:58	20:54	20:22	19:33	18:44	17:08	17:00
18	07:46	07:17	06:34	06:44	06:07	05:55	06:10	06:38	07:08	07:39	07:14	07:43
	17:26	18:03	18:35	20:07	20:37	20:59	20:54	20:21	19:31	18:43	17:07	17:01
19	07:46	07:15	06:33	06:43	06:07	05:55	06:10	06:39	07:09	07:40	07:16	07:44
	17:27	18:05	18:36	20:08	20:38	20:59	20:53	20:19	19:30	18:41	17:06	17:01
20	07:45	07:14	06:31	06:41	06:06	05:55	06:11	06:40	07:10	07:41	07:17	07:45
	17:28	18:06	18:37	20:09	20:39	20:59	20:52	20:18	19:28	18:40	17:05	17:01
21	07:45	07:13	06:29	06:40	06:05	05:55	06:12	06:41	07:11	07:42	07:18	07:45
	17:30	18:07	18:38	20:10	20:40	21:00	20:52	20:16	19:26	18:38	17:05	17:02
22	07:44	07:11	06:28	06:38	06:04	05:55	06:13	06:42	07:12	07:43	07:19	07:46
	17:31	18:08	18:39	20:11	20:41	21:00	20:51	20:15	19:25	18:37	17:04	17:02
23	07:43	07:10	06:26	06:37	06:03	05:56	06:14	06:43	07:13	07:44	07:20	07:46
	17:32	18:09	18:40	20:12	20:42	21:00	20:50	20:13	19:23	18:36	17:03	17:03
24	07:43	07:08	06:24	06:36	06:03	05:56	06:15	06:44	07:14	07:46	07:21	07:47
	17:33	18:11	18:41	20:13	20:43	21:00	20:49	20:12	19:21	18:34	17:03	17:03
25	07:42	07:07	06:23	06:34	06:02	05:56	06:16	06:45	07:15	07:47	07:22	07:47
	17:34	18:12	18:42	20:14	20:44	21:00	20:48	20:10	19:20	17:33	17:02	17:04
26	07:41	07:06	06:21	06:33	06:01	05:57	06:16	06:46	07:16	07:48	07:24	07:47
	17:36	18:13	18:43	20:15	20:45	21:00	20:48	20:09	19:18	17:31	17:02	17:05
27	07:41	07:04	06:19	06:31	06:01	05:57	06:17	06:47	07:17	07:49	07:25	07:48
	17:37	18:14	18:44	20:16	20:45	21:00	20:47	20:07	19:16	17:30	17:01	17:05
28	07:40	07:03	06:18	06:30	06:00	05:57	06:18	06:48	07:18	07:50	07:26	07:48
	17:38	18:15	18:45	20:17	20:46	21:00	20:46	20:06	19:15	17:29	17:01	17:06
29	07:39		07:16	06:29	05:59	05:58	06:19	06:49	07:19	07:51	07:27	07:48
	17:39		19:46	20:18	20:47	21:00	20:45	20:04	19:13	17:27	17:01	17:07
30	07:38		07:14	06:27	05:59	05:58	06:20	06:50	07:20	07:52	07:28	07:49
	17:40		19:47	20:19	20:48	21:00	20:44	20:03	19:11	17:26	17:00	17:07
31	07:37		07:13		05:58		06:21	06:51		06:53		07:49
	17:42		19:48		20:49		20:43	20:01		17:25		17:08
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Total, worst case												
Sun reduction												
Oper. time red.												
Wind dir. red.												
Total reduction												
Total, real												

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AG - R02

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:49	14:18 (10)	07:36	07:01	07:11	06:26	05:58	05:59	06:22	06:52	07:21	06:55	07:29
2	07:49	14:19 (10)	07:35	07:00	07:10	06:25	05:57	05:59	06:23	06:53	07:22	06:56	07:30
3	07:49	14:21 (10)	07:34	06:58	07:08	06:24	05:57	06:00	06:24	06:54	07:23	06:57	07:31
4	07:49	14:22 (10)	07:33	06:57	07:06	06:22	05:57	06:00	06:25	06:55	07:24	06:58	07:32
5	07:49	14:24 (10)	07:32	06:55	07:05	06:21	05:56	06:01	06:26	06:56	07:25	06:59	07:33
6	07:49	14:25 (10)	07:31	06:53	07:03	06:20	05:56	06:01	06:27	06:57	07:26	07:00	07:34
7	07:49	14:27 (10)	07:30	06:52	07:01	06:19	05:56	06:02	06:28	06:58	07:27	07:02	07:35
8	07:49	14:29 (10)	07:29	06:50	07:00	06:18	05:56	06:02	06:29	06:59	07:28	07:03	07:36
9	07:49	14:30 (10)	07:28	06:49	06:58	06:16	05:55	06:03	06:30	07:00	07:29	07:04	07:37
10	07:49	14:35 (10)	07:27	06:47	06:57	06:15	05:55	06:04	06:31	07:01	07:30	07:05	07:37
11	07:49	14:46 (10)	07:26	06:46	06:55	06:14	05:55	06:04	06:32	07:02	07:31	07:06	07:38
12	07:49	17:20	07:24	06:44	06:54	06:13	05:55	06:05	06:33	07:03	07:33	07:07	07:39
13	07:48	17:21	07:23	06:42	06:52	06:12	05:55	06:06	06:34	07:04	07:34	07:09	07:40
14	07:48	17:22	07:22	06:41	06:50	06:11	05:55	06:07	06:34	07:05	07:35	07:10	07:41
15	07:48	17:23	07:19	06:37	06:47	06:09	05:55	06:08	06:36	07:06	07:37	07:12	07:42
16	07:47	17:24	07:18	06:36	06:46	06:08	05:55	06:09	06:37	07:07	07:38	07:13	07:43
17	07:46	17:25	07:17	06:34	06:44	06:07	05:55	06:10	06:38	07:08	07:39	07:14	07:43
18	07:46	17:26	07:15	06:33	06:43	06:07	05:55	06:10	06:39	07:09	07:40	07:16	07:44
19	07:46	17:27	07:14	06:31	06:41	06:06	05:55	06:11	06:40	07:10	07:41	07:17	07:45
20	07:45	17:28	07:13	06:29	06:40	06:05	05:55	06:12	06:41	07:11	07:42	07:18	07:45
21	07:45	17:30	07:11	06:28	06:38	06:04	05:55	06:13	06:42	07:12	07:43	07:19	07:46
22	07:44	17:31	07:10	06:26	06:37	06:03	05:56	06:14	06:43	07:13	07:44	07:20	07:46
23	07:43	17:32	07:08	06:24	06:36	06:03	05:56	06:15	06:44	07:14	07:46	07:21	07:47
24	07:43	17:33	07:07	06:23	06:34	06:02	05:56	06:16	06:45	07:15	06:47	07:22	07:47
25	07:42	17:34	07:06	06:21	06:33	06:01	05:57	06:16	06:46	07:16	06:48	07:24	07:47
26	07:41	17:36	07:04	06:19	06:31	06:01	05:57	06:17	06:47	07:17	06:49	07:25	07:48
27	07:41	17:37	07:03	06:18	06:30	06:00	05:57	06:18	06:48	07:18	06:50	07:26	07:48
28	07:40	17:38	07:02	06:17	06:29	05:59	05:58	06:19	06:49	07:19	06:51	07:27	07:48
29	07:39	17:39	07:01	06:16	06:28	05:58	05:58	06:20	06:50	07:20	06:52	07:28	07:49
30	07:38	17:40	07:00	06:15	06:27	05:57	05:58	06:21	06:51	07:21	06:53	07:29	07:49
31	07:37	17:41	06:59	06:14	06:26	05:56	05:58	06:22	06:52	07:22	06:54	07:30	07:49
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290	1042
Total, worst case	261												1042
Sun reduction	0,40												0,42
Oper. time red.	0,78												0,78
Wind dir. red.	0,64												0,64
Total reduction	0,20												0,21
Total, real	52												218

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

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BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AH - R11

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49 17:09	07:36 17:43	07:01 18:16	07:11 19:49	06:26 20:20	19:07 (9) 05:58	05:59 21:00	06:22 20:42	19:20 (9) 06:52	07:21 19:10	06:55 17:24	07:29 17:00
2	07:49 17:10	07:35 17:44	07:00 18:17	07:10 19:50	06:25 20:21	19:07 (9) 05:58	05:59 21:00	06:23 20:41	19:19 (9) 06:53	07:22 19:08	06:56 17:23	07:30 17:00
3	07:49 17:11	07:34 17:45	06:58 18:18	07:08 19:51	06:24 20:23	19:07 (9) 05:57	06:00 21:00	06:24 20:39	19:19 (9) 06:54	07:23 19:06	06:57 17:21	07:31 17:00
4	07:49 17:12	07:33 17:47	06:56 18:20	07:06 19:53	06:22 20:24	19:07 (9) 05:57	06:00 21:00	06:25 20:38	19:18 (9) 06:55	07:24 19:05	06:58 17:20	07:32 16:59
5	07:49 17:13	07:32 17:48	06:55 18:21	07:05 19:54	06:21 20:25	19:07 (9) 05:56	06:01 20:59	06:26 20:37	19:18 (9) 06:56	07:25 19:03	06:59 17:19	07:33 16:59
6	07:49 17:14	07:31 17:49	06:53 18:22	07:03 19:55	06:20 20:26	19:07 (9) 05:56	06:01 20:59	06:27 20:36	19:16 (9) 06:57	07:26 19:01	07:00 17:18	07:34 16:59
7	07:49 17:15	07:30 17:50	06:52 18:23	07:01 19:56	06:19 20:27	19:07 (9) 05:56	06:02 20:59	06:28 20:35	19:16 (9) 06:58	07:27 19:00	07:02 17:17	07:35 16:59
8	07:49 17:15	07:29 17:51	06:50 18:24	07:00 19:57	06:18 20:28	19:07 (9) 05:56	06:02 20:59	06:29 20:34	19:16 (9) 06:59	07:28 18:58	07:03 17:16	07:36 16:59
9	07:49 17:16	07:28 17:53	06:49 18:25	06:58 19:58	06:17 20:29	19:08 (9) 05:55	06:03 20:58	06:30 20:32	19:16 (9) 07:00	07:29 18:57	07:04 17:15	07:36 16:59
10	07:49 17:17	07:27 17:54	06:47 18:26	06:57 19:59	06:15 20:30	19:08 (9) 05:55	06:04 20:58	06:31 20:31	19:16 (9) 07:01	07:30 18:55	07:05 17:14	07:37 16:59
11	07:49 17:17	07:26 17:55	06:45 18:27	06:55 20:00	06:14 20:31	19:09 (9) 05:55	06:04 20:58	06:32 20:30	19:16 (9) 07:02	07:31 18:53	07:06 17:13	07:38 16:59
12	07:49 17:20	07:24 17:56	06:44 18:28	06:54 20:01	06:13 20:32	19:10 (9) 05:55	06:05 20:57	06:33 20:29	19:16 (9) 07:03	07:32 18:52	07:07 17:12	07:39 16:59
13	07:48 17:21	07:23 17:58	06:42 18:29	06:52 20:02	06:12 20:33	19:11 (9) 05:55	06:06 20:57	06:34 20:27	19:16 (9) 07:04	07:34 18:50	07:09 17:11	07:40 16:59
14	07:48 17:22	07:22 17:59	06:41 18:31	06:50 20:03	06:11 20:34	19:11 (9) 05:55	06:07 20:56	06:35 20:26	19:16 (9) 07:05	07:35 18:49	07:10 17:10	07:41 16:59
15	07:48 17:23	07:21 18:00	06:39 18:32	06:49 20:04	06:10 20:35	19:12 (9) 05:55	06:07 20:56	06:35 20:25	19:16 (9) 07:06	07:36 18:47	07:11 17:09	07:41 17:00
16	07:47 17:24	07:19 18:01	06:37 18:33	06:47 20:05	06:09 20:36	19:14 (9) 05:55	06:08 20:55	06:36 20:23	19:17 (9) 07:06	07:37 18:46	07:12 17:08	07:42 17:00
17	07:47 17:25	07:18 18:02	06:36 18:34	06:46 20:06	06:08 20:36	19:15 (9) 05:55	06:09 20:54	06:37 20:22	19:17 (9) 07:07	07:38 18:44	07:13 17:08	07:43 17:00
18	07:46 17:26	07:17 18:03	06:34 18:35	06:44 20:07	06:07 20:37	19:16 (9) 05:55	06:10 20:54	06:38 20:20	19:18 (9) 07:08	07:39 18:43	07:14 17:07	07:43 17:01
19	07:46 17:27	07:15 18:05	06:33 18:36	06:43 20:08	06:07 20:38	19:17 (9) 05:55	06:10 20:53	06:39 20:19	19:19 (9) 07:09	07:40 18:41	07:16 17:06	07:44 17:01
20	07:45 17:28	07:14 18:06	06:31 18:37	06:41 20:09	06:06 19:23 (9)	05:55 20:59	06:11 20:52	06:40 20:18	19:19 (9) 07:10	07:41 18:40	07:17 17:05	07:45 17:01
21	07:45 17:30	07:13 18:07	06:29 18:38	06:40 20:10	06:05 19:34 (9)	05:55 20:59	06:12 20:52	06:41 20:16	19:21 (9) 07:11	07:42 18:38	07:18 17:05	07:45 17:02
22	07:44 17:31	07:11 18:08	06:28 18:39	06:38 20:11	06:04 19:16 (9)	05:55 20:41	06:13 21:00	06:42 20:15	19:23 (9) 07:12	07:43 18:37	07:19 17:04	07:46 17:02
23	07:43 17:32	07:10 18:09	06:26 18:40	06:37 20:12	06:03 19:14 (9)	05:56 20:42	06:14 21:00	06:43 20:13	19:28 (9) 07:13	07:44 18:36	07:20 17:03	07:46 17:03
24	07:43 17:33	07:08 18:11	06:24 18:41	06:36 20:13	06:03 19:12 (9)	05:56 20:43	06:15 21:00	06:44 20:12	19:14 (9) 07:14	07:45 18:34	07:21 17:03	07:47 17:03
25	07:42 17:34	07:07 18:12	06:23 18:42	06:34 20:14	06:02 19:11 (9)	05:56 20:44	06:16 21:00	06:45 20:10	19:25 (9) 07:15	07:46 17:33	07:22 17:02	07:47 17:04
26	07:41 17:36	07:06 18:13	06:21 18:43	06:33 20:15	06:01 19:10 (9)	05:57 20:45	06:16 21:00	06:46 20:09	19:28 (9) 07:16	07:47 17:31	07:23 17:02	07:47 17:05
27	07:41 17:37	07:04 18:14	06:19 18:44	06:31 20:16	06:01 19:09 (9)	05:57 20:45	06:17 21:00	06:47 20:07	19:25 (9) 07:17	07:48 17:30	07:25 17:01	07:48 17:05
28	07:40 17:38	07:03 18:15	06:18 18:45	06:30 20:17	06:00 19:08 (9)	05:57 20:46	06:18 21:00	06:48 20:06	19:43 (9) 07:18	07:49 17:29	07:26 17:01	07:48 17:06
29	07:39 17:39	07:03 18:16	06:17 18:46	06:29 20:18	05:59 19:08 (9)	05:58 20:47	06:19 21:00	06:49 20:04	19:23 (9) 07:19	07:50 17:27	07:27 17:01	07:48 17:07
30	07:38 17:40	07:03 18:17	06:16 18:47	06:28 20:19	05:59 19:08 (9)	05:58 20:48	06:20 21:00	06:50 20:02	19:45 (9) 07:20	07:51 17:26	07:28 17:00	07:49 17:07
31	07:37 17:42	07:03 18:18	06:15 18:48	06:27 20:20	05:58 19:42 (9)	05:58 20:49	06:21 20:43	06:51 20:01	19:21 (9) 07:21	07:52 17:25	07:29 17:08	07:49 17:08
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Total, worst case				280	515		135	666				
Sun reduction				0,52	0,57		0,74	0,72				
Oper. time red.				0,78	0,78		0,78	0,78				
Wind dir. red.				0,64	0,64		0,64	0,64				
Total reduction				0,26	0,28		0,37	0,36				
Total, real				73	147		50	238				

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AI - R06

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June	
1	07:49 17:09	07:36 17:43	07:01 18:16	17:12 (9) 17:33 (9)	07:11 19:49	06:26 20:20	18:23 (11) 19:17 (11)
2	07:49 17:10	07:35 17:44	07:00 18:17	17:10 (9) 17:34 (9)	07:10 19:50	06:25 20:22	18:23 (11) 19:18 (11)
3	07:49 17:11	07:34 17:45	06:58 18:18	17:09 (9) 17:35 (9)	07:08 19:51	06:24 20:23	18:22 (11) 19:18 (11)
4	07:49 17:12	07:33 17:47	06:56 18:20	17:08 (9) 17:36 (9)	07:06 19:53	06:22 20:24	18:21 (11) 19:19 (11)
5	07:49 17:13	07:32 17:48	06:55 18:21	17:07 (9) 17:37 (9)	07:05 19:54	06:21 20:25	18:21 (11) 19:20 (11)
6	07:49 17:14	07:31 17:49	06:53 18:22	17:06 (9) 17:37 (9)	07:03 19:55	06:20 20:26	18:21 (11) 19:21 (11)
7	07:49 17:14	07:30 17:50	06:52 18:23	17:06 (9) 17:37 (9)	07:01 19:56	06:19 20:27	18:21 (11) 19:21 (11)
8	07:49 17:15	07:29 17:51	06:50 18:24	17:06 (9) 17:37 (9)	07:00 19:57	06:18 20:28	18:21 (11) 19:22 (11)
9	07:49 17:16	07:28 17:53	06:49 18:25	17:05 (9) 17:36 (9)	06:58 19:58	06:17 20:29	18:21 (11) 19:22 (11)
10	07:49 17:17	07:27 17:54	06:47 18:26	17:05 (9) 17:37 (9)	06:57 19:59	06:15 20:30	18:21 (11) 19:23 (11)
11	07:49 17:19	07:26 17:55	06:45 18:27	17:05 (9) 17:36 (9)	06:55 20:00	06:14 20:31	18:21 (11) 19:24 (11)
12	07:49 17:20	07:24 17:56	06:44 18:28	17:05 (9) 17:35 (9)	06:54 20:01	06:13 20:32	18:21 (11) 19:24 (11)
13	07:48 17:21	07:23 17:58	06:42 18:29	17:06 (9) 17:35 (9)	06:52 20:02	06:12 20:33	18:21 (11) 19:25 (11)
14	07:48 17:22	07:22 17:59	06:41 18:31	17:06 (9) 17:33 (9)	06:50 20:03	06:11 20:34	18:21 (11) 19:25 (11)
15	07:48 17:23	07:21 18:00	06:39 18:32	17:08 (9) 17:32 (9)	06:49 20:04	06:10 20:35	18:21 (11) 19:25 (11)
16	07:47 17:24	07:19 18:01	06:37 18:33	17:09 (9) 17:30 (9)	06:47 20:05	06:09 20:36	18:21 (11) 19:26 (11)
17	07:47 17:25	07:18 18:02	06:36 18:34	17:10 (9) 17:28 (9)	06:46 20:06	06:08 20:36	18:21 (11) 19:26 (11)
18	07:46 17:26	07:17 18:03	06:34 18:35	17:13 (9) 17:25 (9)	06:44 20:07	06:07 20:37	18:21 (11) 19:26 (11)
19	07:46 17:27	07:15 18:05	06:33 18:36	06:43 20:08	06:07 20:38	06:07 20:38	18:21 (11) 19:26 (11)
20	07:45 17:28	07:14 18:06	06:31 18:37	06:41 20:09	06:06 20:39	06:06 20:39	18:21 (11) 19:26 (11)
21	07:45 17:30	07:13 18:07	06:29 18:38	06:40 20:10	06:05 20:40	06:05 20:40	18:21 (11) 19:26 (11)
22	07:44 17:31	07:11 18:08	06:28 18:39	06:38 20:11	06:04 20:41	06:04 20:41	18:22 (11) 19:27 (11)
23	07:43 17:32	07:10 18:09	06:26 18:40	06:37 20:12	06:03 20:42	06:03 20:42	18:22 (11) 19:27 (11)
24	07:43 17:33	07:08 18:10	06:24 18:41	06:36 20:13	06:03 20:43	06:03 20:43	18:22 (11) 19:27 (11)
25	07:42 17:34	07:07 18:12	06:23 18:42	06:34 20:14	06:02 20:44	06:02 20:44	18:22 (11) 19:27 (11)
26	07:41 17:36	07:06 18:13	06:21 18:43	06:33 20:15	06:01 20:45	06:01 20:45	18:23 (11) 19:28 (11)
27	07:41 17:37	07:04 18:14	17:18 (9) 18:44	06:19 20:16	06:01 20:45	06:01 20:45	18:23 (11) 19:28 (11)
28	07:40 17:38	07:03 18:15	17:14 (9) 17:30 (9)	06:18 18:45	06:30 20:17	06:00 20:46	18:24 (11) 19:28 (11)
29	07:39 17:39		07:16 19:46	06:29 20:18	06:05 20:47	06:05 20:47	18:24 (11) 19:28 (11)
30	07:38 17:40		07:14 19:47	06:27 20:19	06:05 20:48	06:05 20:48	18:24 (11) 19:27 (11)
31	07:37 17:42		07:13 19:48		06:05 20:49	06:05 20:49	18:24 (11) 19:17 (11)
Potential sun hours	299	298	370	398	447	450	1875
Total, worst case		26	477		475		0,66
Sun reduction		0,45	0,49		0,57		0,78
Oper. time red.		0,78	0,78		0,78		0,61
Wind dir. red.		0,67	0,67		0,61		0,31
Total reduction		0,24	0,25		0,27		0,31
Total, real		6	122		130		590

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

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

Project:

Giave WindPro - fotosimulazioni

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 Calculated:
 07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progetto Shadow receptor: AI - R06

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
 N NE E SE S SW W NW Sum
 704 820 622 355 622 1.039 1.312 1.360 6.834
 Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:59 21:00	18:25 (11) 19:28 (11)	06:22 20:42	06:52 19:59		07:29 17:00
2	05:59 21:00	18:25 (11) 19:27 (11)	06:23 20:41	06:53 19:58	29 19:08	07:30 17:00
3	06:00 21:00	18:26 (11) 19:28 (11)	06:24 20:39	06:54 19:56	30 19:01	07:31 17:00
4	06:00 21:00	18:26 (11) 19:27 (11)	06:25 20:38	06:55 19:54	31 19:05	07:32 16:59
5	06:01 21:00	18:27 (11) 19:27 (11)	06:26 20:37	06:56 19:53	32 19:03	07:33 16:59
6	06:01 20:59	18:27 (11) 19:28 (11)	06:27 20:36	06:57 19:51	31 19:01	07:34 16:59
7	06:02 20:59	18:27 (11) 19:27 (11)	06:28 20:35	06:58 19:50	31 19:00	07:35 16:59
8	06:02 20:59	18:28 (11) 19:27 (11)	06:29 20:34	06:59 19:48	30 18:58	07:36 16:59
9	06:03 20:58	18:28 (11) 19:26 (11)	06:30 20:32	07:00 19:46	30 18:57	07:36 16:59
10	06:04 20:58	18:30 (11) 19:26 (11)	06:31 20:31	07:01 19:45	29 18:55	07:37 16:59
11	06:04 20:58	18:31 (11) 19:25 (11)	06:32 20:30	07:02 19:43	28 18:53	07:38 16:59
12	06:05 20:57	18:31 (11) 19:24 (11)	06:33 20:29	07:03 19:41	28 18:52	07:39 16:59
13	06:06 20:57	18:32 (11) 19:24 (11)	06:34 20:27	07:04 19:40	27 18:50	07:40 16:59
14	06:07 20:56	18:33 (11) 19:23 (11)	06:35 20:26	07:05 19:38	19 18:49	07:41 16:59
15	06:07 20:56	18:34 (11) 19:23 (11)	06:35 20:25	07:06 19:36	14 18:47	07:41 17:00
16	06:08 20:55	18:35 (11) 19:21 (11)	06:36 20:23	07:06 19:35	5 17:58 (9)	07:42 17:00
17	06:09 20:54	18:36 (11) 19:20 (11)	06:37 20:22	07:07 19:33		07:43 17:00
18	06:10 20:54	18:38 (11) 19:19 (11)	06:38 20:20	07:08 19:31		07:43 17:01
19	06:10 20:53	18:39 (11) 19:18 (11)	06:39 20:19	07:09 19:30		07:44 17:01
20	06:11 20:52	18:40 (11) 19:16 (11)	06:40 20:18	07:10 19:28		07:45 17:01
21	06:12 20:52	18:42 (11) 19:14 (11)	06:41 20:16	07:11 19:26		07:45 17:02
22	06:13 20:51	18:45 (11) 19:12 (11)	06:42 20:15	07:12 19:25		07:46 17:02
23	06:14 20:50	18:48 (11) 19:10 (11)	06:43 20:13	07:13 19:23		07:46 17:03
24	06:15 20:49	18:52 (11) 19:06 (11)	06:44 20:12	07:14 19:21		07:47 17:03
25	06:16 20:48		06:45 20:10	07:15 19:20	17:57 (9) 9 18:06 (9)	07:47 17:04
26	06:16 20:48		06:46 20:09	07:16 19:18	06:48 16 18:09 (9)	07:47 17:05
27	06:17 20:47		06:47 20:07	07:17 19:16	06:49 20 18:11 (9)	07:48 17:05
28	06:18 20:46		06:48 20:06	07:18 19:15	06:50 23 18:12 (9)	07:48 17:06
29	06:19 20:45		06:49 20:04	07:19 19:13	06:51 26 18:13 (9)	07:48 17:07
30	06:20 20:44		06:50 20:02	07:20 19:11	06:52 28 18:14 (9)	07:49 17:07
31	06:21 20:43		06:51 20:01	07:21 17:25	06:53 346	07:49 17:08
Potential sun hours	457	427	375	346	299	290
Total, worst case	1161		122	388		
Sun reduction	0,74		0,65	0,57		
Oper. time red.	0,78		0,78	0,78		
Wind dir. red.	0,61		0,67	0,67		
Total reduction	0,35		0,34	0,30		
Total, real	409		42	117		

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

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

Project: **Giave WindPro - fotosimulazioni**

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09/12/2022 09:58 / 56

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AJ - R07

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49 17:09	07:36 17:43	07:01 18:16	07:11 19:49	06:26 20:20	05:58 20:49	05:59 21:00	06:22 20:42	06:52 19:59	07:21 19:10	18:02 (9)	06:55 17:24
2	07:49 17:10	07:35 17:44	07:00 18:17	07:10 19:50	06:25 20:21	05:58 20:50	05:59 21:00	06:23 20:41	06:53 19:58	07:22 19:08	18:03 (9)	06:56 17:23
3	07:49 17:11	07:34 17:45	06:58 18:18	07:08 19:51	06:24 20:23	05:57 20:51	06:00 21:00	06:24 20:39	06:54 19:56	07:23 19:06	18:05 (9)	06:57 17:21
4	07:49 17:12	07:33 17:47	06:56 18:20	07:06 19:53	06:22 20:24	05:57 20:51	06:00 21:00	06:25 20:38	06:55 19:54	07:24 19:05	18:08 (9)	06:58 17:20
5	07:49 17:13	07:32 17:48	06:55 18:21	07:05 19:54	06:21 20:25	05:56 20:52	06:01 21:00	06:26 20:37	06:56 19:53	07:25 19:03	18:18 (9)	06:59 17:19
6	07:49 17:14	07:31 17:49	06:53 18:22	07:03 19:55	06:20 20:26	05:56 20:53	06:01 20:59	06:27 20:36	06:57 19:51	07:26 19:01		07:00 17:18
7	07:49 17:15	07:30 17:50	06:52 18:23	07:01 19:56	06:19 20:27	05:56 20:53	06:02 20:59	06:28 20:35	06:58 19:50	07:27 19:00		07:02 17:17
8	07:49 17:15	07:29 17:51	06:50 18:24	07:00 19:57	06:18 20:28	05:56 20:54	06:02 20:59	06:29 20:34	06:59 19:48	07:28 18:58		07:03 17:16
9	07:49 17:16	07:28 17:53	06:49 18:25	06:58 19:58	06:17 20:29	05:55 20:55	06:03 20:58	06:30 20:32	07:00 19:46	07:29 18:57		07:04 17:15
10	07:49 17:17	07:27 17:54	06:47 18:26	17:29 (9) 06:57	06:15 19:59	05:55 20:30	06:04 20:55	06:31 20:31	07:01 19:45	07:30 18:55		07:05 17:14
11	07:49 17:19	07:26 17:55	06:45 18:27	17:26 (9) 06:55	06:14 20:00	05:55 20:31	06:04 20:58	06:32 20:30	07:02 19:43	07:31 18:53		07:06 17:13
12	07:49 17:20	07:24 17:56	06:44 18:28	17:23 (9) 06:54	06:13 20:01	05:55 20:32	06:05 20:57	06:33 20:29	07:03 19:41	07:32 18:52		07:07 17:12
13	07:48 17:21	07:23 17:58	06:42 18:29	17:22 (9) 06:52	06:12 20:02	05:55 20:33	06:06 20:57	06:34 20:27	07:04 19:40	07:34 18:50		07:09 17:11
14	07:48 17:22	07:22 17:59	06:41 18:31	17:21 (9) 06:50	06:11 20:03	05:55 20:34	06:07 20:57	06:35 20:26	07:05 19:38	07:35 18:25 (9)		07:10 17:10
15	07:48 17:23	07:21 18:00	06:39 18:32	17:20 (9) 06:49	06:10 20:04	05:55 20:35	06:07 20:58	06:26 20:25	07:06 19:36	07:36 18:29 (9)		07:11 17:09
16	07:47 17:24	07:19 18:01	06:37 18:33	17:19 (9) 06:47	06:09 20:05	05:55 20:36	06:08 20:58	06:36 20:23	07:06 19:35	07:37 18:10 (9)		07:12 17:08
17	07:47 17:25	07:18 18:02	06:36 18:34	17:18 (9) 06:46	06:08 20:06	05:55 20:36	06:09 20:58	06:37 20:22	07:07 19:33	07:38 18:31 (9)		07:13 17:08
18	07:46 17:26	07:17 18:03	06:34 18:35	17:18 (9) 06:44	06:07 20:07	05:55 20:37	06:10 20:59	06:38 20:20	07:08 19:31	07:39 18:32 (9)		07:14 17:07
19	07:46 17:27	07:15 18:05	06:33 18:36	17:17 (9) 06:43	06:07 20:08	05:55 20:38	06:10 20:59	06:39 20:19	07:09 19:30	07:40 18:33 (9)		07:16 17:06
20	07:45 17:28	07:14 18:06	06:31 18:37	17:17 (9) 06:41	06:06 20:09	05:55 20:39	06:11 20:52	06:40 20:18	07:10 19:28	07:41 18:04 (9)		07:17 17:05
21	07:45 17:30	07:13 18:07	06:29 18:38	17:17 (9) 06:40	06:05 20:10	05:55 20:40	06:12 20:52	06:41 20:16	07:11 19:26	07:42 18:33 (9)		07:18 17:05
22	07:44 17:31	07:11 18:08	06:28 18:39	17:17 (9) 06:38	06:04 20:11	05:55 20:41	06:13 20:51	06:42 20:15	07:12 19:25	07:43 18:33 (9)		07:19 17:04
23	07:43 17:32	07:10 18:09	06:26 18:40	17:17 (9) 06:37	06:03 20:12	05:56 20:42	06:14 20:50	06:43 20:13	07:13 19:23	07:44 18:33 (9)		07:20 17:03
24	07:43 17:33	07:08 18:10	06:24 18:41	17:18 (9) 06:36	06:03 20:13	05:56 20:43	06:15 20:49	06:44 20:12	07:14 19:21	07:45 18:33 (9)		07:21 17:03
25	07:42 17:34	07:07 18:12	06:23 18:42	17:19 (9) 06:34	06:02 20:14	05:56 20:44	06:16 20:48	06:45 20:10	07:15 19:20	07:46 18:32 (9)		07:22 17:04
26	07:41 17:36	07:06 18:13	06:21 18:43	17:19 (9) 06:33	06:01 20:15	05:57 20:45	06:16 21:00	06:46 20:09	07:16 19:18	07:48 18:32 (9)		07:23 17:02
27	07:41 17:37	07:04 18:14	06:19 18:44	17:21 (9) 06:31	06:01 20:16	05:57 20:45	06:17 21:00	06:47 20:07	07:17 19:16	07:49 18:31 (9)		07:25 17:01
28	07:40 17:38	07:03 18:15	06:18 18:45	17:23 (9) 06:30	06:00 20:17	05:57 20:46	06:18 21:00	06:48 20:06	07:18 19:15	07:50 18:30 (9)		07:26 17:01
29	07:39 17:39	07:13 19:46	07:16 18:48	18:25 (9) 06:29	06:29 20:18	05:59 20:47	06:19 21:00	06:49 20:04	07:19 19:13	07:51 18:29 (9)		07:27 17:01
30	07:38 17:40	07:14 19:47	07:14 18:49	18:35 (9) 06:27	06:27 20:19	05:58 20:48	06:20 21:00	06:50 20:02	07:20 19:11	07:52 18:28 (9)		07:28 17:01
31	07:37 17:42	07:13 19:48	07:13 18:48		05:58 20:49		06:21 20:43	06:51 20:01		07:53 17:25		07:29 17:00
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Total, worst case			513						454		72	
Sun reduction			0,49						0,65		0,57	
Oper. time red.			0,78						0,78		0,78	
Wind dir. red.			0,68						0,68		0,68	
Total reduction			0,26						0,34		0,30	
Total, real			132						156		22	

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AK - R03

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834

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

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:49 17:09	07:36 17:43	07:01 18:16	07:11 18:39 (10)	06:26 19:17 (10)	05:58 20:20	05:59 20:49	06:22 21:00	06:52 20:42	07:21 19:10	17:12 (10) 17:58 (10)	06:55 17:24	07:29 17:00
2	07:49 17:10	07:35 17:44	07:00 18:17	07:09 18:40 (10)	06:25 19:50	05:57 20:22	05:59 21:00	06:23 20:41	06:53 19:58	07:22 19:08	17:11 (10) 17:58 (10)	06:56 17:22	07:30 17:00
3	07:49 17:11	07:34 17:45	06:58 18:18	07:08 18:42 (10)	06:24 19:51	05:57 20:23	06:00 20:51	06:24 21:00	06:54 19:56	07:23 19:06	17:11 (10) 17:58 (10)	06:57 17:21	07:31 16:59
4	07:49 17:12	07:33 17:47	06:56 18:20	07:06 18:44 (10)	06:22 19:53	05:57 20:24	06:00 20:51	06:25 20:38	06:55 19:55	07:24 19:05	17:10 (10) 17:57 (10)	06:58 17:20	07:32 16:59
5	07:49 17:13	07:32 17:48	06:55 18:21	07:05 18:45 (10)	06:21 19:54	05:56 20:25	06:01 20:52	06:26 21:00	06:56 19:53	07:25 19:03	17:10 (10) 17:57 (10)	06:59 17:19	07:33 16:59
6	07:49 17:14	07:31 17:49	06:53 18:22	07:03 18:46 (10)	06:20 19:55	05:56 20:26	06:01 20:59	06:27 20:36	06:57 19:51	07:26 19:01	17:10 (10) 17:56 (10)	07:00 17:18	07:34 16:59
7	07:49 17:14	07:30 17:50	06:52 18:23	07:01 18:46 (10)	06:19 19:56	05:56 20:27	06:02 20:59	06:28 20:35	06:58 19:50	07:27 19:00	17:10 (10) 17:56 (10)	07:02 17:17	07:35 16:59
8	07:49 17:15	07:29 17:51	06:50 18:24	07:00 18:47 (10)	06:18 19:57	05:55 20:28	06:02 20:59	06:29 20:34	06:59 19:48	07:28 18:58	17:10 (10) 17:55 (10)	07:03 17:16	07:36 16:59
9	07:49 17:16	07:28 17:53	06:49 18:25	06:58 18:47 (10)	06:16 19:58	05:55 20:29	06:03 20:58	06:30 20:32	07:00 19:46	07:29 18:57	17:10 (10) 17:54 (10)	07:04 17:15	07:37 16:59
10	07:49 17:17	07:27 17:54	06:47 18:26	06:57 18:47 (10)	06:15 19:59	05:55 20:30	06:04 20:58	06:31 20:31	07:01 19:45	07:30 18:55	17:10 (10) 17:53 (10)	07:05 17:14	07:37 16:59
11	07:49 17:18	07:26 17:55	06:45 18:27	06:55 18:48 (10)	06:14 20:00	05:55 20:31	06:04 20:58	06:32 20:30	07:02 19:43	07:31 18:53	17:11 (10) 17:51 (10)	07:06 17:13	07:38 16:59
12	07:49 17:20	07:24 17:56	06:44 18:28	06:54 18:47 (10)	06:13 20:01	05:55 20:32	06:05 20:57	06:33 20:29	07:03 19:41	07:32 18:52	17:12 (10) 17:51 (10)	07:07 17:12	07:39 16:59
13	07:48 17:21	07:23 17:57	06:42 18:29	06:52 18:46 (10)	06:12 20:02	05:55 20:33	06:06 20:57	06:34 20:27	07:04 19:40	07:34 18:50	17:13 (10) 17:50 (10)	07:09 17:11	07:40 16:59
14	07:48 17:22	07:22 17:59	06:41 18:31	06:50 18:45 (10)	06:11 20:03	05:55 20:34	06:07 20:56	06:34 20:26	07:05 19:38	07:35 18:49	17:14 (10) 17:48 (10)	07:10 17:10	07:41 16:59
15	07:48 17:23	07:21 18:00	06:39 18:32	06:49 18:45 (10)	06:10 20:04	05:55 20:35	06:07 20:56	06:35 20:25	07:06 19:36	07:36 18:47	17:15 (10) 17:46 (10)	07:11 17:09	07:42 17:00
16	07:47 17:24	07:19 18:01	06:37 18:33	06:47 18:43 (10)	06:09 20:05	05:55 20:36	06:08 20:55	06:36 20:23	07:06 19:35	07:37 18:46	17:17 (10) 17:43 (10)	07:12 17:08	07:42 17:00
17	07:47 17:25	07:18 18:02	06:36 18:34	06:46 18:42 (10)	06:08 20:06	05:55 20:36	06:09 20:54	06:37 20:22	07:07 19:33	07:38 18:44	17:19 (10) 17:41 (10)	07:13 17:08	07:43 17:00
18	07:46 17:26	07:17 18:03	06:34 18:35	06:44 18:40 (10)	06:07 20:07	05:55 20:37	06:10 20:54	06:38 20:20	07:08 19:31	07:39 18:45	17:23 (10) 17:45 (10)	07:14 18:43	07:43 17:01
19	07:46 17:27	07:15 18:05	06:33 18:36	06:43 18:41 (10)	06:07 20:08	05:55 20:38	06:10 20:53	06:39 20:19	07:09 19:30	07:40 18:49	17:31 (10) 17:49 (10)	07:14 18:41	07:44 17:01
20	07:45 17:28	07:14 18:06	06:31 18:37	06:41 18:36 (10)	06:06 20:09	05:55 20:39	06:11 20:52	06:40 20:18	07:10 19:28	07:41 18:24	17:28 (10) 17:52 (10)	07:14 18:40	07:45 17:01
21	07:45 17:30	07:13 18:07	06:29 18:38	06:40 18:33 (10)	06:05 20:10	05:55 20:40	06:12 20:52	06:41 20:16	07:11 19:26	07:42 17:53	17:25 (10) 17:53 (10)	07:14 18:38	07:45 17:02
22	07:44 17:31	07:11 18:08	06:28 18:39	06:38 18:30 (10)	06:04 20:11	05:55 20:41	06:13 20:51	06:42 20:15	07:12 19:25	07:43 17:55	17:23 (10) 17:55 (10)	07:14 18:37	07:46 17:02
23	07:43 17:32	07:10 18:09	06:26 18:38	06:37 18:25 (10)	06:03 20:12	05:56 20:42	06:14 20:50	06:43 20:13	07:13 19:23	07:44 17:56	17:21 (10) 17:56 (10)	07:14 18:36	07:46 17:03
24	07:43 17:33	07:08 18:10	06:24 17:07 (10)	06:36 18:41 (10)	06:03 20:13	05:56 20:43	06:15 20:49	06:44 20:12	07:14 19:21	07:45 18:38	17:19 (10) 17:57 (10)	07:14 18:34	07:47 17:03
25	07:42 17:34	07:07 18:12	06:23 17:10 (10)	06:35 18:42 (10)	06:02 20:14	05:56 20:44	06:16 20:48	06:45 20:10	07:15 19:20	07:46 18:39	17:18 (10) 17:57 (10)	07:14 17:33	07:47 17:04
26	07:41 17:36	07:06 18:13	06:21 17:12 (10)	06:34 18:43 (10)	06:01 20:15	05:57 20:45	06:16 20:48	06:46 20:09	07:16 19:18	07:47 18:42	17:16 (10) 17:58 (10)	07:14 17:31	07:47 17:05
27	07:41 17:37	07:04 18:14	06:19 17:14 (10)	06:33 18:44 (10)	06:01 20:16	05:57 20:45	06:17 20:47	06:47 20:07	07:17 19:16	07:48 18:43	17:15 (10) 17:58 (10)	07:14 17:30	07:48 17:05
28	07:40 17:38	07:03 18:15	06:18 17:15 (10)	06:32 18:45 (10)	06:00 20:17	05:57 20:46	06:18 20:46	06:48 20:06	07:18 19:15	07:49 18:44	17:14 (10) 17:58 (10)	07:14 17:29	07:48 17:01
29	07:39 17:39		07:16 19:46	06:29 19:46	06:05 20:18	05:58 20:47	06:19 20:45	06:49 20:04	07:19 19:13	07:50 18:46	17:13 (10) 17:59 (10)	07:14 17:27	07:48 17:01
30	07:38 17:40		07:14 19:47	06:27 19:47	06:04 20:19	05:58 20:48	06:20 20:44	06:50 20:02	07:20 19:11	07:51 18:47	17:12 (10) 17:59 (10)	07:14 17:26	07:49 17:07
31	07:37 17:42		07:13 19:48	06:26 19:48	06:03 20:19	05:58 20:49	06:21 20:43	06:51 20:01	07:21 19:11	07:52 18:44	17:12 (10) 17:55 (10)	07:14 17:25	07:49 17:08
Potential sun hours	299	298	370	398	447	450	457	427	375	346	701	299	290
Total, worst case		138	991						444	701			
Sun reduction		0,45	0,49						0,65	0,57			
Oper. time red.		0,78	0,78						0,78	0,78			
Wind dir. red.		0,66	0,66						0,66	0,66			
Total reduction		0,23	0,25						0,34	0,30			
Total, real		32	249						149	207			

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AL - R04

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	
1	07:49	15:12 (11)	07:36	07:01	07:11	18:08 (10) 06:26	05:58
	17:09	31 15:43 (11)	17:43	18:16	19:49	44 18:52 (10) 20:20	20:49
2	07:49	15:13 (11)	07:35	07:00	07:09	18:08 (10) 06:25	05:57
	17:10	30 15:43 (11)	17:44	18:17	19:50	44 18:52 (10) 20:22	20:50
3	07:49	15:14 (11)	07:34	06:58	07:08	18:07 (10) 06:24	05:57
	17:11	29 15:43 (11)	17:45	18:18	19:51	45 18:52 (10) 20:23	20:51
4	07:49	15:15 (11)	07:33	06:56	07:06	18:08 (10) 06:22	05:57
	17:12	28 15:43 (11)	17:47	18:20	19:53	44 18:52 (10) 20:24	20:51
5	07:49	15:16 (11)	07:32	06:55	07:05	18:07 (10) 06:21	05:56
	17:13	27 15:43 (11)	17:48	18:21	19:54	44 18:51 (10) 20:25	20:52
6	07:49	15:18 (11)	07:31	06:53	07:03	18:07 (10) 06:20	05:56
	17:14	25 15:43 (11)	17:49	18:22	19:55	43 18:50 (10) 20:26	20:53
7	07:49	15:19 (11)	07:30	06:52	07:01	18:08 (10) 06:19	05:56
	17:14	24 15:43 (11)	17:50	18:23	19:56	42 18:50 (10) 20:27	20:53
8	07:49	15:21 (11)	07:29	06:50	07:00	18:08 (10) 06:18	05:55
	17:15	22 15:43 (11)	17:51	18:24	19:57	41 18:49 (10) 20:28	20:54
9	07:49	15:22 (11)	07:28	06:49	06:58	18:09 (10) 06:16	05:55
	17:16	20 15:42 (11)	17:53	18:25	19:58	40 18:49 (10) 20:29	20:55
10	07:49	15:23 (11)	07:27	06:47	06:57	18:09 (10) 06:15	05:55
	17:17	18 15:41 (11)	17:54	18:26	19:59	38 18:47 (10) 20:30	20:55
11	07:49	15:26 (11)	07:26	06:45	06:55	18:09 (10) 06:14	05:55
	17:18	13 15:39 (11)	17:55	18:27	20:00	36 18:45 (10) 20:31	20:56
12	07:49	15:29 (11)	07:24	06:44	06:54	18:11 (10) 06:13	05:55
	17:20	9 15:38 (11)	17:56	18:28	20:01	34 18:45 (10) 20:32	20:56
13	07:48		07:23	06:42	06:52	18:11 (10) 06:12	05:55
	17:21		17:57	18:29	20:02	32 18:43 (10) 20:33	20:57
14	07:48		07:22	06:41	06:50	18:13 (10) 06:11	05:55
	17:22		17:59	18:31	20:03	28 18:41 (10) 20:34	20:57
15	07:48		07:21	06:39	06:49	18:14 (10) 06:10	05:55
	17:23		18:00	18:32	20:04	25 18:39 (10) 20:35	20:58
16	07:47		07:19	06:37	06:47	18:17 (10) 06:09	05:55
	17:24		18:01	18:33	20:05	20 18:37 (10) 20:36	20:58
17	07:47		07:18	06:36	06:46	18:20 (10) 06:08	05:55
	17:25		18:02	18:34	20:06	13 18:33 (10) 20:36	20:58
18	07:46		07:17	06:34	06:44		06:07 05:55
	17:26		18:03	18:35	20:07		20:37 20:59
19	07:46		07:15	06:32	06:43		06:07 05:55
	17:27		18:05	18:36	20:08		20:38 20:59
20	07:45		07:14	06:31	17:26 (10) 06:41		06:06 05:55
	17:28		18:06	18:37	14 17:40 (10) 20:09		20:39 20:59
21	07:45		07:13	06:29	17:23 (10) 06:40		06:05 05:55
	17:30		18:07	18:38	21 17:44 (10) 20:10		20:40 20:59
22	07:44		07:11	06:28	17:20 (10) 06:38		06:04 05:55
	17:31		18:08	18:39	26 17:46 (10) 20:11		20:41 21:00
23	07:43		07:10	06:26	17:17 (10) 06:37		06:03 05:56
	17:32		18:09	18:40	30 17:47 (10) 20:12		20:42 21:00
24	07:43		07:08	06:24	17:16 (10) 06:36		06:03 05:56
	17:33		18:10	18:41	33 17:49 (10) 20:13		20:43 21:00
25	07:42		07:07	06:23	17:14 (10) 06:34		06:02 05:56
	17:34		18:12	18:42	36 17:50 (10) 20:14		20:44 21:00
26	07:41		07:06	06:21	17:12 (10) 06:33		06:01 05:57
	17:36		18:13	18:43	39 17:51 (10) 20:15		20:45 21:00
27	07:41		07:04	06:19	17:12 (10) 06:31		06:01 05:57
	17:37		18:14	18:44	40 17:52 (10) 20:16		20:45 21:00
28	07:40		07:03	06:18	17:11 (10) 06:30		06:00 05:57
	17:38		18:15	18:45	41 17:52 (10) 20:17		20:46 21:00
29	07:39		07:16	06:16	18:09 (10) 06:29		05:59 05:58
	17:39		19:46	43 18:52 (10) 20:18		20:47 21:00	
30	07:38		07:14	06:14	18:09 (10) 06:27		05:59 05:58
	17:40		19:47	44 18:53 (10) 20:19		20:48 21:00	
31	07:37		07:13	06:13	18:08 (10) 06:26		05:58 21:00
	17:42		19:48	44 18:52 (10) 20:19		20:49 21:00	
Potential sun hours	299	298	370	398	447	450	
Total, worst case	276		411	613			
Sun reduction	0,40		0,49	0,52			
Oper. time red.	0,78		0,78	0,78			
Wind dir. red.	0,68		0,68	0,68			
Total reduction	0,21		0,26	0,28			
Total, real	58		106	169			

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

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

Project:

Giave WindPro - fotosimulazioni

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 Calculated:
 07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AL - R04

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
 N NE E SE S SW W NW Sum
 704 820 622 355 622 1.039 1.312 1.360 6.834
 Idle start wind speed: Cut in wind speed from power curve

	July	August	September	October	November	December
1	05:59 21:00	06:22 20:42	06:52 19:59	18:09 (10) 18:45 (10)	07:21 19:10	06:55 17:24
2	05:59 21:00	06:23 20:41	06:53 19:58	18:08 (10) 18:46 (10)	07:22 19:08	06:56 17:22
3	06:00 21:00	06:24 20:40	06:54 19:56	18:06 (10) 18:46 (10)	07:23 19:06	06:57 17:21
4	06:00 21:00	06:25 20:38	06:55 19:54	18:05 (10) 18:46 (10)	07:24 19:05	06:58 17:20
5	06:01 21:00	06:26 20:37	06:56 19:53	18:04 (10) 18:46 (10)	07:25 19:03	06:59 17:19
6	06:01 20:59	06:27 20:36	06:57 19:51	18:03 (10) 18:46 (10)	07:26 19:01	07:00 17:18
7	06:02 20:59	06:28 20:35	06:58 19:50	18:02 (10) 18:46 (10)	07:27 19:00	07:02 17:17
8	06:02 20:59	06:29 20:34	06:59 19:48	18:02 (10) 18:46 (10)	07:28 18:58	07:03 17:16
9	06:03 20:58	06:30 20:32	07:00 19:46	18:01 (10) 18:46 (10)	07:29 18:57	07:04 17:15
10	06:04 20:58	06:31 20:31	07:01 19:45	18:01 (10) 18:46 (10)	07:30 18:55	07:05 17:14
11	06:04 20:58	06:32 20:30	07:02 19:43	18:01 (10) 18:45 (10)	07:31 18:53	07:06 17:13
12	06:05 20:57	06:33 20:29	07:03 19:41	18:01 (10) 18:45 (10)	07:32 18:52	07:07 17:12
13	06:06 20:57	06:34 20:27	07:04 19:40	18:00 (10) 18:44 (10)	07:34 18:50	07:09 17:11
14	06:07 20:56	06:34 20:26	07:05 19:38	18:01 (10) 18:43 (10)	07:35 18:49	07:10 17:10
15	06:07 20:56	06:35 20:25	07:06 19:36	18:01 (10) 18:42 (10)	07:36 18:47	07:11 17:09
16	06:08 20:55	06:36 20:23	07:06 19:35	18:00 (10) 18:40 (10)	07:37 18:46	07:12 17:08
17	06:09 20:54	06:37 20:22	07:07 19:33	18:01 (10) 18:39 (10)	07:38 18:44	07:13 17:08
18	06:10 20:54	06:38 20:20	07:08 19:31	18:01 (10) 18:38 (10)	07:39 18:43	07:14 17:07
19	06:10 20:53	06:39 20:19	07:09 19:30	18:02 (10) 18:36 (10)	07:40 18:41	07:16 17:06
20	06:11 20:52	06:40 20:18	07:10 19:28	18:03 (10) 18:34 (10)	07:41 18:40	07:17 17:05
21	06:12 20:52	06:41 20:16	07:11 19:26	18:05 (10) 18:32 (10)	07:42 18:38	07:18 17:05
22	06:13 20:51	06:42 20:15	07:12 19:25	18:07 (10) 18:29 (10)	07:43 18:37	07:19 17:04
23	06:14 20:50	06:43 20:13	07:13 19:23	18:09 (10) 18:26 (10)	07:44 18:36	07:20 17:03
24	06:15 20:49	06:44 20:12	07:14 19:21	07:45 18:34	07:21 17:03	07:21 17:03
25	06:16 20:48	06:45 20:10	07:15 19:20	06:47 17:33	07:22 17:02	07:22 17:04
26	06:16 20:48	06:46 20:09	18:22 (10) 18:36 (10)	07:16 19:18	06:48 17:31	07:23 17:02
27	06:17 20:47	06:47 20:07	18:19 (10) 18:39 (10)	07:17 19:16	06:49 17:30	07:25 17:01
28	06:18 20:46	06:48 20:06	18:16 (10) 18:41 (10)	07:18 19:15	06:50 17:29	07:26 17:01
29	06:19 20:45	06:49 20:04	18:14 (10) 18:42 (10)	07:19 19:13	06:51 17:27	07:27 17:01
30	06:20 20:44	06:50 20:02	18:12 (10) 18:44 (10)	07:20 19:11	06:52 17:26	07:28 17:00
31	06:21 20:43	06:51 20:01	18:11 (10) 18:45 (10)	07:21 19:11	06:53 17:25	07:29 17:00
Potential sun hours	457	427	375	346	299	290
Total, worst case		153	879		7	1134
Sun reduction		0,72	0,65		0,48	0,42
Oper. time red.		0,78	0,78		0,78	0,78
Wind dir. red.		0,68	0,68		0,68	0,68
Total reduction		0,38	0,34		0,26	0,22
Total, real		58	303		2	252

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AM - R09

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:49 17:09	07:36 17:43	07:01 18:16	07:11 19:49	18:35 (9) 20:26	06:26 20:58	05:58 20:59	06:22 21:00	06:52 19:59	07:21 19:10	06:55 17:24	07:29 17:00	
2	07:49 17:10	07:35 17:44	07:00 18:17	07:09 19:50	18:37 (9) 20:21	06:25 20:50	05:59 21:00	06:23 20:41	06:53 19:58	07:22 19:08	06:56 17:22	07:30 17:00	
3	07:49 17:11	07:34 17:45	06:58 18:18	07:08 19:51	18:38 (9) 20:23	06:24 20:51	05:57 21:00	06:24 20:39	06:54 19:56	07:23 19:06	06:57 17:21	07:31 16:59	
4	07:49 17:12	07:33 17:47	06:56 18:20	07:06 19:53	18:42 (9) 20:24	06:22 20:51	05:57 21:00	06:25 20:38	06:55 19:54	07:24 19:05	06:58 17:20	07:32 16:59	
5	07:49 17:13	07:32 17:48	06:55 18:21	07:05 19:54	18:50 (9) 20:24	06:21 20:52	05:56 20:59	06:01 20:37	06:26 19:53	07:25 19:03	06:59 17:19	07:33 16:59	
6	07:49 17:14	07:31 17:49	06:53 18:22	07:03 19:55	06:20 20:26	05:56 20:53	06:01 20:59	06:27 20:36	06:57 19:51	07:26 19:01	07:00 17:18	07:34 16:59	
7	07:49 17:14	07:30 17:50	06:52 18:23	07:01 19:56	06:19 20:27	05:56 20:53	06:02 20:59	06:28 20:35	06:58 19:50	07:27 19:00	07:02 17:17	07:35 16:59	
8	07:49 17:15	07:29 17:51	06:50 18:24	07:00 19:57	06:18 20:28	05:56 20:54	06:02 20:59	06:29 20:34	06:59 19:48	18:36 (9) 18:44 (9)	07:28 18:58	07:03 17:16	07:36 16:59
9	07:49 17:16	07:28 17:53	06:49 18:25	06:58 19:58	06:17 20:29	05:55 20:55	06:03 20:58	06:30 20:32	07:00 19:46	18:33 (9) 18:47 (9)	07:29 18:57	07:04 17:15	07:36 16:59
10	07:49 17:17	07:27 17:54	06:47 18:26	06:57 19:59	06:15 20:30	05:55 20:55	06:04 20:58	06:31 20:31	07:01 19:45	18:30 (9) 18:48 (9)	07:30 18:55	07:05 17:14	07:37 16:59
11	07:49 17:18	07:26 17:55	06:45 18:27	06:55 20:00	06:14 20:31	05:55 20:56	06:04 20:58	06:32 20:30	07:02 19:43	18:28 (9) 18:50 (9)	07:31 18:53	07:06 17:13	07:38 16:59
12	07:48 17:20	07:24 17:56	06:44 18:28	06:54 20:01	06:13 20:32	05:55 20:56	06:05 20:57	06:33 20:29	07:03 19:41	18:27 (9) 18:50 (9)	07:32 18:52	07:07 17:12	07:39 16:59
13	07:48 17:21	07:23 17:57	06:42 18:29	06:52 20:02	06:12 20:33	05:55 20:57	06:06 20:57	06:34 20:27	07:04 19:40	18:26 (9) 18:51 (9)	07:34 18:50	07:09 17:11	07:40 16:59
14	07:48 17:22	07:22 17:59	06:41 18:31	06:50 20:03	06:11 20:34	05:55 20:57	06:07 20:56	06:34 20:26	07:05 19:38	18:25 (9) 18:51 (9)	07:35 18:49	07:10 17:10	07:41 16:59
15	07:48 17:23	07:21 18:00	06:39 18:32	06:49 20:04	06:10 20:35	05:55 20:58	06:06 20:56	06:35 20:25	07:06 19:36	18:24 (9) 18:51 (9)	07:36 18:47	07:11 17:09	07:41 17:00
16	07:47 17:24	07:19 18:01	06:37 18:33	06:47 20:05	06:09 20:35	05:55 20:58	06:08 20:55	06:36 20:23	07:06 19:35	18:23 (9) 18:50 (9)	07:37 18:46	07:12 17:08	07:42 17:00
17	07:47 17:25	07:18 18:02	06:36 18:34	06:46 20:06	06:08 20:36	05:55 20:58	06:09 20:54	06:37 20:22	07:07 19:33	18:22 (9) 18:50 (9)	07:38 18:44	07:13 17:08	07:43 17:00
18	07:46 17:26	07:17 18:03	06:34 18:35	17:49 (9) 20:07	06:07 20:37	05:55 20:59	06:10 20:54	06:38 20:20	07:08 19:31	18:22 (9) 18:49 (9)	07:39 18:43	07:14 17:07	07:43 17:01
19	07:46 17:27	07:15 18:05	06:32 18:36	17:43 (9) 20:08	06:07 20:38	05:55 20:59	06:10 20:53	06:39 20:19	07:09 19:30	18:22 (9) 18:49 (9)	07:40 18:41	07:16 17:06	07:44 17:01
20	07:45 17:28	07:14 18:06	06:31 18:37	17:41 (9) 20:09	06:06 20:39	05:55 20:59	06:11 20:52	06:40 20:18	07:10 19:28	18:22 (9) 18:48 (9)	07:41 18:40	07:17 17:05	07:45 17:01
21	07:45 17:30	07:13 18:07	06:29 18:38	17:39 (9) 20:10	06:05 20:40	05:55 20:59	06:12 20:52	06:41 20:16	07:11 19:26	18:23 (9) 18:47 (9)	07:42 18:38	07:18 17:05	07:45 17:02
22	07:44 17:31	07:11 18:08	06:28 18:39	17:38 (9) 20:11	06:04 20:41	05:55 21:00	06:13 20:51	06:42 20:15	07:12 19:25	18:23 (9) 18:45 (9)	07:43 18:37	07:19 17:04	07:46 17:02
23	07:43 17:32	07:10 18:09	06:26 18:40	17:36 (9) 20:12	06:03 20:42	05:56 21:00	06:14 20:50	06:43 20:13	07:13 19:23	18:24 (9) 18:43 (9)	07:44 18:36	07:20 17:03	07:46 17:03
24	07:43 17:33	07:08 18:10	06:24 18:41	17:36 (9) 20:13	06:02 20:43	05:56 21:00	06:15 20:49	06:44 20:12	07:14 19:21	18:26 (9) 18:41 (9)	07:45 18:34	07:21 17:03	07:47 17:03
25	07:42 17:34	07:07 18:12	06:23 18:42	17:35 (9) 20:14	06:02 20:44	05:56 21:00	06:16 20:48	06:45 20:10	07:15 19:20	18:29 (9) 18:38 (9)	06:47 17:33	07:22 17:02	07:47 17:04
26	07:41 17:36	07:06 18:13	06:21 18:43	17:34 (9) 20:15	06:01 20:45	05:57 21:00	06:16 20:47	06:46 20:09	07:16 19:18	18:25 (9) 18:42 (9)	06:48 17:31	07:23 17:02	07:47 17:05
27	07:41 17:37	07:04 18:14	06:19 18:44	17:34 (9) 20:16	06:01 20:45	05:57 21:00	06:17 20:47	06:47 20:07	07:17 19:16	18:24 (9) 18:41 (9)	06:49 17:30	07:25 17:01	07:48 17:05
28	07:40 17:38	07:03 18:15	06:18 18:45	17:34 (9) 20:17	06:00 20:46	05:57 21:00	06:18 20:46	06:48 20:06	07:18 19:15	18:29 (9) 18:46 (9)	06:50 17:29	07:26 17:02	07:48 17:06
29	07:39 17:39	07:16 19:46	07:16 19:00 (9)	18:34 (9) 20:18	05:59 20:47	05:58 21:00	06:19 20:45	06:49 20:04	07:19 19:13	18:27 (9) 18:44 (9)	06:51 17:27	07:27 17:01	07:48 17:07
30	07:38 17:40	07:14 19:47	07:14 19:00 (9)	18:35 (9) 20:19	05:59 20:48	05:58 21:00	06:20 20:44	06:50 20:02	07:20 19:11	18:26 (9) 18:43 (9)	06:52 17:26	07:28 17:00	07:49 17:07
31	07:37 17:42	07:13 19:48	07:13 18:58 (9)	18:35 (9) 20:20	05:58 20:49	05:58 21:00	06:21 20:43	06:51 20:01	19:11	18:25 (9) 18:42 (9)	06:53 17:25	07:29 17:08	07:49 17:08
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290	
Total, worst case			313	63					387				
Sun reduction			0,49	0,52					0,65				
Oper. time red.			0,78	0,78					0,78				
Wind dir. red.			0,68	0,68					0,68				
Total reduction			0,26	0,28					0,34				
Total, real			80	17					133				

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:

07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AN - R10

Assumptions for shadow calculations

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

Table with 12 columns (Jan-Dec) and 2 rows of sunshine probability values.

Operational time

Table with 11 columns (N, NE, E, SE, S, SW, W, NW, Sum) and 1 row of operational time values.

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

Main shadow calculation table with columns for months (January-December) and rows for each day (1-31) showing sun rise/set times and reduction values.

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

Matrix defining Day in month, Sun rise/set times, Minutes with flicker, and First/Last time with flicker (WTG causing flicker first/last time).

Project:

Giave WindPro - fotosimulazioni

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 Calculated:
 07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AO - R05

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June				
1	07:49	15:26 (11)	07:36	07:01	07:11	18:26 (10)	06:26	05:58		
	17:09	60	16:26 (9)	17:43	18:16	19:49	18:59 (10)	20:20	20:49	
2	07:49	15:26 (11)	07:35	07:00	07:09	18:25 (10)	06:25	05:57		
	17:10	60	16:26 (9)	17:44	18:17	19:50	19:00 (10)	20:22	20:50	
3	07:49	15:27 (11)	07:34	06:58	07:08	18:23 (10)	06:24	05:57		
	17:11	60	16:27 (9)	17:45	18:18	19:51	19:00 (10)	20:23	20:51	
4	07:49	15:27 (11)	07:33	06:56	07:06	18:23 (10)	06:22	05:57		
	17:12	60	16:27 (9)	17:47	18:20	19:53	19:02 (10)	20:24	20:51	
5	07:49	15:28 (11)	07:32	06:55	07:05	18:22 (10)	06:21	05:56		
	17:13	59	16:27 (9)	17:48	18:21	19:54	19:01 (10)	20:25	20:52	
6	07:49	15:28 (11)	07:31	06:53	07:03	18:21 (10)	06:20	05:56		
	17:14	60	16:28 (9)	17:49	18:22	19:55	19:01 (10)	20:26	20:53	
7	07:49	15:29 (11)	07:30	06:52	07:01	18:21 (10)	06:19	05:56		
	17:14	59	16:28 (9)	17:50	18:23	19:56	19:02 (10)	20:27	20:53	
8	07:49	15:30 (11)	07:29	06:50	07:00	18:20 (10)	06:18	05:55		
	17:15	58	16:28 (9)	17:51	18:24	19:57	19:01 (10)	20:28	20:54	
9	07:49	15:31 (11)	07:28	06:49	06:58	18:20 (10)	06:16	05:55		
	17:16	57	16:28 (9)	17:53	18:25	19:58	19:02 (10)	20:29	20:55	
10	07:49	15:30 (11)	07:27	06:47	06:57	18:20 (10)	06:15	05:55		
	17:17	57	16:27 (9)	17:54	18:26	19:59	19:01 (10)	20:30	20:55	
11	07:49	15:31 (11)	07:26	06:45	06:55	18:19 (10)	06:14	05:55		
	17:18	56	16:27 (9)	17:55	18:27	20:00	19:00 (10)	20:31	20:56	
12	07:49	15:32 (11)	07:24	06:44	06:54	18:20 (10)	06:13	05:55		
	17:20	55	16:27 (9)	17:56	18:28	20:01	19:00 (10)	20:32	20:56	
13	07:48	15:32 (11)	07:23	06:42	06:52	18:19 (10)	06:12	05:55		
	17:21	53	16:26 (9)	17:57	18:29	20:02	18:59 (10)	20:33	20:57	
14	07:48	15:33 (11)	07:22	06:41	06:50	18:20 (10)	06:11	05:55		
	17:22	48	16:25 (9)	17:59	18:31	20:03	18:59 (10)	20:34	20:57	
15	07:48	15:35 (11)	07:21	06:39	06:49	18:20 (10)	06:10	05:55		
	17:23	41	16:23 (9)	18:00	18:32	20:04	18:58 (10)	20:35	20:58	
16	07:47	15:35 (11)	07:19	06:37	06:47	18:21 (10)	06:09	05:55		
	17:24	38	16:13 (11)	18:01	18:33	20:05	18:57 (10)	20:36	20:58	
17	07:47	15:36 (11)	07:18	06:36	06:46	18:21 (10)	06:08	05:55		
	17:25	37	16:13 (11)	18:02	18:34	20:06	18:56 (10)	20:36	20:58	
18	07:46	15:37 (11)	07:17	06:34	06:44	18:23 (10)	06:07	05:55		
	17:26	36	16:13 (11)	18:03	18:35	20:07	18:55 (10)	20:37	20:59	
19	07:46	15:38 (11)	07:15	06:32	06:43	18:23 (10)	06:07	05:55		
	17:27	35	16:13 (11)	18:05	18:36	20:08	18:53 (10)	20:38	20:59	
20	07:45	15:39 (11)	07:14	06:31	06:41	18:25 (10)	06:06	05:55		
	17:28	33	16:12 (11)	18:06	18:37	20:09	18:52 (10)	20:39	20:59	
21	07:45	15:40 (11)	07:13	06:29	06:40	18:27 (10)	06:05	05:55		
	17:30	31	16:11 (11)	18:07	18:38	20:10	18:50 (10)	20:40	20:59	
22	07:44	15:42 (11)	07:11	06:28	06:38	18:28 (10)	06:04	05:55		
	17:31	30	16:12 (11)	18:08	18:39	20:11	18:47 (10)	20:41	21:00	
23	07:43	15:43 (11)	07:10	06:26	06:37	18:32 (10)	06:03	05:56		
	17:32	27	16:10 (11)	18:09	18:40	20:12	18:44 (10)	20:42	21:00	
24	07:43	15:44 (11)	07:08	06:24	06:36	18:29 (10)	06:03	05:56		
	17:33	25	16:09 (11)	18:10	18:41	20:13	20:43	21:00		
25	07:42	15:46 (11)	07:07	06:23	06:34	18:26 (10)	06:02	05:56		
	17:34	22	16:08 (11)	18:12	18:42	20:14	20:44	21:00		
26	07:41	15:49 (11)	07:06	06:21	06:33	18:24 (10)	06:01	05:57		
	17:36	18	16:07 (11)	18:13	18:43	20:15	20:45	21:00		
27	07:41	15:52 (11)	07:04	06:19	06:31	17:40 (10)	06:01	05:57		
	17:37	12	16:04 (11)	18:14	18:44	9	17:49 (10)	20:16	20:45	21:00
28	07:40		07:03	06:18	06:30	17:35 (10)	06:00	05:57		
	17:38		18:15	18:45	18	17:53 (10)	20:17	20:46	21:00	
29	07:39			07:16	06:29	18:31 (10)	05:59	05:58		
	17:39			19:46	24	18:55 (10)	20:18	20:47	21:00	
30	07:38			07:14	06:27	18:30 (10)	05:59	05:58		
	17:40			19:47	27	18:57 (10)	20:19	20:48	21:00	
31	07:37			07:13	06:26	18:28 (10)	05:58			
	17:42			19:48	30	18:58 (10)	20:49			
Potential sun hours	299	298	370	398	447	450				
Total, worst case	1187		108	800						
Sun reduction	0,40		0,49	0,52						
Oper. time red.	0,78		0,78	0,78						
Wind dir. red.	0,68		0,67	0,67						
Total reduction	0,21		0,26	0,27						
Total, real	253		28	220						

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AO - R05

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December
1	05:59 21:00	06:22 20:42	06:52 19:59	18:19 (10) 19:00 (10)	07:21 19:10	06:55 17:24
2	05:59 21:00	06:23 20:41	06:53 19:58	18:18 (10) 18:59 (10)	07:22 19:08	06:56 17:22
3	06:00 21:00	06:24 20:40	06:54 19:56	18:17 (10) 18:59 (10)	07:23 19:06	06:57 17:21
4	06:00 21:00	06:25 20:38	06:55 19:54	18:17 (10) 18:58 (10)	07:24 19:05	06:58 17:20
5	06:01 21:00	06:26 20:37	06:56 19:53	18:17 (10) 18:58 (10)	07:25 19:03	06:59 17:19
6	06:01 20:59	06:27 20:36	06:57 19:51	18:17 (10) 18:57 (10)	07:26 19:01	07:00 17:18
7	06:02 20:59	06:28 20:35	06:58 19:50	18:17 (10) 18:57 (10)	07:27 19:00	07:02 17:17
8	06:02 20:59	06:29 20:34	06:59 19:48	18:17 (10) 18:56 (10)	07:28 18:58	07:03 17:16
9	06:03 20:58	06:30 20:32	07:00 19:46	18:17 (10) 18:55 (10)	07:29 18:57	07:04 17:15
10	06:04 20:58	06:31 20:31	07:01 19:45	18:18 (10) 18:54 (10)	07:30 18:55	07:05 17:14
11	06:04 20:58	06:32 20:30	07:02 19:43	18:19 (10) 18:52 (10)	07:31 18:53	07:06 17:13
12	06:05 20:57	06:33 20:29	07:03 19:41	18:20 (10) 18:51 (10)	07:32 18:52	07:07 17:12
13	06:06 20:57	06:34 20:27	07:04 19:40	18:21 (10) 18:49 (10)	07:34 18:50	07:09 17:11
14	06:07 20:56	06:34 20:26	07:05 19:38	18:22 (10) 18:47 (10)	07:35 18:49	07:10 17:10
15	06:07 20:56	06:35 20:25	07:05 19:36	18:25 (10) 18:44 (10)	07:36 18:47	07:11 17:09
16	06:08 20:55	06:36 20:23	07:06 19:35	18:27 (10) 18:39 (10)	07:37 18:46	12 15:36 (11) 17:00
17	06:09 20:54	06:37 20:22	07:07 19:33	18:39 (10) 18:44	07:38 17:08	18 15:40 (11) 17:00
18	06:10 20:54	06:38 20:20	07:08 19:31	18:41 (10) 18:43	07:39 17:07	22 15:42 (11) 17:00
19	06:10 20:53	06:39 20:19	07:09 19:30	18:42 (10) 18:41	07:40 17:06	27 15:44 (11) 17:01
20	06:11 20:52	06:40 20:18	07:10 19:28	18:43 (10) 18:40	07:41 17:05	30 15:47 (11) 17:01
21	06:12 20:52	06:41 20:16	07:11 19:26	18:42 (10) 18:38	07:42 17:05	31 15:49 (11) 17:02
22	06:13 20:51	06:42 20:15	07:12 19:25	18:43 (10) 18:37	07:43 17:04	15:15 (11) 17:02
23	06:14 20:50	06:43 20:13	07:13 19:23	18:44 (10) 18:36	07:44 17:03	33 15:48 (11) 17:03
24	06:15 20:49	06:44 20:12	07:14 19:21	18:45 (10) 18:34	07:45 17:03	35 15:49 (11) 17:03
25	06:16 20:48	06:45 20:10	07:15 19:20	18:46 (10) 18:33	07:46 17:02	36 15:50 (11) 17:04
26	06:16 20:48	06:46 20:09	07:16 19:18	18:47 (10) 18:32	07:47 17:02	37 15:51 (11) 17:05
27	06:17 20:47	06:47 20:07	07:17 19:16	18:48 (10) 18:31	07:48 17:02	38 15:52 (11) 17:05
28	06:18 20:46	06:48 20:06	07:18 19:15	18:49 (10) 18:30	07:49 17:02	39 15:53 (11) 17:05
29	06:19 20:45	06:49 20:04	07:19 19:13	18:50 (10) 18:29	07:50 17:02	47 16:05 (9) 17:06
30	06:20 20:44	06:50 20:02	07:20 19:11	18:51 (10) 18:28	07:51 17:02	53 16:07 (9) 17:07
31	06:21 20:43	06:51 20:01	07:21 19:10	18:52 (10) 18:27	07:52 17:02	54 16:08 (9) 17:07
Potential sun hours	457	427	375	346	299	290
Total, worst case		375	547		537	1861
Sun reduction		0,72	0,65		0,48	0,42
Oper. time red.		0,78	0,78		0,78	0,78
Wind dir. red.		0,67	0,67		0,68	0,68
Total reduction		0,38	0,34		0,26	0,22
Total, real		142	188		139	417

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar

Calculation: Giave progettoShadow receptor: AP - R08

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49	07:36	07:01	07:11	06:26	05:58	19:21 (11) 05:59	19:20 (11) 06:22	06:52	07:21	06:55	07:29
2	07:49	07:35	07:00	07:09	06:25	05:57	19:43 (11) 20:49	19:20 (11) 06:23	06:53	07:22	06:56	07:30
3	07:49	07:34	06:58	07:08	06:24	05:57	19:44 (11) 21:00	19:21 (11) 06:24	06:54	07:23	06:57	07:31
4	07:49	07:33	06:56	07:06	06:22	05:57	19:19 (11) 21:00	19:22 (11) 06:25	06:55	07:24	06:58	07:32
5	07:49	07:32	06:55	07:05	06:21	05:56	19:48 (11) 21:00	19:23 (11) 06:26	06:56	07:25	06:59	07:33
6	07:49	07:31	06:53	07:03	06:20	05:56	19:48 (11) 20:59	19:24 (11) 06:27	06:57	07:26	07:00	07:34
7	07:49	07:30	06:52	07:01	06:19	05:56	19:17 (11) 20:59	19:24 (11) 06:28	06:58	07:27	07:02	07:35
8	07:49	07:29	06:50	07:00	06:18	05:56	19:49 (11) 20:59	19:25 (11) 06:29	06:59	07:28	07:03	07:36
9	07:49	07:28	06:49	06:58	06:17	05:55	19:50 (11) 20:59	19:26 (11) 06:30	07:00	07:29	07:04	07:36
10	07:49	07:27	06:47	06:57	06:15	05:55	19:51 (11) 20:58	19:27 (11) 06:31	07:01	07:30	07:05	07:37
11	07:49	07:26	06:45	06:55	06:14	05:55	19:16 (11) 20:58	19:29 (11) 06:32	07:02	07:31	07:06	07:38
12	07:48	07:24	06:44	06:54	06:13	05:55	19:52 (11) 20:58	19:30 (11) 06:33	07:03	07:32	07:07	07:39
13	07:48	07:23	06:42	06:52	06:12	05:55	19:53 (11) 20:57	19:32 (11) 06:34	07:04	18:28 (9)	07:34	07:40
14	07:48	07:22	06:41	17:44 (9)	06:50	06:11	19:16 (11) 20:57	19:35 (11) 06:35	07:05	18:39 (9)	07:35	07:41
15	07:48	07:21	06:39	17:40 (9)	06:49	06:10	19:54 (11) 20:56	19:36 (11) 06:36	07:06	18:41 (9)	07:36	07:41
16	07:47	07:19	06:37	17:37 (9)	06:47	06:09	19:54 (11) 20:56	19:37 (11) 06:37	07:07	18:43 (9)	07:37	07:42
17	07:47	07:18	06:36	17:35 (9)	06:46	06:08	19:54 (11) 20:55	19:38 (11) 06:38	07:08	18:44 (9)	07:38	07:43
18	07:46	07:17	06:34	17:34 (9)	06:44	06:07	19:55 (11) 20:54	19:39 (11) 06:39	07:09	18:45 (9)	07:39	07:44
19	07:46	07:16	06:32	17:33 (9)	06:43	06:07	19:16 (11) 20:53	19:40 (11) 06:40	07:10	18:46 (9)	07:40	07:45
20	07:45	07:14	06:31	17:32 (9)	06:41	06:06	19:55 (11) 20:52	19:41 (11) 06:41	07:11	18:47 (9)	07:41	07:46
21	07:45	07:13	06:29	17:31 (9)	06:40	06:05	19:16 (11) 20:52	19:42 (11) 06:42	07:12	18:48 (9)	07:42	07:47
22	07:44	07:11	06:28	17:30 (9)	06:38	06:04	19:56 (11) 20:51	19:43 (11) 06:43	07:13	18:49 (9)	07:43	07:48
23	07:43	07:10	06:26	17:29 (9)	06:37	06:03	19:17 (11) 20:51	19:44 (11) 06:44	07:14	18:50 (9)	07:44	07:49
24	07:43	07:09	06:24	17:28 (9)	06:36	06:03	19:56 (11) 20:50	19:45 (11) 06:45	07:15	18:51 (9)	07:45	07:50
25	07:42	07:07	06:23	17:27 (9)	06:34	06:02	19:17 (11) 20:50	19:46 (11) 06:46	07:16	18:52 (9)	07:46	07:51
26	07:41	07:06	06:21	17:26 (9)	06:33	06:01	19:56 (11) 20:49	19:47 (11) 06:47	07:17	18:53 (9)	07:47	07:52
27	07:41	07:04	06:19	17:25 (9)	06:31	06:01	19:18 (11) 20:49	19:48 (11) 06:48	07:18	18:54 (9)	07:48	07:53
28	07:40	07:03	06:18	17:24 (9)	06:30	06:00	19:57 (11) 20:48	19:49 (11) 06:49	07:19	18:55 (9)	07:49	07:54
29	07:39	07:15	06:16	17:23 (9)	06:29	06:00	19:19 (11) 20:48	19:50 (11) 06:50	07:20	18:56 (9)	07:50	07:55
30	07:38	07:14	06:15	17:22 (9)	06:28	05:59	19:51 (11) 20:47	19:51 (11) 06:51	07:21	18:57 (9)	07:51	07:56
31	07:37	07:13	06:14	17:21 (9)	06:27	05:58	19:56 (11) 20:46	19:52 (11) 06:52	07:22	18:58 (9)	07:52	07:57
Potential sun hours	299	298	370	398	447	450	457	427	375	346	299	290
Total, worst case			357		41	1057	384		365			
Sun reduction			0.49		0.57	0.66	0.74		0.65			
Oper. time red.			0.78		0.78	0.78	0.78		0.78			
Wind dir. red.			0.68		0.59	0.59	0.59		0.68			
Total reduction			0.26		0.27	0.31	0.34		0.35			
Total, real			92		11	324	132		126			

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:59 / 1

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 07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 1 - AG07

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June
1	07:49 08:36-11:50/194 17:09 15:57-16:44/47	07:36 08:51-09:45/54 17:43	07:01 18:16	07:11 19:06-19:28/22 19:50	06:26 20:21	05:58 06:57-08:18/81 20:50
2	07:49 08:37-11:50/193 17:10 15:58-16:45/47	07:36 08:52-09:44/52 17:44	07:00 18:18	07:10 19:06-19:26/20 19:51	06:25 20:22	05:58 06:57-08:19/82 20:50
3	07:50 08:37-11:50/193 17:11 15:59-16:46/47	07:35 08:53-09:43/50 17:46	06:58 18:19	07:08 19:07-19:24/17 19:52	06:24 20:23	05:57 06:57-08:20/83 20:51
4	07:50 08:37-11:50/193 17:12 15:59-16:47/48	07:34 08:55-09:42/47 17:47	06:57 18:20	07:07 19:11-19:21/10 19:53	06:23 20:24	05:57 06:56-08:20/84 20:52
5	07:50 08:38-11:50/192 17:13 16:00-16:47/47	07:33 08:56-09:41/45 17:48	06:55 18:21	07:05 19:54	06:21 20:25	05:57 06:56-08:21/85 20:52
6	07:50 08:37-11:48/191 17:14 16:00-16:48/48	07:32 08:58-09:39/41 17:49	06:54 18:22	07:03 19:55	06:20 20:26	05:56 06:56-08:22/86 20:53
7	07:50 08:38-11:48/190 17:15 16:01-16:49/48	07:30 08:59-09:38/39 17:51	06:52 18:23	07:02 19:56	06:19 20:27	05:56 06:56-08:22/86 20:54
8	07:49 08:38-11:48/190 17:16 16:02-16:50/48	07:29 09:01-09:36/35 17:52	06:51 18:24	07:00 19:57	06:18 20:28	05:56 06:55-08:22/87 20:54
9	07:49 08:39-11:47/188 17:17 16:03-16:51/48	07:28 09:04-09:34/30 17:53	06:49 18:25	18:03-18:05/2 19:58	06:17 20:29	05:56 06:55-08:23/88 20:55
10	07:49 08:40-11:47/187 17:18 16:05-16:53/48	07:27 09:06-09:30/24 17:54	06:47 18:26	18:01-18:06/5 19:59	06:16 20:30	05:55 06:55-08:23/88 20:55
11	07:49 08:39-11:45/186 17:19 16:05-16:53/48	07:26 09:10-09:26/16 17:55	06:46 18:28	17:59-18:06/7 20:00	06:15 20:31	05:55 06:55-08:24/89 20:56
12	07:49 08:40-11:45/185 17:20 16:06-16:55/49	07:25 17:57	06:44 18:29	17:58-18:08/10 20:01	06:14 20:32	05:55 06:55-08:24/89 20:56
13	07:48 08:41-11:44/183 17:21 16:08-16:56/48	07:23 17:58	06:43 18:30	17:57-18:09/12 20:02	06:13 20:33	07:27-07:46/19 20:57
14	07:48 08:40-09:58/78 16:09-16:57/48 17:22 09:59-11:42/103	07:22 17:59	06:41 18:31	17:56-18:09/13 20:03	06:12 20:34	07:22-07:51/29 20:57
15	07:48 08:41-09:58/77 16:11-16:58/47 17:23 10:00-11:41/101	07:21 18:00	06:39 18:32	17:56-18:11/15 20:04	06:11 20:35	07:19-07:55/36 20:58
16	07:47 08:41-09:57/76 16:12-16:59/47 17:24 10:01-11:39/98	07:20 18:01	06:38 18:33	17:55-18:12/17 20:05	06:10 20:36	07:16-07:58/42 20:58
17	07:47 08:42-09:57/75 16:14-16:59/45 17:25 10:03-11:37/94	07:18 18:03	06:36 18:34	17:54-18:13/19 20:06	06:09 20:37	07:14-08:00/46 20:59
18	07:47 08:42-09:55/73 16:17-16:59/42 17:26 10:04-11:34/90	07:17 18:04	06:34 18:35	17:55-18:14/19 20:07	06:08 20:38	07:11-08:02/51 20:59
19	07:46 08:43-09:55/72 11:02-11:31/29 17:28 10:06-10:58/52 16:19-16:59/40	07:16 18:05	06:33 18:36	17:55-18:15/20 20:08	06:07 20:39	07:09-08:04/55 20:59
20	07:45 08:43-09:53/70 11:06-11:27/21 17:29 10:07-10:56/49 16:20-16:59/39	07:14 18:06	06:31 18:37	17:56-18:17/21 20:09	06:06 20:39	07:07-08:05/58 20:59
21	07:45 08:43-09:51/68 16:20-16:58/38 17:30 10:09-10:54/45	07:13 18:07	06:29 18:38	17:56-18:17/21 20:10	06:05 20:40	07:07-08:07/60 21:00
22	07:44 08:45-09:50/65 16:22-16:58/36 17:31 10:11-10:53/42	07:12 18:08	06:28 18:39	17:57-18:17/20 20:11	06:04 20:41	07:05-08:09/64 21:00
23	07:44 08:45-09:49/64 16:23-16:58/35 17:32 10:13-10:50/37	07:10 18:10	06:26 18:40	17:59-18:16/17 20:12	06:04 20:42	07:04-08:10/66 21:00
24	07:43 08:45-09:48/63 16:24-16:57/33 17:33 10:16-10:48/32	07:09 18:11	06:25 18:41	18:01-18:12/11 20:13	06:03 20:43	07:03-08:11/68 21:00
25	07:42 08:46-09:49/63 16:26-16:57/31 17:35 10:20-10:45/25	07:07 18:12	06:23 18:42	18:04-18:21/17 20:15	06:02 20:44	07:02-08:12/70 21:00
26	07:42 08:47-09:49/62 16:27-16:56/29 17:36 10:25-10:39/14	07:06 18:13	06:21 18:43	18:05-18:23/18 20:16	06:02 20:45	07:01-08:13/72 21:00
27	07:41 08:47-09:48/61 17:37 16:28-16:54/26	07:04 18:14	06:20 18:44	18:04-18:24/20 20:17	06:01 20:46	07:00-08:14/74 21:00
28	07:40 08:48-09:47/59 17:38 16:30-16:53/23	07:03 18:15	06:18 18:46	18:04-18:24/20 20:18	06:00 20:46	06:59-08:15/76 21:00
29	07:39 08:49-09:47/58 17:39 16:32-16:51/19		07:16 19:47	19:04-19:26/22 20:19	06:00 20:47	06:59-08:16/77 21:00
30	07:38 08:49-09:46/57 17:41 16:35-16:48/13		07:15 19:48	19:04-19:27/23 20:20	05:59 20:48	06:58-08:16/78 21:00
31	07:37 08:50-09:46/56 17:42		07:13 19:49	19:04-19:27/23 20:20	05:59 20:49	06:58-08:18/80 21:00
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	5706	433	386	69	1121	2659

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:59 / 2

Licensed user:

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Via Vittorio Veneto 231
IT-09028 Sestu
+390702358125
BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 1 - AG07

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834

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

	July	August	September	October	November	December
1	05:59 06:59-08:28/89 21:00	06:22 20:42	06:52 20:00	07:21 18:36-18:47/11 19:10	06:55 08:35-09:00/25 17:24	07:29 08:21-11:27/186 17:00 15:47-16:35/48
2	05:59 07:00-08:28/88 21:00	06:23 20:41	06:53 19:58	07:22 18:37-18:45/8 19:08	06:56 08:32-09:03/31 17:23	07:30 08:22-11:29/187 17:00 15:47-16:35/48
3	06:00 07:00-08:28/88 21:00	06:24 20:40	06:54 19:56	07:23 18:38-18:44/6 19:07	06:57 08:31-09:06/35 17:22	07:31 08:22-11:30/188 17:00 15:46-16:35/49
4	06:00 07:01-08:28/87 21:00	06:25 20:39	06:55 19:55	07:24 18:39-18:42/3 19:05	06:58 08:29-09:08/39 17:20	07:32 08:22-11:32/190 17:00 15:46-16:34/48
5	06:01 07:01-08:28/87 21:00	06:26 20:37	06:56 19:53	07:26 19:03	06:59 08:27-09:09/42 17:19	07:33 08:23-11:33/190 16:59 15:46-16:34/48
6	06:02 07:02-08:28/86 20:59	06:27 20:36	06:57 19:52	07:27 19:02	07:01 08:26-09:11/45 17:18	07:34 08:23-11:34/191 16:59 15:46-16:34/48
7	06:02 07:02-08:27/85 20:59	06:28 20:35	06:58 19:50	07:28 19:00	07:02 08:25-09:13/48 17:17	07:35 08:24-11:36/192 16:59 15:46-16:34/48
8	06:03 07:03-08:27/84 20:59	06:29 20:34	06:59 19:05-19:15/10 19:48	07:29 18:58	07:03 08:24-09:14/50 17:16	07:36 08:24-11:37/193 16:59 15:47-16:34/47
9	06:03 07:04-08:27/83 20:59	06:30 20:33	07:00 19:02-19:18/16 19:47	07:30 18:57	07:04 08:23-09:15/52 17:15	07:37 08:25-11:38/193 16:59 15:47-16:34/47
10	06:04 07:04-08:26/82 20:58	06:31 20:31	07:01 19:00-19:19/19 19:45	07:31 18:55	07:05 08:22-09:16/54 17:14	07:38 08:26-11:39/193 16:59 15:47-16:34/47
11	06:05 07:05-08:26/81 20:58	06:32 20:30	07:02 18:58-19:20/22 19:43	07:32 18:54	07:06 08:22-09:18/56 17:13	07:38 08:26-11:40/194 16:59 15:47-16:34/47
12	06:05 07:06-08:26/80 20:57	06:33 20:29	07:03 18:57-19:20/23 19:42	07:33 18:52	07:08 08:21-09:18/57 17:12 16:07-16:20/13	07:39 08:27-11:41/194 16:59 15:48-16:35/47
13	06:06 07:06-08:25/79 20:57	06:34 20:28	07:04 18:55-19:18/23 19:40	07:34 18:51	07:09 08:21-09:19/58 17:11 16:04-16:23/19	07:40 08:27-11:41/194 17:00 15:47-16:34/47
14	06:07 07:07-08:25/78 20:56	06:35 20:26	07:05 18:55-19:16/21 19:38	07:35 18:49	07:10 08:20-09:19/59 17:10 16:02-16:25/23	07:41 08:27-11:42/195 17:00 15:48-16:34/46
15	06:08 07:08-08:25/77 20:56	06:36 20:25	07:06 18:54-19:15/21 19:37	07:36 18:48	07:11 08:20-09:21/61 17:09 16:01-16:28/27	07:42 08:28-11:43/195 17:00 15:49-16:35/46
16	06:08 07:09-08:24/75 20:55	06:37 20:23	07:07 18:53-19:13/20 19:35	07:37 18:46	07:12 08:20-09:22/62 16:00-16:29/29 17:09 09:58-10:13/15	07:42 08:29-11:44/195 17:00 15:48-16:34/46
17	06:09 07:10-08:23/73 20:55	06:38 20:22	07:08 18:53-19:11/18 19:33	07:38 18:45	07:13 08:19-09:22/63 15:59-16:30/31 17:08 09:53-10:18/25	07:43 08:29-11:44/195 17:01 15:49-16:35/46
18	06:10 07:11-08:22/71 20:54	06:39 20:21	07:09 18:53-19:10/17 19:32	07:39 18:43	07:15 08:19-09:22/63 15:58-16:31/33 17:07 09:50-10:22/32	07:44 08:30-11:46/196 17:01 15:50-16:36/46
19	06:11 07:12-08:21/69 20:53	06:40 20:19	07:10 18:49-18:59/10 19:30 18:59-19:08/9	07:40 18:42	07:16 08:20-09:24/64 15:58-16:33/35 17:06 09:48-10:25/37	07:44 08:30-11:46/196 17:01 15:50-16:35/45
20	06:12 07:13-08:21/68 20:53	06:41 20:18	07:11 18:45-19:01/16 19:28 19:01-19:06/5	07:41 18:40	07:17 08:20-09:25/65 15:57-16:33/36 17:06 09:46-10:28/42	07:45 08:31-11:47/196 17:02 15:50-16:36/46
21	06:12 07:15-08:20/65 20:52	06:42 20:16	07:12 18:43-19:02/19 19:27 19:02-19:04/2	07:42 18:39	07:18 08:19-09:27/68 15:56-16:34/38 17:05 09:45-10:30/45	07:45 08:31-11:47/196 17:02 15:50-16:36/46
22	06:13 07:15-08:18/63 20:51	06:43 20:15	07:13 18:41-19:02/21 19:25	07:44 18:37	07:19 08:19-09:29/70 10:42-11:03/21 17:04 09:43-10:32/49 15:56-16:35/39	07:46 08:32-11:48/196 17:03 15:51-16:37/46
23	06:14 07:17-08:16/59 20:50	06:44 20:13	07:14 18:40-19:01/21 19:23	07:45 18:36	07:20 08:19-09:31/72 10:38-11:07/29 17:04 09:42-10:34/52 15:55-16:35/40	07:46 08:32-11:48/196 17:03 15:51-16:37/46
24	06:15 07:19-08:15/56 20:49	06:45 20:12	07:15 18:38-18:59/21 19:21	07:46 18:34	07:21 08:20-09:33/73 15:55-16:37/42 17:03 09:42-11:12/90	07:47 08:33-11:49/196 17:04 15:53-16:38/45
25	06:16 07:21-08:14/53 20:49	06:46 20:10	07:16 18:38-18:57/19 19:20	07:47 17:33	07:23 08:20-09:35/75 15:53-16:37/44 17:03 09:41-11:15/94	07:47 08:33-11:49/196 17:04 15:53-16:39/46
26	06:17 07:23-08:12/49 20:48	06:46 20:09	07:16 18:37-18:56/19 19:18	07:48 17:32	07:24 08:20-09:36/76 15:51-16:38/47 17:02 09:40-11:18/98	07:48 08:33-11:48/195 17:05 15:53-16:39/46
27	06:18 07:25-08:10/45 20:47	06:47 20:07	07:17 18:36-18:54/18 19:16	07:49 17:30	07:25 08:20-09:37/77 15:50-16:37/47 17:02 09:39-11:20/101	07:48 08:34-11:49/195 17:06 15:54-16:40/46
28	06:19 07:28-08:07/39 20:46	06:48 20:06	07:18 18:36-18:52/16 19:15	07:50 17:29	07:26 08:20-09:38/78 15:49-16:37/48 17:01 09:39-11:22/103	07:48 08:34-11:49/195 17:06 15:54-16:41/47
29	06:20 07:30-08:03/33 20:45	06:49 20:04	07:19 18:36-18:51/15 19:13	07:51 17:28	07:27 08:21-11:24/183 17:01 15:48-16:36/48	07:49 08:34-11:49/195 17:07 15:55-16:41/46
30	06:20 07:34-08:00/26 20:44	06:50 20:03	07:20 18:36-18:49/13 19:11	07:53 17:26	07:28 08:21-11:26/185 17:01 15:47-16:36/49	07:49 08:35-11:49/194 17:08 15:55-16:42/47
31	06:21 07:40-07:53/13 20:43	06:51 20:01		07:54 08:39-08:56/17 17:25		07:49 08:35-11:49/194 17:08 15:56-16:42/46
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	2111	0	434	45	3507	7448

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

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Calculated:

07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 2 - AG06

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June	July	August	September	October	November	December
1	07:49 16:01-16:43/42 17:10 17:43	07:36 08:43-09:20/37 17:43	07:01 07:11 18:17	06:26 06:58	05:59 06:22	06:52 07:21	06:55 08:16	06:22 06:52	07:21 07:24	06:55 08:16-08:48/32	07:29 15:52-16:35/43	
2	07:49 16:03-16:45/42 17:10 17:44	07:36 08:43-09:21/38 17:44	07:00 07:10 18:18	06:25 06:58	05:59 06:23	06:53 07:22	06:55 08:16	06:23 06:53	07:22 07:25	06:56 08:15-08:49/34	07:30 15:51-16:35/44	
3	07:50 16:04-16:46/42 17:11 17:46	07:35 08:43-09:21/38 17:46	06:58 07:08 18:19	06:24 06:57	06:00 06:24	06:54 07:23	06:58 08:16	06:24 06:54	07:23 07:26	06:57 08:15-08:50/35	07:31 15:51-16:35/44	
4	07:50 16:04-16:47/43 17:12 17:47	07:34 08:44-09:21/37 17:47	06:57 07:07 18:20	06:23 06:57	06:00 06:25	06:55 07:24	06:58 08:16	06:25 06:55	07:24 07:27	06:58 08:14-08:50/36	07:32 15:51-16:34/43	
5	07:50 16:04-16:47/43 17:13 17:48	07:33 08:44-09:21/37 17:48	06:55 07:05 18:21	06:21 06:57	06:01 06:26	06:56 07:25	06:58 08:16	06:26 06:56	07:25 07:28	06:59 08:14-08:51/37	07:33 15:51-16:34/43	
6	07:50 16:05-16:48/43 17:14 17:49	07:31 08:44-09:21/37 17:49	06:54 07:03 18:22	06:20 06:56	06:02 06:27	06:57 07:27	06:58 08:16	06:27 06:57	07:27 07:30	07:01 08:14-08:51/37	07:34 15:51-16:34/43	
7	07:50 16:06-16:49/43 17:15 17:50	07:30 08:45-09:21/36 17:50	06:52 07:02 18:23	06:20 06:56	06:02 06:28	06:58 07:28	06:58 08:16	06:28 06:58	07:28 07:31	07:02 08:14-08:52/38	07:35 15:51-16:34/43	
8	07:49 16:07-16:50/43 17:16 17:51	07:29 08:45-09:20/35 17:51	06:51 07:00 18:24	06:19 06:56	06:03 06:29	06:59 07:29	06:59 08:16	06:29 06:59	07:29 07:32	07:03 08:14-08:52/38	07:36 15:51-16:34/43	
9	07:49 16:08-16:52/44 17:17 17:52	07:28 08:46-09:20/34 17:52	06:49 06:59 18:25	06:18 06:56	06:03 06:30	06:59 07:30	06:59 08:16	06:30 06:30	07:30 07:33	07:04 08:14-08:51/37	07:37 15:52-16:34/42	
10	07:49 16:09-16:53/44 17:18 17:53	07:27 08:46-09:19/33 17:53	06:47 06:57 18:26	06:17 06:55	06:04 06:31	07:01 07:31	06:59 08:16	06:31 06:31	07:31 07:34	07:05 08:14-08:51/37	07:38 15:52-16:34/42	
11	07:49 16:09-16:53/44 17:19 17:54	07:26 08:47-09:18/31 17:54	06:46 06:55 18:27	06:15 06:55	06:05 06:32	07:02 07:32	06:58 08:16	06:32 06:32	07:32 07:35	07:06 08:15-08:52/37	07:38 15:52-16:34/42	
12	07:49 16:11-16:55/44 17:20 17:55	07:25 08:48-09:17/29 17:55	06:44 06:54 18:28	06:14 06:55	06:05 06:33	07:03 07:33	06:58 08:16	06:33 06:33	07:33 07:36	07:07 08:15-08:51/36	07:39 15:53-16:35/42	
13	07:48 16:12-16:56/44 17:21 17:56	07:23 08:50-09:16/26 17:56	06:43 06:52 18:29	06:13 06:55	06:06 06:34	07:04 07:34	06:58 08:16	06:34 06:34	07:34 07:37	07:09 08:16-08:51/35	07:40 15:52-16:34/42	
14	07:48 16:13-16:56/43 17:22 17:57	07:22 08:50-09:14/24 17:57	06:41 06:51 18:30	06:12 06:57	06:07 06:35	07:05 07:35	06:58 08:16	06:35 06:35	07:35 07:38	07:11 16:08-16:19/11	17:00	
15	07:48 16:15-16:57/42 17:23 17:58	07:21 08:52-09:12/20 17:58	06:39 06:49 18:31	06:11 06:57	06:08 06:36	07:06 07:36	06:58 08:16	06:36 06:36	07:36 07:39	07:10 16:06-16:22/16	17:01	
16	07:47 16:16-16:56/40 17:24 18:01	07:20 08:55-09:09/14 18:01	06:38 06:48 18:32	06:10 06:55	06:08 06:37	07:07 07:37	06:58 08:16	06:37 06:37	07:37 07:40	07:12 08:18-08:50/32	17:02	
17	07:47 08:54-09:04/10 17:25 16:19-16:57/38	07:18 09:02-09:03/1 18:03	06:36 06:46 18:34	06:09 06:58	06:09 06:38	07:08 07:38	06:58 08:16	06:38 06:38	07:38 07:41	07:13 08:19-08:50/31	17:03	
18	07:46 08:51-09:06/15 17:26 16:21-16:56/35	07:17 18:04	06:34 06:45 18:35	06:08 06:58	06:09 06:39	07:09 07:39	06:58 08:16	06:39 06:39	07:39 07:42	07:15 08:19-08:49/30	17:04	
19	07:46 08:50-09:09/19 17:28 16:22-16:57/35	07:16 18:05	06:33 06:43 18:36	06:07 06:55	06:11 06:40	07:10 07:40	06:58 08:16	06:40 06:40	07:40 07:43	07:16 16:01-16:28/27	17:01	
20	07:45 08:49-09:10/21 17:29 16:23-16:56/33	07:14 18:06	06:31 06:42 18:37	06:06 06:55	06:12 06:41	07:11 07:41	06:58 08:16	06:41 06:41	07:41 07:44	07:17 08:22-08:48/26	17:05	
21	07:45 08:47-09:11/24 17:30 16:23-16:56/33	07:13 18:07	06:29 06:40 18:38	06:05 06:56	06:12 06:42	07:12 07:42	06:58 08:16	06:42 06:42	07:42 07:45	07:18 08:23-08:47/24	17:02	
22	07:44 08:47-09:13/26 17:31 16:25-16:56/31	07:11 18:08	06:28 06:39 18:39	06:04 06:56	06:13 06:43	07:13 07:43	06:58 08:16	06:43 06:43	07:43 07:46	07:19 08:25-08:46/21	17:06	
23	07:44 08:46-09:14/28 17:32 16:26-16:55/29	07:10 18:10	06:26 06:37 18:40	06:04 06:56	06:14 06:44	07:14 07:44	06:58 08:16	06:44 06:44	07:44 07:47	17:04 15:59-16:33/33	17:03	
24	07:43 08:45-09:15/30 17:33 16:27-16:54/27	07:09 18:11	06:25 06:36 18:41	06:03 06:56	06:15 06:45	07:15 07:45	06:58 08:16	06:45 06:45	07:45 07:48	07:20 08:26-08:45/19	17:04	
25	07:42 08:46-09:17/31 17:35 16:29-16:54/25	07:07 18:12	06:23 06:35 18:42	06:02 06:57	06:16 06:46	07:16 07:46	06:58 08:16	06:46 06:46	07:46 07:49	07:23 08:32-08:42/10	17:07	
26	07:42 08:45-09:17/32 17:36 16:30-16:53/23	07:06 18:13	06:21 06:33 18:43	06:02 06:57	06:17 06:46	07:16 07:46	06:58 08:16	06:46 06:46	07:46 07:49	07:24 15:55-16:35/40	17:04	
27	07:41 08:44-09:18/34 17:37 16:32-16:52/20	07:04 18:14	06:20 06:32 18:44	06:01 06:57	06:18 06:47	07:17 07:47	06:58 08:16	06:47 06:47	07:47 07:50	07:25 15:54-16:36/42	17:08	
28	07:40 08:44-09:19/35 17:38 16:34-16:50/16	07:03 18:15	06:18 06:30 18:46	06:00 06:58	06:19 06:48	07:18 07:48	06:58 08:16	06:48 06:48	07:48 07:51	07:26 15:53-16:36/43	17:08	
29	07:39 08:44-09:19/35 17:40 16:37-16:47/10	07:02 18:16	06:17 06:29 18:47	06:00 06:58	06:20 06:49	07:19 07:49	06:58 08:16	06:49 06:49	07:49 07:52	07:27 15:53-16:36/43	17:09	
30	07:38 08:43-09:20/37 17:41 17:42	07:01 18:17	06:16 06:28 18:48	06:00 06:58	06:21 06:50	07:20 07:50	06:58 08:16	06:50 06:50	07:50 07:53	07:28 15:52-16:36/44	17:09	
31	07:37 08:43-09:20/37 17:42	07:00 18:18	06:15 06:27 18:49	06:00 06:58	06:22 06:51	07:21 07:51	06:58 08:16	06:51 06:51	07:51 07:54	07:29 08:17-08:48/31	17:08	
	Potential sun hours 299	298	370	398	447	450	457	427	375	346	299	290
	Sum of minutes with flicker 1455	507	0	0	0	0	0	0	0	154	1343	1291

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:59 / 4

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+390702358125
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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progettoWTG: 3 - AG01

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834

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

	January	February	March	April	May	June
1	07:49 08:40-09:00/20 17:09 14:59-15:49/50	07:36 08:52-09:06/14 17:43 14:53-16:28/95	07:01 08:44-09:48/64 18:16 15:10-16:48/98	07:11 08:24-08:40/16 19:50	06:26 20:21	05:58 18:50-19:33/43 20:49
2	07:49 08:40-09:01/21 17:10 15:00-15:51/61	07:36 08:55-09:04/9 17:44 14:53-16:30/97	07:00 08:44-09:48/64 18:18 15:13-16:48/95	07:10 08:25-08:37/12 19:51	06:25 20:22	05:58 18:50-19:34/44 20:50
3	07:50 08:40-09:02/22 17:11 15:00-15:52/62	07:35 14:53-16:32/99 17:46	06:58 08:43-09:48/65 18:19 15:14-16:48/94	07:08 19:52	06:24 20:23	05:57 18:51-19:34/43 20:51
4	07:50 08:40-09:03/23 17:12 15:00-15:53/63	07:34 14:53-16:33/100 17:47	06:57 08:43-09:47/64 18:20 15:16-16:47/91	07:07 19:53	06:23 20:24	05:57 18:51-19:33/42 20:52
5	07:50 08:40-09:04/24 17:13 14:59-15:53/64	07:33 14:53-16:35/102 17:48	06:55 08:43-09:47/64 18:21 15:19-16:47/88	07:05 19:54	06:21 19:08-19:13/5 20:25	05:57 18:51-19:34/43 20:52
6	07:50 08:39-09:04/25 17:14 14:59-15:54/65	07:31 14:53-16:36/103 17:49	06:54 08:42-09:46/64 18:22 15:22-16:46/84	07:03 19:55	06:20 19:03-19:18/15 20:26	05:56 18:52-19:34/42 20:53
7	07:50 08:40-09:05/25 17:15 14:59-15:55/66	07:30 14:54-16:38/104 17:50	06:52 08:43-09:46/63 18:23 15:24-16:46/82	07:02 19:56	06:19 19:00-19:21/21 20:27	05:56 18:52-19:34/42 20:54
8	07:49 08:40-09:06/26 17:16 14:59-15:56/67	07:29 14:54-16:39/105 17:52	06:50 08:42-09:45/63 18:24 15:24-16:45/81	07:00 19:57	06:18 18:57-19:22/25 20:28	05:56 18:52-19:34/42 20:54
9	07:49 08:40-09:07/27 17:17 14:59-15:58/69	07:28 14:54-16:40/106 17:53	06:49 08:43-09:45/62 18:25 15:25-16:45/80	06:59 19:58	06:17 18:56-19:23/27 20:29	05:56 18:52-19:34/42 20:55
10	07:49 08:40-09:08/28 17:18 14:59-15:59/70	07:27 14:54-16:41/107 17:54	06:47 08:42-09:43/61 18:26 15:26-16:44/78	06:57 19:59	06:16 18:55-19:25/30 20:30	05:55 18:53-19:34/41 20:55
11	07:49 08:40-09:08/28 17:19 14:58-15:59/61	07:26 09:13-09:24/11 17:55 14:54-16:42/108	06:46 08:42-09:42/60 18:28 15:26-16:42/76	06:55 20:00	06:15 18:53-19:26/33 20:31	05:55 18:53-19:34/41 20:56
12	07:49 08:40-09:09/29 17:20 14:58-16:01/63	07:25 09:08-09:29/21 17:57 14:55-16:43/108	06:44 08:43-09:41/58 18:29 15:28-16:42/74	06:54 20:01	06:14 18:53-19:27/34 20:32	05:55 18:54-19:35/41 20:56
13	07:48 08:41-09:10/29 17:21 14:58-16:02/64	07:23 09:04-09:33/29 17:58 14:55-16:44/109	06:43 08:43-09:40/57 18:30 15:28-16:41/73	06:52 20:02	06:13 18:52-19:27/35 20:33	05:55 18:54-19:35/41 20:57
14	07:48 08:40-09:10/30 17:22 14:57-16:02/65	07:22 09:01-09:35/34 17:59 14:55-16:44/109	06:41 08:43-09:38/55 18:31 15:29-16:39/70	06:51 20:03	06:12 18:51-19:28/37 20:34	05:55 18:54-19:35/41 20:57
15	07:48 08:41-09:11/30 17:23 14:57-16:04/67	07:21 08:59-09:37/38 18:00 14:56-16:45/109	06:39 08:44-09:37/53 18:32 15:31-16:39/68	06:49 20:04	06:11 18:51-19:30/39 20:35	05:55 18:55-19:35/40 20:58
16	07:47 08:40-09:11/31 17:24 14:56-16:04/68	07:20 08:58-09:39/41 18:01 14:57-16:46/109	06:38 08:44-09:35/51 18:33 15:32-16:37/65	06:48 20:05	06:10 18:51-19:30/39 20:36	05:55 18:55-19:35/40 20:58
17	07:47 08:41-09:12/31 17:25 14:56-16:06/70	07:18 08:55-09:40/45 18:03 14:57-16:46/109	06:36 07:35-07:41/6 15:33-16:35/62 18:34 08:45-09:34/49	06:46 20:06	06:09 18:50-19:30/40 20:37	05:55 18:55-19:35/40 20:58
18	07:46 08:41-09:12/31 17:26 14:56-16:06/70	07:17 08:54-09:42/48 18:04 14:58-16:47/109	06:34 07:30-07:44/14 15:35-16:34/59 18:35 08:46-09:31/45	06:45 20:07	06:08 18:50-19:31/41 20:38	05:55 18:55-19:35/40 20:59
19	07:46 08:42-09:13/31 17:28 14:56-16:08/72	07:16 08:53-09:44/51 18:05 14:59-16:48/109	06:33 07:27-07:45/18 15:36-16:33/57 18:36 08:47-09:29/42	06:43 20:08	06:07 18:49-19:31/42 20:39	05:55 18:55-19:35/40 20:59
20	07:45 08:42-09:12/30 17:29 14:55-16:08/73	07:14 08:51-09:44/53 18:06 14:59-16:47/108	06:31 07:26-07:47/21 15:38-16:31/53 18:37 08:49-09:27/38	06:42 20:09	06:06 18:49-19:31/42 20:39	05:55 18:55-19:35/40 20:59
21	07:45 08:42-09:12/30 17:30 14:55-16:09/74	07:13 08:50-09:45/55 18:07 15:00-16:48/108	06:29 07:24-07:48/24 15:40-16:29/49 18:38 08:50-09:24/34	06:40 20:10	06:05 18:49-19:32/43 20:40	05:56 18:56-19:36/40 21:00
22	07:44 08:43-09:13/30 17:31 14:55-16:10/75	07:11 08:50-09:46/56 18:08 15:01-16:48/107	06:28 07:23-07:48/25 15:42-16:27/45 18:39 08:51-09:21/30	06:39 20:11	06:04 18:49-19:32/43 20:41	05:56 18:56-19:36/40 21:00
23	07:44 08:43-09:13/30 17:32 14:55-16:11/76	07:10 08:48-09:47/59 18:10 15:02-16:48/106	06:26 07:23-07:48/25 15:45-16:25/40 18:40 08:54-09:18/24	06:37 20:12	06:04 18:49-19:32/43 20:42	05:56 18:56-19:36/40 21:00
24	07:43 08:43-09:12/29 17:33 14:54-16:12/78	07:09 08:48-09:47/59 18:11 15:04-16:49/105	06:25 07:22-07:48/26 15:47-16:21/34 18:41 08:58-09:12/14	06:36 20:13	06:03 18:49-19:33/44 20:43	05:56 18:56-19:36/40 21:00
25	07:42 08:45-09:13/28 17:35 14:55-16:13/78	07:07 08:47-09:47/60 18:12 15:04-16:48/104	06:23 07:21-07:48/27 18:42 15:51-16:18/27	06:34 20:14	06:02 18:49-19:33/44 20:44	05:57 18:57-19:37/40 21:00
26	07:42 08:45-09:13/28 16:11-16:14/3 17:36 14:54-16:11/77	07:06 08:46-09:48/62 18:13 15:06-16:49/103	06:21 07:21-07:48/27 18:43 15:56-16:13/17	06:33 20:15	06:02 18:49-19:33/44 20:45	05:57 18:57-19:37/40 21:00
27	07:41 08:46-09:12/26 17:37 14:54-16:15/81	07:04 08:45-09:48/63 18:14 15:07-16:48/101	06:20 07:21-07:47/26 18:44	06:32 20:17	06:01 18:49-19:33/44 20:46	05:57 18:57-19:37/40 21:00
28	07:40 08:46-09:11/25 17:38 14:54-16:18/84	07:03 08:45-09:48/63 18:15 15:09-16:49/100	06:18 07:20-07:46/26 18:45	06:30 20:18	06:00 18:49-19:33/44 20:46	05:58 18:57-19:38/41 21:00
29	07:39 08:47-09:11/24 17:39 14:53-16:21/88		07:16 08:21-08:45/24 19:47	06:29 20:19	06:00 18:50-19:34/44 20:47	05:58 18:57-19:38/41 21:00
30	07:38 08:49-09:09/20 17:41 14:53-16:24/91		07:15 08:21-08:44/23 19:48	06:28 20:20	05:59 18:49-19:33/44 20:48	05:58 18:58-19:39/41 21:00
31	07:37 08:50-09:08/18 17:42 14:53-16:26/93		07:13 08:22-08:42/20 19:49		05:59 18:50-19:34/44 20:49	
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	2947	3810	3316	28	986	1231

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

Ing. Bruno Manca
 Via Vittorio Veneto 231
 IT-09028 Sestu
 +390702358125
 BrunoManca / ingbrunomanca@gmail.com
 Calculated:
 07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progettoWTG: 3 - AG01

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum
 704 820 622 355 622 1.039 1.312 1.360 6.834

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

	July	August	September	October	November	December
1	05:59 18:57-19:39/42 21:00	06:22 19:03-19:37/34 20:00	06:52 20:00	07:21 09:22-10:19/57 19:10 16:07-17:20/73	06:55 14:23-16:10/107 17:24	07:29 08:22-08:50/28 17:00 14:40-15:41/61
2	05:59 18:58-19:39/41 21:00	06:23 19:04-19:36/32 20:41	06:53 19:58	07:22 09:21-10:20/59 19:08 16:05-17:21/76	06:56 14:23-16:09/106 17:23	07:30 08:22-08:50/28 17:00 14:41-15:41/60
3	06:00 18:57-19:39/42 21:00	06:24 19:06-19:35/29 20:40	06:54 19:56	07:23 09:20-10:20/60 19:07 16:04-17:21/77	06:57 14:24-16:09/105 17:22	07:31 08:23-08:50/27 17:00 14:42-15:41/59
4	06:00 18:58-19:40/42 21:00	06:25 19:07-19:34/27 20:39	06:55 19:55	07:24 09:19-10:21/62 19:05 16:02-17:21/79	06:58 14:23-16:07/104 17:20	07:32 08:24-08:50/26 17:00 14:43-15:40/57
5	06:01 18:58-19:40/42 21:00	06:26 19:09-19:32/23 20:37	06:56 19:53	07:25 09:19-10:21/62 19:03 16:01-17:21/80	06:59 14:23-16:06/103 17:19	07:33 08:25-08:50/25 16:59 14:44-15:40/56
6	06:02 18:58-19:40/42 20:59	06:27 19:11-19:30/19 20:36	06:57 19:51	07:26 09:18-10:21/63 19:02 16:00-17:21/81	07:01 14:23-16:05/102 17:18	07:34 08:25-08:50/25 16:59 14:45-15:40/55
7	06:02 18:57-19:40/43 20:59	06:28 19:14-19:27/13 20:35	06:58 19:50	07:28 09:18-10:21/63 19:00 15:59-17:21/82	07:02 14:24-16:04/100 17:17	07:35 08:26-08:50/24 16:59 14:46-15:40/54
8	06:03 18:58-19:41/43 20:59	06:29 19:14-19:27/13 20:34	06:59 19:48	07:29 09:17-10:21/64 18:58 15:56-17:21/85	07:03 14:24-16:02/98 17:16	07:36 08:27-08:50/23 16:59 14:47-15:40/53
9	06:03 18:58-19:41/43 20:58	06:30 19:14-19:27/13 20:33	07:00 19:47	07:30 09:18-10:22/64 18:57 15:53-17:22/89	07:04 08:26-08:35/9 17:15 14:24-16:01/97	07:37 08:28-08:50/22 16:59 14:48-15:40/52
10	06:04 18:58-19:41/43 20:58	06:31 19:14-19:27/13 20:31	07:01 08:19-08:30/11 19:45	07:31 09:18-10:22/64 18:55 15:50-17:22/92	07:05 08:23-08:37/14 17:14 14:24-15:59/95	07:38 08:29-08:50/21 16:59 14:49-15:40/51
11	06:05 18:58-19:41/43 20:58	06:32 19:14-19:27/13 20:30	07:02 08:16-08:32/16 19:43	07:32 09:18-10:22/64 18:54 15:48-17:22/94	07:06 08:22-08:40/18 17:13 14:25-15:58/93	07:38 08:30-08:51/21 16:59 14:50-15:40/50
12	06:05 18:58-19:42/44 20:57	06:33 19:14-19:27/13 20:29	07:03 08:14-08:34/20 19:43	07:33 09:18-10:22/64 18:52 15:45-17:22/97	07:08 08:20-08:41/21 17:12 14:25-15:56/91	07:39 08:31-08:51/20 16:59 14:51-15:40/48
13	06:06 18:58-19:41/43 20:57	06:34 19:14-19:27/13 20:28	07:04 08:13-08:35/22 19:40	07:34 09:18-10:21/63 18:51 15:43-17:21/98	07:09 08:19-08:43/24 17:11 14:25-15:53/88	07:40 08:31-08:50/19 17:00 14:52-15:39/47
14	06:07 18:58-19:42/44 20:56	06:35 19:14-19:27/13 20:26	07:05 08:12-08:35/23 19:38	07:35 09:18-10:21/63 18:49 15:41-17:21/100	07:10 08:18-08:43/25 17:10 14:26-15:50/84	07:41 08:32-08:50/18 17:00 14:53-15:39/46
15	06:08 18:58-19:42/44 20:56	06:36 19:14-19:27/13 20:25	07:06 08:11-08:36/25 19:37	07:36 09:18-10:20/62 18:47 15:39-17:21/102	07:11 08:19-08:45/26 17:09 14:27-15:48/81	07:41 08:33-08:51/18 17:00 14:54-15:40/46
16	06:08 18:59-19:43/44 20:55	06:37 19:14-19:27/13 20:23	07:07 08:10-08:36/26 19:35	07:37 09:18-10:19/61 18:46 15:37-17:20/103	07:12 08:18-08:46/28 17:09 14:27-15:44/77	07:42 08:34-08:50/16 17:00 14:54-15:39/45
17	06:09 18:58-19:42/44 20:55	06:38 19:14-19:27/13 20:22	07:08 08:09-08:36/27 19:33 16:46-17:00/14	07:38 09:18-10:19/61 18:44 15:35-17:20/105	07:13 08:18-08:46/28 17:08 14:28-15:46/78	07:43 08:35-08:51/16 17:01 14:55-15:40/45
18	06:10 18:58-19:42/44 20:54	06:39 19:14-19:27/13 20:21	07:09 08:09-08:36/27 19:32 16:40-17:05/25	07:39 09:19-10:18/59 18:43 15:34-17:19/105	07:15 08:17-08:46/29 17:07 14:28-15:46/78	07:43 08:36-08:51/15 17:01 14:56-15:40/44
19	06:11 18:59-19:42/43 20:53	06:40 19:14-19:27/13 20:19	07:10 08:09-08:35/26 19:30 09:47-09:58/11	07:40 09:20-10:18/58 18:42 15:33-17:20/107	07:16 08:18-08:48/30 17:06 14:29-15:45/76	07:44 08:36-08:51/15 17:01 14:56-15:40/44
20	06:12 18:59-19:42/43 20:53	06:41 19:14-19:27/13 20:18	07:11 08:09-08:35/26 19:28 09:42-10:03/21	07:41 09:21-10:17/56 18:40 15:32-17:19/107	07:17 08:18-08:48/30 17:06 14:30-15:45/75	07:45 08:37-08:52/15 17:02 14:57-15:41/44
21	06:12 18:59-19:43/44 20:52	06:42 19:14-19:27/13 20:16	07:12 08:09-08:34/25 19:26 09:37-10:05/28	07:42 09:21-10:16/55 18:39 15:31-17:18/107	07:18 08:18-08:48/30 17:05 14:31-15:45/74	07:45 08:37-08:52/15 17:02 14:57-15:41/44
22	06:13 18:59-19:42/43 20:51	06:43 19:14-19:27/13 20:15	07:13 08:08-08:32/24 19:25 09:35-10:08/33	07:43 09:22-10:14/52 18:37 15:29-17:18/109	07:19 08:18-08:48/30 17:04 14:31-15:44/73	07:46 08:38-08:53/15 17:03 14:58-15:42/44
23	06:14 18:59-19:42/43 20:50	06:44 19:14-19:27/13 20:13	07:14 08:09-08:31/22 19:23 09:32-10:10/38	07:45 09:23-10:13/50 18:36 15:28-17:17/109	07:20 08:18-08:49/31 17:04 14:32-15:44/72	07:46 08:38-08:53/15 17:03 14:58-15:42/44
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25	06:16 19:00-19:41/41 20:49	06:45 19:14-19:27/13 20:10	07:15 08:12-08:27/15 19:20 09:29-10:13/44	07:47 08:26-09:11/45 17:33 14:27-16:16/109	07:23 08:19-08:50/31 17:03 14:34-15:44/70	07:47 08:39-08:54/15 17:04 14:59-15:43/44
26	06:17 19:00-19:41/41 20:48	06:46 19:14-19:27/13 20:09	07:16 08:14-08:24/10 19:18 09:27-10:15/48	07:48 08:28-09:09/41 17:32 14:26-16:16/110	07:24 08:19-08:50/31 17:02 14:35-15:43/68	07:48 08:39-08:55/16 17:05 14:59-15:43/44
27	06:18 19:01-19:41/40 20:47	06:47 19:14-19:27/13 20:07	07:17 09:26-10:16/50 19:16 16:14-17:18/64	07:49 08:29-09:06/37 17:30 14:25-16:15/110	07:25 08:20-08:50/30 17:02 14:36-15:43/67	07:48 08:40-08:56/16 17:06 15:00-15:45/45
28	06:19 19:01-19:41/40 20:46	06:48 19:14-19:27/13 20:06	07:18 09:25-10:17/52 19:15 16:12-17:19/67	07:50 08:31-09:04/33 17:29 14:25-16:14/109	07:26 08:20-08:50/30 17:01 14:37-15:43/66	07:48 08:39-08:57/18 17:06 15:00-15:45/45
29	06:20 19:01-19:39/38 20:45	06:49 19:14-19:27/13 20:04	07:19 09:24-10:18/54 19:13 16:10-17:19/69	07:51 08:34-09:01/27 17:28 14:24-16:13/109	07:27 08:21-08:50/29 17:01 14:38-15:42/64	07:49 08:39-08:57/18 17:07 15:00-15:46/46
30	06:20 19:02-19:38/36 20:44	06:50 19:14-19:27/13 20:03	07:20 09:23-10:19/56 19:11 16:08-17:20/72	07:52 08:38-08:58/20 17:26 14:24-16:13/109	07:28 08:21-08:50/29 17:01 14:39-15:42/63	07:49 08:39-08:58/19 17:08 15:00-15:47/47
31	06:21 19:03-19:38/35 20:43	06:51 19:14-19:27/13 20:01		07:54 08:44-08:51/7 17:25 14:24-16:11/107		07:49 08:39-08:59/20 17:08 15:00-15:48/48
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	1303	177	1539	4672	3112	2116

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:59 / 6

Licensed user:

Ing. Bruno Manca
Via Vittorio Veneto 231
IT-09028 Sestu
+390702358125
BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 4 - AG05

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834

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

	January	February	March	April	May	June	July	August	September	October	November	December	
1	07:49 17:09	07:36 17:43	07:01 18:16	07:11 19:50	06:26 20:21	05:58 20:50	05:59 21:00	06:22 20:42	06:52 20:00	19:25-19:38/13	07:21 19:10	06:55 17:24	07:29 17:00
2	07:49 17:10	07:36 17:44	07:00 18:18	07:10 19:51	06:25 20:22	05:58 20:50	05:59 21:00	06:23 20:41	06:53 19:58	19:28-19:34/6	07:22 19:08	06:56 17:23	07:30 17:00
3	07:50 17:11	07:35 17:46	06:58 18:19	07:08 19:52	06:24 20:23	05:57 20:51	06:00 21:00	06:24 20:40	06:54 19:56		07:23 19:06	06:57 17:22	07:31 17:00
4	07:50 17:12	07:34 17:47	06:57 18:20	07:06 19:53	06:23 20:24	05:57 20:52	06:00 21:00	06:25 20:39	06:55 19:55		07:24 19:05	06:58 17:20	07:32 17:00
5	07:50 17:13	07:33 17:48	06:55 18:21	07:05 19:54	06:21 20:25	05:57 20:52	06:01 21:00	06:26 20:37	06:56 19:53		07:25 19:03	06:59 17:19	07:33 16:59
6	07:50 17:14	07:31 17:49	06:54 18:22	07:03 19:55	06:20 20:26	05:56 20:53	06:01 20:59	06:27 20:36	06:57 19:51		07:26 19:02	07:01 17:18	07:34 16:59
7	07:50 17:15	07:30 17:50	06:52 18:23	07:02 19:56	06:19 20:27	05:56 20:54	06:02 20:59	06:28 20:35	06:58 19:50		07:28 19:00	07:02 17:17	07:35 16:59
8	07:49 17:16	07:29 17:52	06:50 18:24	07:00 19:57	06:18 20:28	05:56 20:54	06:03 20:59	06:29 20:34	06:59 19:48		07:29 18:58	07:03 17:16	07:36 16:59
9	07:49 17:17	07:28 17:53	06:49 18:25	06:58 19:58	06:17 20:29	05:56 20:55	06:03 20:59	06:30 20:33	07:00 19:47		07:30 18:57	07:04 17:15	07:37 16:59
10	07:49 17:18	07:27 17:54	06:47 18:26	06:57 19:59	19:29-19:35/6	06:16 20:30	05:55 20:55	06:31 20:31	07:01 19:45		07:31 18:55	07:05 17:14	07:38 16:59
11	07:49 17:19	07:26 17:55	06:46 18:28	06:55 20:00	19:26-19:39/13	06:15 20:31	05:55 20:56	06:32 20:30	07:02 19:43		07:32 18:54	07:06 17:13	07:38 16:59
12	07:49 17:20	07:25 17:57	06:44 18:29	06:54 20:01	19:24-19:39/15	06:13 20:32	05:55 20:56	06:33 20:29	07:03 19:42		07:33 18:52	07:08 17:12	07:39 16:59
13	07:48 17:21	07:23 17:58	06:42 18:30	06:52 20:02	19:23-19:41/18	06:12 20:33	05:55 20:57	06:34 20:28	07:04 19:40		07:34 18:51	07:09 17:11	07:40 17:00
14	07:48 17:22	07:22 17:59	06:41 18:31	06:51 20:03	19:21-19:41/20	06:11 20:34	05:55 20:57	06:35 20:26	07:05 19:38		07:35 18:49	07:10 17:10	07:41 17:00
15	07:48 17:23	07:21 18:00	06:39 18:32	06:49 20:04	19:21-19:42/21	06:10 20:35	05:55 20:58	06:36 20:25	07:06 19:37		07:36 18:47	07:11 17:09	07:41 17:00
16	07:47 17:24	07:20 18:01	06:38 18:33	06:48 20:05	19:19-19:42/23	06:10 20:36	05:55 20:58	06:37 20:23	07:07 19:35		07:37 18:46	07:12 17:09	07:42 17:00
17	07:47 17:25	07:18 18:03	06:36 18:34	06:46 20:06	19:20-19:42/22	06:09 20:37	05:55 20:58	06:38 20:22	07:08 19:33	19:34-19:37/3	07:38 18:44	07:13 17:08	07:43 17:00
18	07:46 17:26	07:17 18:04	06:34 18:35	06:45 20:07	19:19-19:42/23	06:08 20:38	05:55 20:59	06:39 20:21	07:09 19:32	19:30-19:41/11	07:39 18:43	07:15 17:07	07:44 17:01
19	07:46 17:28	07:16 18:05	06:33 18:36	06:43 20:08	19:19-19:42/23	06:07 20:39	05:55 20:59	06:38 20:19	07:10 19:30	19:28-19:43/15	07:40 18:41	07:16 17:06	07:44 17:01
20	07:45 17:29	07:14 18:06	06:31 18:37	06:42 20:09	19:19-19:40/21	06:06 20:39	05:55 20:59	06:39 20:18	07:11 19:28	19:26-19:44/18	07:41 18:40	07:17 17:06	07:45 17:02
21	07:45 17:30	07:13 18:07	06:29 18:38	06:40 20:10	19:20-19:40/20	06:05 20:40	05:55 21:00	06:38 20:16	07:12 19:26	19:25-19:45/20	07:42 18:39	07:18 17:05	07:45 17:02
22	07:44 17:31	07:11 18:08	06:28 18:39	06:39 20:11	19:20-19:39/19	06:04 20:41	05:56 21:00	06:38 20:15	07:13 19:25	19:23-19:44/21	07:43 18:37	07:19 17:04	07:46 17:03
23	07:44 17:32	07:10 18:10	06:26 18:40	06:37 20:12	19:21-19:38/17	06:04 20:42	05:56 21:00	06:38 20:13	07:13 19:23	19:23-19:44/21	07:44 18:36	07:20 17:04	07:46 17:03
24	07:43 17:33	07:09 18:11	06:24 18:41	06:36 20:13	19:22-19:36/14	06:03 20:43	05:56 21:00	06:38 20:12	07:14 19:21	19:22-19:45/23	07:45 18:34	07:21 17:03	07:47 17:04
25	07:42 17:35	07:07 18:12	06:23 18:42	06:34 20:14	19:24-19:33/9	06:02 20:44	05:56 21:00	06:38 20:10	07:15 19:20	19:22-19:44/22	07:46 17:33	07:23 17:03	07:47 17:04
26	07:42 17:36	07:06 18:13	06:21 18:43	06:33 20:16		06:02 20:45	05:57 21:00	06:39 20:09	07:16 19:18	19:21-19:44/23	07:47 17:32	07:24 17:02	07:48 17:05
27	07:41 17:37	07:04 18:14	06:20 18:44	06:32 20:17		06:01 20:46	05:57 21:00	06:40 20:07	07:17 19:16	19:21-19:44/23	07:48 17:30	07:25 17:02	07:48 17:05
28	07:40 17:38	07:03 18:15	06:18 18:45	06:30 20:18		06:00 20:46	05:57 21:00	06:41 20:06	07:18 19:15	19:22-19:43/21	07:49 17:29	07:26 17:01	07:48 17:06
29	07:39 17:39		07:16 19:47	06:29 20:19		06:00 20:47	05:58 21:00	06:42 20:04	07:19 19:13	19:22-19:42/20	07:50 17:28	07:27 17:01	07:49 17:07
30	07:38 17:41		07:15 19:48	06:28 20:20		05:59 21:00	05:58 21:00	06:43 20:03	07:20 19:11	19:23-19:41/18	07:51 17:26	07:28 17:01	07:49 17:08
31	07:37 17:42		07:13 19:49	06:28 20:20		05:59 20:49	05:59 20:49	06:44 20:01	07:21 19:11	19:24-19:39/15	07:52 17:25	07:29 17:01	07:49 17:08
Potential sun hours	299	298	370	398	284	447	450	457	427	375	346	299	290
Sum of minutes with flicker	0	0	0	284	0	276	0	274	19	0	0	0	0

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

Ing. Bruno Manca
Via Vittorio Veneto 231
IT-09028 Sestu
+390702358125
BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 5 - AG02

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:49 08:17-08:29/12 17:09	07:36 08:07-08:26/19 17:43	07:01 07:29-07:51/22 18:16	07:11 07:29-07:51/22 19:50	06:26 07:19-08:40/81 20:21	05:58 06:59-08:55/116 20:49
2	07:49 08:17-08:30/13 17:10	07:35 08:08-08:26/18 17:44	07:00 07:29-07:51/22 18:18	07:10 07:29-07:51/22 19:51	06:25 07:17-08:40/83 20:22	05:58 06:59-07:31/32 20:50
3	07:49 08:17-08:31/14 17:11	07:35 08:09-08:25/16 17:46	06:58 07:28-07:51/23 18:19	07:08 07:28-07:51/23 19:52	06:24 07:16-08:42/86 20:23	05:57 06:59-07:35/36 20:51
4	07:50 08:16-08:32/16 17:12	07:34 08:10-08:24/14 17:47	06:57 07:28-07:51/23 18:20	07:06 07:28-07:51/23 19:53	06:23 07:14-08:43/89 20:24	05:57 06:59-07:38/39 20:52
5	07:50 08:16-08:33/17 17:13	07:32 08:12-08:23/11 17:48	06:55 07:28-07:50/22 18:21	07:05 07:28-07:50/22 19:54	06:21 07:13-08:44/91 20:25	05:57 06:59-07:40/41 20:52
6	07:50 08:16-08:33/17 17:14	07:31 08:15-08:20/5 17:49	06:54 07:28-07:49/21 18:22	07:03 07:44-07:56/12 19:55	06:20 07:12-08:45/93 20:26	05:56 06:59-07:43/44 20:53
7	07:50 08:15-08:34/19 17:15	07:30 07:30 17:50	06:52 07:29-07:49/20 18:23	07:02 07:36-07:58/22 19:56	06:19 07:11-08:46/95 20:27	05:56 07:00-07:45/45 20:54
8	07:49 08:15-08:35/20 17:16	07:29 07:29 17:52	06:50 07:29-07:47/18 18:24	07:00 07:34-07:59/25 19:57	06:18 07:09-08:46/97 20:28	05:56 06:59-07:45/46 20:54
9	07:49 08:15-08:36/21 17:17	07:28 07:28 17:53	06:49 07:31-07:46/15 18:25	06:58 07:32-08:01/29 19:58	06:17 07:08-08:47/99 20:29	05:56 06:59-07:47/48 20:55
10	07:49 08:14-08:37/23 17:18	07:27 07:27 17:54	06:47 07:33-07:43/10 18:26	06:57 07:31-08:02/31 19:59	06:16 07:07-08:48/101 20:30	05:55 06:59-07:48/49 20:55
11	07:49 08:12-08:37/25 17:19	07:26 07:26 17:55	06:46 06:46 18:28	06:55 07:30-08:03/33 20:00	06:15 07:07-08:48/101 20:31	05:55 07:00-07:50/50 20:56
12	07:49 08:12-08:38/26 17:20	07:25 07:25 17:57	06:44 06:44 18:29	06:54 07:29-08:03/34 20:01	06:14 07:06-08:49/103 20:32	05:55 06:59-07:51/52 20:56
13	07:48 08:12-08:39/27 17:21	07:23 07:23 17:58	06:42 06:42 18:30	06:52 07:30-08:04/34 20:02	06:13 07:05-08:49/104 20:33	05:55 06:59-07:52/53 20:57
14	07:48 08:11-08:39/28 17:22	07:22 07:22 17:59	06:41 06:41 18:31	06:51 07:29-08:04/35 20:03	06:11 07:04-08:50/106 20:34	05:55 06:58-07:52/54 20:57
15	07:48 08:11-08:40/29 17:23	07:21 07:21 18:00	06:39 06:39 18:32	06:49 07:29-08:04/35 20:04	06:11 07:05-08:51/106 20:35	05:55 06:58-07:53/55 20:58
16	07:47 08:10-08:40/30 17:24	07:20 07:20 18:01	06:38 06:38 18:33	06:48 07:28-08:04/36 20:05	06:10 07:04-08:51/107 20:36	05:55 06:58-07:54/56 20:58
17	07:47 08:11-08:41/30 17:25	07:18 07:18 18:03	06:36 06:36 18:34	06:46 07:28-08:04/36 20:06	06:09 07:03-08:52/109 20:37	05:55 06:57-07:54/57 20:58
18	07:46 08:10-08:41/31 17:26	07:17 07:17 18:04	06:34 06:34 18:35	06:45 07:28-08:03/35 20:07	06:08 07:02-08:52/110 20:38	05:55 06:57-07:54/57 20:59
19	07:46 08:11-08:42/31 17:28	07:16 07:16 18:05	06:33 06:33 18:36	06:43 07:28-08:03/35 20:08	06:07 07:02-08:52/110 20:38	05:55 06:57-07:55/58 20:59
20	07:45 08:10-08:42/32 17:29	07:14 07:14 18:06	06:31 06:31 18:37	06:42 07:27-08:02/35 20:09	06:06 07:01-08:52/111 20:39	05:55 06:57-07:55/58 20:59
21	07:45 08:08-08:41/33 17:30	07:13 07:13 18:07	06:29 06:29 18:38	06:40 07:28-08:14/46 20:10	06:05 07:02-08:53/111 20:40	05:56 06:58-07:56/58 21:00
22	07:44 08:08-08:42/34 17:31	07:11 07:11 18:08	06:28 06:28 18:39	06:39 07:27-08:19/52 20:11	06:04 07:01-08:53/112 20:41	05:56 06:58-07:56/58 21:00
23	07:44 08:07-08:42/35 17:32	07:10 07:10 18:10	06:26 06:26 18:40	06:37 07:28-08:23/55 20:12	06:04 07:00-08:53/113 20:42	05:56 06:58-07:56/58 21:00
24	07:43 08:07-08:41/34 17:33	07:09 07:40-07:42/2 18:11	06:24 06:24 18:41	06:36 07:29-08:26/57 20:13	06:03 07:01-08:54/113 20:43	05:56 06:58-07:56/58 21:00
25	07:42 08:07-08:41/34 17:35	07:07 07:35-07:46/11 18:12	06:23 06:23 18:42	06:34 07:29-08:28/59 20:14	06:02 07:00-08:54/114 20:44	05:57 06:59-07:56/57 21:00
26	07:41 08:07-08:41/34 17:36	07:06 07:33-07:48/15 18:13	06:21 06:21 18:43	06:33 07:29-08:31/62 20:15	06:02 06:59-08:54/115 20:45	05:57 07:00-07:56/56 21:00
27	07:41 08:06-08:39/33 17:37	07:04 07:31-07:49/18 18:14	06:20 06:20 18:44	06:32 07:27-08:33/66 20:17	06:01 07:00-08:55/115 20:46	05:57 07:00-07:55/55 21:00
28	07:40 08:06-08:38/32 17:38	07:03 07:30-07:51/21 18:15	06:18 06:18 18:45	06:30 07:24-08:35/71 20:18	06:00 06:59-08:54/115 20:46	05:58 07:01-07:56/55 21:00
29	07:39 08:06-08:35/29 17:39		07:16 07:16 19:47	06:29 07:22-08:36/74 20:19	06:00 07:00-08:55/115 20:47	05:58 07:01-07:55/54 21:00
30	07:38 08:07-08:33/26 17:41		07:15 07:15 19:48	06:28 07:21-08:38/77 20:20	05:59 06:59-08:55/116 20:48	05:58 07:03-07:55/52 21:00
31	07:37 08:07-08:31/24 17:42		07:13 07:13 19:49		05:59 06:59-08:55/116 20:49	
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	809	150	196	1086	3237	3590

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

Ing. Bruno Manca
Via Vittorio Veneto 231
IT-09028 Sestu
+390702358125
BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 5 - AG02

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December
1	05:59 07:03-07:54/51 21:00 07:54-09:02/68	06:22 07:17-08:59/102 20:42	06:52 07:29-08:02/33 20:00	07:21 19:10	06:55 17:24	07:29 07:54-08:20/26 17:00
2	05:59 07:05-07:54/49 21:00 07:54-09:02/68	06:23 07:18-08:59/101 20:41	06:53 07:30-08:01/31 19:58	07:22 19:08	06:56 17:23	07:30 07:56-08:20/24 17:00
3	06:00 07:04-07:53/49 21:00 07:53-09:02/69	06:24 07:18-08:58/100 20:40	06:54 07:30-07:59/29 19:56	07:23 08:12-08:19/7 19:06	06:57 17:22	07:31 07:58-08:20/22 17:00
4	06:00 07:05-07:52/47 21:00 07:52-09:03/71	06:25 07:19-08:57/98 20:39	06:55 07:31-07:58/27 19:55	07:24 08:09-08:22/13 19:05	06:58 17:20	07:32 07:59-08:19/20 17:00
5	06:01 07:05-07:51/46 21:00 07:51-09:02/71	06:26 07:20-08:56/96 20:37	06:56 07:33-07:55/22 19:53	07:25 08:07-08:23/16 19:03	06:59 07:44-07:51/7 17:19	07:33 08:00-08:19/19 16:59
6	06:01 07:05-07:50/45 20:59 07:50-09:03/73	06:27 07:21-08:55/94 20:36	06:57 07:38-07:51/13 19:51	07:26 08:05-08:24/19 19:02	07:01 07:42-07:53/11 17:18	07:34 08:02-08:19/17 16:59
7	06:02 07:05-07:48/43 20:59 07:48-09:02/74	06:28 07:22-08:55/93 20:35	06:58 19:50	07:27 08:04-08:24/20 19:00	07:02 07:41-07:55/14 17:17	07:35 08:02-08:19/17 16:59
8	06:03 07:06-07:46/40 20:59 07:46-09:03/77	06:29 07:23-08:53/90 20:34	06:59 19:48	07:29 08:04-08:26/22 18:58	07:03 07:40-07:56/16 17:16	07:36 08:03-08:19/16 16:59
9	06:03 07:07-07:44/37 20:58 07:44-09:04/80	06:30 07:23-08:51/88 20:33	07:00 19:47	07:30 08:03-08:26/23 18:57	07:04 07:39-07:57/18 17:15	07:37 08:05-08:19/14 16:59
10	06:04 07:06-07:40/34 20:58 07:40-09:03/83	06:31 07:25-08:50/85 20:31	07:01 19:45	07:31 08:03-08:26/23 18:55	07:05 07:38-07:57/19 17:14	07:37 08:06-08:20/14 16:59
11	06:05 07:07-07:34/27 20:58 07:34-09:03/89	06:32 07:26-08:49/83 20:30	07:02 19:43	07:32 08:03-08:25/22 18:54	07:06 07:39-08:03/24 17:13	07:38 08:07-08:20/13 16:59
12	06:05 07:08-09:04/116 20:57	06:33 07:27-08:47/80 20:29	07:03 19:42	07:33 08:02-08:25/23 18:52	07:08 07:38-08:05/27 17:12	07:39 08:08-08:20/12 16:59
13	06:06 07:07-09:03/116 20:57	06:34 07:29-08:46/77 20:27	07:04 19:40	07:34 08:03-08:24/21 18:51	07:09 07:38-08:08/30 17:11	07:40 08:08-08:19/11 17:00
14	06:07 07:08-09:03/115 20:56	06:35 07:30-08:44/74 20:26	07:05 19:38	07:35 08:03-08:23/20 18:49	07:10 07:38-08:10/32 17:10	07:41 08:10-08:19/9 17:00
15	06:08 07:08-09:04/116 20:56	06:36 07:32-08:42/70 20:25	07:06 19:37	07:36 08:04-08:21/17 18:47	07:11 07:39-08:12/33 17:09	07:41 08:11-08:19/8 17:00
16	06:08 07:09-09:04/115 20:55	06:37 07:34-08:40/66 20:23	07:07 19:35	07:37 08:05-08:19/14 18:46	07:12 07:40-08:14/34 17:09	07:42 08:12-08:19/7 17:00
17	06:09 07:09-09:03/114 20:55	06:38 07:36-08:37/61 20:22	07:08 19:33	07:38 08:07-08:17/10 18:44	07:13 07:40-08:14/34 17:08	07:43 08:13-08:18/5 17:01
18	06:10 07:09-09:03/114 20:54	06:39 07:36-08:35/59 20:21	07:09 19:31	07:39 18:43	07:15 07:41-08:15/34 17:07	07:43 08:15-08:18/3 17:01
19	06:11 07:10-09:04/114 20:53	06:40 07:35-08:32/57 20:19	07:10 19:30	07:40 18:41	07:16 07:42-08:17/35 17:06	07:44 08:15-08:17/2 17:01
20	06:12 07:11-09:04/113 20:52	06:41 07:34-08:28/54 20:18	07:11 19:28	07:41 18:40	07:17 07:43-08:17/34 17:06	07:45 17:02
21	06:12 07:11-09:04/113 20:52	06:42 07:33-08:24/51 20:16	07:12 19:26	07:42 18:39	07:18 07:44-08:17/33 17:05	07:45 17:02
22	06:13 07:11-09:03/112 20:51	06:43 07:33-08:17/44 20:15	07:13 19:25	07:43 18:37	07:19 07:46-08:18/32 17:04	07:46 17:03
23	06:14 07:11-09:03/112 20:50	06:44 07:32-08:07/35 20:13	07:13 19:23	07:45 18:36	07:20 07:47-08:18/31 17:04	07:46 17:03
24	06:15 07:12-09:03/111 20:49	06:44 07:31-08:06/35 20:12	07:14 19:21	07:46 18:34	07:21 07:48-08:19/31 17:03	07:47 17:04
25	06:16 07:13-09:02/109 20:49	06:45 07:30-08:06/36 20:10	07:15 19:20	06:47 17:33	07:23 07:49-08:19/30 17:03	07:47 08:18-08:21/3 17:04
26	06:17 07:13-09:02/109 20:48	06:46 07:30-08:06/36 20:09	07:16 19:18	06:48 17:32	07:24 07:49-08:19/30 17:02	07:48 08:17-08:22/5 17:05
27	06:18 07:14-09:02/108 20:47	06:47 07:30-08:06/36 20:07	07:17 19:16	06:49 17:30	07:25 07:50-08:19/29 17:02	07:48 08:18-08:24/6 17:06
28	06:19 07:15-09:02/107 20:46	06:48 07:30-08:05/35 20:06	07:18 19:15	06:50 17:29	07:26 07:51-08:19/28 17:01	07:48 08:17-08:25/8 17:06
29	06:19 07:14-09:00/106 20:45	06:49 07:30-08:05/35 20:04	07:19 19:13	06:51 17:28	07:27 07:52-08:20/28 17:01	07:49 08:17-08:25/8 17:07
30	06:20 07:15-09:00/105 20:44	06:50 07:29-08:04/35 20:03	07:20 19:11	06:52 17:26	07:28 07:53-08:20/27 17:01	07:49 08:16-08:26/10 17:08
31	06:21 07:16-09:00/104 20:43	06:51 07:29-08:03/34 20:01		06:54 17:25		07:49 08:16-08:27/11 17:08
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	3520	2040	155	270	701	310

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:59 / 9

Licensed user:

Ing. Bruno Manca
 Via Vittorio Veneto 231
 IT-09028 Sestu
 +390702358125
 BrunoManca / ingbrunomanca@gmail.com
 Calculated:
 07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 6 - AG04

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
 Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
 3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
 N NE E SE S SW W NW Sum
 704 820 622 355 622 1.039 1.312 1.360 6.834
 Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:49 08:12-08:54/42 17:09	07:36 08:14-09:07/53 17:43	07:01 17:47-17:55/8 18:16	07:11 17:18-18:45/87 19:50	06:26 06:57-07:24/27 20:21 17:18-18:38/80	05:58 07:01-07:20/19 20:50 07:20-08:03/43
2	07:49 08:12-08:55/43 17:10	07:36 08:14-09:06/52 17:44	07:00 17:50-17:56/6 18:18	07:10 17:17-18:45/88 19:51	06:25 06:55-07:22/27 20:22 17:19-18:37/78	05:58 07:01-07:23/22 20:50 07:23-08:04/41
3	07:50 08:12-08:56/44 17:11	07:35 08:15-09:06/51 17:46	06:58 18:19	07:08 17:15-18:45/90 19:52	06:24 06:55-07:21/26 20:23 17:20-18:37/77	05:57 07:01-07:25/24 20:51 07:25-08:05/40
4	07:50 08:12-08:57/45 17:12	07:34 08:16-09:05/49 17:47	06:57 18:20	07:06 17:15-18:46/91 19:53	06:23 06:55-07:21/26 20:24 17:21-18:36/75	05:57 07:01-07:26/27 20:52 07:26-08:04/38
5	07:50 08:12-08:57/45 17:13	07:33 08:16-09:05/49 17:48	06:55 18:21	07:05 17:14-18:46/92 19:54	06:21 06:54-07:20/26 20:25 17:22-18:35/73	05:57 06:59-07:28/29 20:52 07:28-08:05/37
6	07:50 08:11-08:57/46 17:14	07:31 08:17-09:04/47 17:49	06:54 18:22	07:03 17:14-18:47/93 19:55	06:20 06:53-07:20/27 20:26 17:23-18:35/72	05:56 06:58-07:29/31 20:53 07:29-08:05/36
7	07:50 08:11-08:58/47 17:15	07:30 08:18-09:03/45 17:50	06:52 18:23	07:02 17:14-18:46/92 19:56	06:19 06:53-07:20/27 20:27 07:26-07:39/13	05:56 06:58-07:30/32 20:54 07:30-08:06/36
8	07:49 08:11-08:59/48 17:16	07:29 08:19-09:02/43 17:52	06:50 18:24	07:00 17:13-18:46/93 19:57	06:18 06:51-07:19/28 20:28 07:21-07:42/21	05:56 06:56-07:30/34 20:54 07:30-08:05/35
9	07:49 08:11-09:00/49 17:17	07:28 08:21-09:01/40 17:53	06:49 18:25	06:58 17:13-18:47/94 19:58	06:17 06:51-07:45/54 20:29 17:25-18:31/66	05:56 06:56-07:31/35 20:55 07:31-08:06/35
10	07:49 08:11-09:01/50 17:18	07:27 08:21-08:59/38 17:54	06:47 18:26	06:57 17:12-18:46/94 19:59	06:16 06:51-07:48/57 20:30 17:26-18:31/65	05:55 06:56-07:32/36 20:55 07:32-08:06/34
11	07:49 08:10-09:01/51 17:19	07:26 08:23-08:58/35 17:55	06:46 18:28	06:55 17:13-18:47/94 20:00	06:15 06:51-07:49/58 20:31 17:27-18:30/63	05:55 06:55-07:33/38 20:56 07:33-08:06/33
12	07:49 08:11-09:02/51 17:20	07:25 08:25-08:56/31 17:57	06:44 18:29	06:54 17:12-18:46/94 20:01	06:14 06:51-07:51/60 20:32 17:28-18:29/61	05:55 06:55-07:34/39 20:56 07:34-08:07/33
13	07:48 08:11-09:03/52 17:21	07:23 08:27-08:53/26 17:58	06:42 18:30	06:52 17:12-18:47/95 20:02	06:12 06:51-07:52/61 20:33 17:29-18:28/59	05:55 06:55-07:34/39 20:57 07:34-08:07/33
14	07:48 08:11-09:03/52 17:22	07:22 08:30-08:49/19 17:59	06:41 18:31	06:51 17:12-18:46/94 20:03	06:11 06:51-07:53/62 20:34 17:30-18:27/57	05:55 06:55-07:35/40 20:57 07:35-08:07/32
15	07:48 08:11-09:04/53 17:23	07:21 08:31-08:50/10 18:00	06:39 16:57-17:15/18 18:32	06:49 17:12-18:46/94 20:04	06:10 06:52-07:55/63 20:35 17:31-18:25/54	05:55 06:55-07:36/41 20:58 07:36-08:07/31
16	07:47 08:11-09:04/53 17:24	07:20 08:32-08:51/11 18:01	06:38 16:50-17:21/31 18:33	06:48 07:17-07:25/8 20:05 17:12-18:45/93	06:10 06:52-07:56/64 20:36 17:34-18:25/51	05:55 06:56-07:36/41 20:58 07:36-08:07/31
17	07:47 08:11-09:05/54 17:25	07:18 08:33-08:52/12 18:03	06:36 16:45-17:24/39 18:34	06:46 07:14-07:28/14 20:06 17:13-18:46/93	06:09 06:53-07:57/64 20:37 17:35-18:24/49	05:55 06:55-07:36/41 20:58 07:36-08:08/32
18	07:46 08:11-09:05/54 17:26	07:17 08:34-08:53/13 18:04	06:34 16:42-17:28/46 18:35	06:45 07:12-07:28/16 20:07 17:12-18:45/93	06:08 06:53-07:57/64 20:38 17:36-18:22/46	05:55 06:55-07:36/41 20:59 07:36-08:08/32
19	07:46 08:12-09:06/54 17:28	07:16 08:35-08:54/14 18:05	06:33 16:39-17:30/51 18:36	06:43 07:11-07:30/19 20:08 17:13-18:45/92	06:07 06:54-07:58/64 20:39 17:37-18:21/44	05:55 06:55-07:37/42 20:59 07:37-08:08/31
20	07:45 08:11-09:06/55 17:29	07:14 17:43-17:44/1 18:06	06:31 16:36-17:32/56 18:37	06:42 07:09-07:30/21 20:09 17:12-18:44/92	06:06 06:54-07:58/64 20:39 17:39-18:20/41	05:55 06:55-07:37/42 20:59 07:37-08:08/31
21	07:45 08:11-09:06/55 17:30	07:13 17:43-17:46/3 18:07	06:29 16:34-17:34/60 18:38	06:40 07:09-07:30/21 20:10 17:13-18:44/91	06:05 06:56-08:00/64 20:40 17:41-18:19/38	05:55 06:56-07:38/42 21:00 07:38-08:09/31
22	07:44 08:12-09:07/55 17:31	07:11 17:42-17:46/4 18:08	06:28 16:31-17:36/65 18:39	06:39 07:07-07:30/23 20:11 17:13-18:43/90	06:04 06:56-08:00/64 20:41 17:42-18:17/35	05:56 06:56-07:38/42 21:00 07:38-08:09/31
23	07:44 08:12-09:07/55 17:32	07:10 17:43-17:48/5 18:10	06:26 16:30-17:38/68 18:40	06:37 07:06-07:30/24 20:12 17:14-18:43/89	06:04 06:57-08:00/63 20:42 17:44-18:15/31	05:56 06:56-07:38/42 21:00 07:38-08:09/31
24	07:43 08:12-09:07/55 17:33	07:09 17:43-17:50/7 18:11	06:24 16:28-17:39/71 18:41	06:36 07:05-07:31/26 20:13 17:15-18:43/88	06:03 06:59-08:01/62 20:43 17:47-18:14/27	05:56 06:56-07:38/42 21:00 07:38-08:09/31
25	07:42 08:12-09:08/56 17:35	07:07 17:43-17:50/7 18:12	06:23 16:26-17:39/73 18:42	06:34 07:03-07:29/26 20:14 17:14-18:42/88	06:02 07:01-08:01/60 20:44 17:49-18:12/23	05:56 06:57-07:38/41 21:00 07:38-08:10/32
26	07:42 08:12-09:08/56 17:36	07:06 17:44-17:52/8 18:13	06:21 16:25-17:41/76 18:43	06:33 07:03-07:29/26 20:15 17:15-18:41/86	06:02 07:02-08:01/59 20:45 17:51-18:09/18	05:57 06:57-07:38/41 21:00 07:38-08:09/31
27	07:41 08:13-09:08/55 17:37	07:04 17:44-17:53/9 18:14	06:20 16:23-17:42/79 18:44	06:32 07:02-07:29/27 20:17 17:16-18:41/85	06:01 07:02-08:02/60 20:46 17:55-18:06/11	05:57 06:57-07:38/41 21:00 07:38-08:09/31
28	07:40 08:13-09:08/55 17:38	07:03 17:46-17:54/8 18:15	06:18 16:21-17:42/81 18:45	06:30 07:01-07:27/26 20:18 17:16-18:40/84	06:00 07:02-08:02/60 20:46	05:58 06:58-07:38/40 21:00 07:38-08:10/32
29	07:39 08:13-09:07/54 17:39		07:16 17:21-18:44/83 19:47	06:29 06:59-07:27/28 20:19 17:17-18:39/82	06:00 07:02-08:03/61 20:47	05:58 06:58-07:38/40 21:00 07:38-08:10/32
30	07:38 08:13-09:07/54 17:41		07:15 17:19-18:44/85 19:48	06:28 06:58-07:25/27 20:20 17:18-18:39/81	05:59 07:01-08:03/62 20:48	05:58 06:59-07:38/39 21:00 07:38-08:11/33
31	07:37 08:13-09:07/54 17:42		07:13 17:18-18:44/86 19:49		05:59 07:02-07:17/15 20:49 07:17-08:04/47	
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	1592	630	1082	3044	3092	2112

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

Ing. Bruno Manca
Via Vittorio Veneto 231
IT-09028 Sestu
+390702358125
BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 6 - AG04

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834

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

	July	August	September	October	November	December
1	05:59 06:59-07:37/38 21:00 07:37-08:10/33	06:22 07:01-08:01/60 20:42 17:38-18:40/62	06:52 17:12-18:46/94 20:00	07:21 19:10	06:55 07:51-08:29/38 17:24	07:29 07:52-08:43/51 17:00
2	05:59 07:00-07:38/38 21:00 07:38-08:11/33	06:23 07:02-07:59/57 20:41 17:37-18:41/64	06:53 17:11-18:45/94 19:58	07:22 19:08	06:56 07:49-08:30/41 17:23	07:30 07:53-08:43/50 17:00
3	06:00 07:01-07:37/36 21:00 07:37-08:11/34	06:24 07:02-07:57/55 20:40 17:36-18:41/65	06:54 17:11-18:45/94 19:56	07:23 19:06	06:57 07:49-08:32/43 17:22	07:31 07:54-08:43/49 17:00
4	06:00 07:02-07:37/35 21:00 07:37-08:11/34	06:25 07:02-07:29/27 17:35-18:42/67 20:39 07:30-07:55/25	06:55 17:11-18:44/93 19:55	07:24 19:05	06:58 07:48-08:33/45 17:20	07:32 07:55-08:43/48 17:00
5	06:01 07:02-07:36/34 21:00 07:36-08:11/35	06:26 07:02-07:29/27 17:34-18:43/69 20:37 07:33-07:52/19	06:56 17:10-18:42/92 19:53	07:25 19:03	06:59 07:47-08:34/47 17:19	07:33 07:56-08:43/47 16:59
6	06:01 07:04-07:36/32 20:59 07:36-08:11/35	06:27 07:03-07:30/27 17:33-18:44/71 20:36 07:39-07:46/7	06:57 17:09-18:42/93 19:51	07:26 19:02	07:01 07:46-08:35/49 17:18	07:34 07:57-08:43/46 16:59
7	06:02 07:04-07:34/30 20:59 07:34-08:11/37	06:28 07:03-07:29/26 20:35 17:32-18:45/73	06:58 17:09-18:41/92 19:50	07:27 19:00	07:02 07:46-08:36/50 17:17	07:35 07:58-08:43/45 16:59
8	06:03 07:06-07:34/28 20:59 07:34-08:11/37	06:29 07:04-07:30/26 20:34 17:30-18:44/74	06:59 17:09-18:40/91 19:48	07:29 18:58	07:03 07:46-08:37/51 17:16	07:36 07:59-08:44/45 16:59
9	06:03 07:08-07:33/25 20:59 07:33-08:12/39	06:30 07:04-07:31/27 20:33 17:29-18:45/76	07:00 17:09-18:39/90 19:47	07:30 18:57	07:04 07:45-08:37/52 17:15	07:37 08:00-08:44/44 16:59
10	06:04 07:09-07:31/22 20:58 07:31-08:11/40	06:31 07:04-07:30/26 20:31 17:28-18:45/77	07:01 17:10-18:38/88 19:45	07:31 18:55	07:05 07:45-08:38/53 17:14	07:38 08:01-08:44/43 16:59
11	06:05 07:09-07:29/20 20:58 07:29-08:12/43	06:32 07:04-07:31/27 20:30 17:27-18:46/79	07:02 17:10-18:37/87 19:43	07:32 18:54	07:06 07:45-08:39/54 17:13	07:38 08:02-08:45/43 16:59
12	06:05 07:10-07:27/17 20:57 07:27-08:12/45	06:33 07:05-07:32/27 20:29 17:26-18:46/80	07:03 17:10-18:36/86 19:42	07:33 18:23-18:30/7 18:52	07:08 07:45-08:39/54 17:12	07:39 08:03-08:45/42 16:59
13	06:06 07:10-08:11/61 20:57	06:34 07:06-07:33/27 20:28 17:25-18:47/82	07:04 17:10-18:35/85 19:40	07:34 18:20-18:28/8 18:51	07:09 07:45-08:39/54 17:11	07:40 08:03-08:44/41 17:00
14	06:07 07:10-08:11/61 20:56	06:35 07:07-07:35/28 20:26 17:24-18:47/83	07:05 17:11-18:34/83 19:38	07:35 18:18-18:26/8 18:49	07:10 07:45-08:40/55 17:10	07:41 08:04-08:45/41 17:00
15	06:08 07:11-08:12/61 20:56	06:36 07:09-07:35/26 20:25 17:24-18:48/84	07:06 17:11-18:33/82 19:37	07:36 18:16-18:25/9 18:47	07:11 07:45-08:41/56 17:09	07:41 08:05-08:45/40 17:00
16	06:08 07:12-08:12/60 20:55 18:09-18:11/2	06:37 07:09-07:36/27 20:23 17:23-18:48/85	07:07 17:12-18:31/79 19:35	07:37 18:15-18:23/8 18:46	07:12 07:45-08:41/56 17:09	07:42 08:05-08:45/40 17:00
17	06:09 07:11-08:11/60 20:55 18:02-18:17/15	06:38 07:09-07:36/27 20:22 17:22-18:48/86	07:08 17:13-18:30/77 19:33	07:38 18:14-18:21/7 18:44	07:13 07:45-08:41/56 17:08	07:43 08:06-08:46/40 17:01
18	06:10 07:12-08:11/59 20:54 17:59-18:20/21	06:39 07:10-07:36/26 20:21 17:21-18:48/87	07:09 17:14-18:28/74 19:31	07:39 18:14-18:20/6 18:43	07:15 07:46-08:41/55 17:07	07:44 08:07-08:46/39 17:01
19	06:11 07:10-08:11/61 20:53 17:57-18:22/25	06:40 07:11-07:36/25 20:19 17:20-18:49/89	07:10 17:15-18:26/71 19:30	07:40 18:14-18:19/5 18:41	07:16 07:47-08:42/55 17:06	07:44 08:07-08:46/39 17:01
20	06:12 07:08-08:11/63 20:53 17:55-18:25/30	06:41 07:12-07:36/24 20:18 17:19-18:49/90	07:11 17:15-18:23/68 19:28	07:41 18:14-18:17/3 18:40	07:17 07:47-08:42/55 17:06	07:45 08:08-08:47/39 17:02
21	06:12 07:07-08:11/64 20:52 17:54-18:27/33	06:42 07:13-07:36/23 20:16 17:19-18:49/90	07:12 17:16-18:21/65 19:26	07:42 18:14-18:16/2 18:39	07:18 07:47-08:42/55 17:05	07:45 08:08-08:47/39 17:02
22	06:13 07:06-08:09/63 20:51 17:51-18:28/37	06:43 07:14-07:35/21 20:15 17:18-18:49/91	07:13 17:18-18:19/61 19:25	07:43 18:37	07:19 07:47-08:42/55 17:04	07:46 08:09-08:48/39 17:03
23	06:14 07:05-08:09/64 20:50 17:50-18:29/39	06:43 07:14-07:34/20 20:13 17:16-18:48/92	07:13 17:19-18:17/58 19:23	07:45 18:36	07:20 07:48-08:42/54 17:04	07:46 08:09-08:48/39 17:03
24	06:15 07:04-08:09/65 20:49 17:48-18:31/43	06:44 07:14-07:32/18 20:12 17:16-18:48/92	07:14 17:21-18:14/53 19:21	07:46 18:34	07:21 07:49-08:43/54 17:03	07:47 08:10-08:49/39 17:04
25	06:16 07:04-08:08/64 20:49 17:47-18:32/45	06:45 07:15-07:31/16 20:10 17:15-18:48/93	07:15 17:24-18:11/47 19:20	06:47 17:33	07:23 07:49-08:43/54 17:03	07:47 08:10-08:49/39 17:04
26	06:17 07:04-08:08/64 20:48 17:46-18:34/48	06:46 07:16-07:29/13 20:09 17:14-18:47/93	07:16 17:26-18:08/42 19:18	06:48 17:32	07:24 07:50-08:43/53 17:02	07:48 08:10-08:50/40 17:05
27	06:18 07:03-08:07/64 20:47 17:45-18:35/50	06:47 07:19-07:26/7 20:07 17:14-18:47/93	07:17 17:30-18:04/34 19:16	06:49 08:04-08:11/7 17:30	07:25 07:50-08:43/53 17:02	07:48 08:11-08:51/40 17:05
28	06:19 07:03-08:06/63 20:46 17:43-18:35/52	06:48 17:13-18:47/94 20:06	07:18 17:35-17:58/23 19:15	06:50 07:59-08:20/21 17:29	07:26 07:51-08:43/52 17:01	07:48 08:11-08:51/40 17:06
29	06:19 07:02-08:04/62 20:45 17:41-18:36/55	06:49 17:13-18:47/94 20:04	07:19 17:35-17:58/23 19:13	06:51 07:56-08:23/27 17:28	07:27 07:51-08:43/52 17:01	07:49 08:11-08:52/41 17:07
30	06:20 07:02-08:03/61 20:44 17:40-18:38/58	06:50 17:12-18:46/94 20:03	07:20 17:35-17:58/23 19:11	06:52 07:54-08:26/32 17:26	07:28 07:52-08:43/51 17:01	07:49 08:11-08:52/41 17:08
31	06:21 07:02-08:02/60 20:43 17:39-18:39/60	06:51 17:12-18:46/94 20:01		06:54 07:52-08:28/36 17:25		07:49 08:11-08:53/42 17:08
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	2593	3354	2096	186	1552	1311

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:59 / 11

Licensed user:

Ing. Bruno Manca
Via Vittorio Veneto 231
IT-09028 Sestu
+390702358125
BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 7 - AG03

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June
1	07:49 08:36-08:54/18 17:09 08:54-09:03/9	07:36 08:41-09:05/24 17:43 09:39-10:41/62	07:01 07:35-07:57/22 18:16 08:49-10:39/110	07:11 07:49-08:07/18 19:50 09:30-10:31/61	06:26 20:21	05:58 20:49
2	07:49 08:35-08:55/20 17:10 08:55-09:04/9	07:35 08:42-09:04/22 17:44 09:38-10:42/64	07:00 07:36-07:57/21 18:18 08:48-10:38/110	07:10 07:49-08:05/16 19:51 09:30-10:29/59	06:25 20:22	05:58 20:50
3	07:49 08:35-08:56/21 17:11 08:56-09:04/8	07:34 08:44-09:03/19 17:46 09:37-10:43/66	06:58 07:36-07:56/20 18:19 08:46-10:36/110	07:08 07:50-08:05/15 19:52 09:31-10:27/56	06:24 20:23	05:57 20:51
4	07:50 08:35-08:57/22 17:12 08:57-09:05/8	07:33 08:46-09:01/15 17:47 09:37-10:44/67	06:57 07:37-07:55/18 18:20 08:44-10:34/110	07:06 07:51-08:02/11 19:53 09:32-10:25/53	06:23 20:24	05:57 20:52
5	07:50 08:34-08:57/23 17:13 08:57-09:06/9	07:32 08:49-08:58/9 17:48 09:36-10:45/69	06:55 07:38-07:53/15 18:21 08:43-10:32/109	07:05 07:53-07:59/6 19:54 09:32-10:23/51	06:21 20:25	05:57 20:52
6	07:50 08:34-08:58/24 17:14 08:58-09:05/7	07:31 09:36-10:46/70 17:49	06:54 07:39-07:50/11 18:22 08:41-10:30/109	07:03 09:34-10:21/47 19:55	06:20 20:26	05:56 20:53
7	07:49 08:34-08:59/25 17:15 08:59-09:06/7	07:30 09:35-10:46/71 17:50	06:52 08:40-10:28/108 18:23	07:02 09:35-10:19/44 19:56	06:19 20:27	05:56 20:54
8	07:49 08:34-09:00/26 17:16 09:00-09:07/7	07:29 09:35-10:47/72 17:52	06:50 08:39-10:25/106 18:24	07:00 09:36-10:16/40 19:57	06:18 20:28	05:56 20:54
9	07:49 08:34-09:01/27 17:17 09:01-09:08/7	07:28 09:35-10:48/73 17:53	06:49 08:38-10:22/104 18:25	06:58 09:38-10:13/35 19:58	06:17 20:29	05:56 20:55
10	07:49 08:34-09:02/28 17:18 09:02-09:09/7	07:27 09:34-10:47/73 17:54	06:47 08:37-10:19/102 18:26	06:57 09:39-10:10/31 19:59	06:16 20:30	05:55 20:55
11	07:49 08:34-09:02/28 17:19 09:02-09:08/6	07:26 09:33-10:48/75 17:55	06:46 08:35-10:14/99 18:27	06:55 09:42-10:07/25 20:00	06:15 20:31	05:55 20:56
12	07:49 08:34-09:04/30 17:20 09:04-09:09/5	07:25 09:33-10:49/76 17:57	06:44 08:35-10:10/95 18:29	06:54 09:45-10:02/17 20:01	06:14 20:32	05:55 20:56
13	07:48 08:34-09:05/31 17:21 09:05-09:10/5	07:23 09:33-10:49/76 17:58	06:42 08:34-09:48/74 18:30	06:52 20:02 20:02	06:12 20:33	05:55 20:57
14	07:48 08:34-09:05/31 17:22 09:05-09:10/5	07:22 09:32-10:48/76 17:59	06:41 08:33-09:47/74 18:31	06:51 20:03 20:03	06:11 20:34	05:55 20:57
15	07:48 08:34-09:06/32 17:23 09:06-09:11/5	07:21 09:32-10:49/77 18:00	06:39 08:33-09:48/75 18:32	06:49 20:04 20:04	06:10 20:35	05:55 20:58
16	07:47 08:34-09:06/32 17:24 09:06-09:11/5	07:20 09:32-10:49/77 18:01	06:38 08:32-09:47/75 18:33	06:48 20:05 20:05	06:10 20:36	05:55 20:58
17	07:47 08:34-09:07/33 17:25 09:07-09:11/4	07:18 09:32-10:48/76 18:03	06:36 08:31-09:46/75 18:34	06:46 20:06 20:06	06:09 20:37	05:55 20:58
18	07:46 08:34-09:11/37 17:26 09:59-10:14/15	07:17 09:32-10:48/76 18:04	06:34 08:31-09:46/75 18:35	06:45 20:07 20:07	06:08 20:38	05:55 20:59
19	07:46 08:35-09:12/37 17:28 09:56-10:19/23	07:16 09:32-10:48/76 18:05	06:33 08:30-09:45/75 18:36	06:43 20:08 20:08	06:07 20:38	05:55 20:59
20	07:45 08:34-09:11/37 17:29 09:54-10:21/27	07:14 09:31-10:47/76 18:06	06:31 08:30-09:45/75 18:37	06:42 20:09 20:09	06:06 20:39	05:55 20:59
21	07:45 08:34-09:11/37 17:30 09:51-10:24/33	07:13 09:32-10:47/75 18:07	06:29 08:30-09:44/74 18:38	06:40 20:10 20:10	06:05 20:40	05:56 21:00
22	07:44 08:35-09:12/37 17:31 09:50-10:26/36	07:11 07:44-07:53/9 18:08 09:31-10:46/75	06:28 08:29-09:43/74 18:39	06:39 20:11 20:11	06:04 20:41	05:56 21:00
23	07:44 08:35-09:11/36 17:32 09:49-10:28/39	07:10 07:41-07:55/14 18:10 09:32-10:46/74	06:26 08:30-09:43/73 18:40	06:37 20:12 20:12	06:04 20:42	05:56 21:00
24	07:43 08:35-09:11/36 17:33 09:47-10:30/43	07:09 07:39-07:57/18 09:32-10:45/73 18:11 09:05-09:26/21	06:24 08:29-09:42/73 18:41	06:36 20:13 20:13	06:03 20:43	05:56 21:00
25	07:42 08:36-09:11/35 17:35 09:46-10:32/46	07:07 07:37-07:57/20 09:32-10:44/72 18:12 09:00-09:30/30	06:23 06:55-07:04/9 18:42 08:29-09:40/71	06:34 20:14 20:14	06:02 20:44	05:56 21:00
26	07:41 08:37-09:10/33 17:36 09:45-10:34/49	07:06 07:37-07:58/21 18:13 08:57-10:43/106	06:21 06:53-07:06/13 18:43 08:29-09:40/71	06:33 20:15 20:15	06:02 20:45	05:57 21:00
27	07:41 08:37-09:09/32 17:37 09:44-10:35/51	07:04 07:36-07:57/21 18:14 08:54-10:42/108	06:20 06:51-07:07/16 18:44 08:29-09:38/69	06:32 20:16 20:16	06:01 20:46	05:57 21:00
28	07:40 08:38-09:08/30 17:38 09:43-10:37/54	07:03 07:36-07:58/22 18:15 08:52-10:41/109	06:18 06:50-07:07/17 18:45 08:29-09:36/67	06:30 20:18 20:18	06:00 20:46	05:58 21:00
29	07:39 08:38-09:07/29 17:39 09:42-10:38/56		07:16 07:50-08:08/18 19:46 09:29-10:36/67	06:29 20:19 20:19	06:00 20:47	05:58 21:00
30	07:38 08:39-09:07/28 17:41 09:41-10:39/58		07:15 07:49-08:07/18 19:48 09:29-10:34/65	06:28 20:20 20:20	05:59 20:48	05:58 21:00
31	07:37 08:40-09:06/26 17:42 09:40-10:40/60		07:13 07:48-08:07/19 19:49 09:29-10:32/63		05:59 20:49	
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	1624	2405	2862	585	0	0

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

Ing. Bruno Manca
Via Vittorio Veneto 231
IT-09028 Sestu
+390702358125
BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 7 - AG03

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834

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

	July	August	September	October	November	December
1	05:59 21:00	06:22 20:42	06:52 09:41-10:06/25 19:59	07:21 09:13-10:27/74 19:10 10:29-10:46/17	06:55 09:03-10:17/74 17:24	07:29 08:16-08:44/28 17:00 08:44-08:51/7
2	05:59 21:00	06:23 20:41	06:53 09:38-10:09/31 19:58	07:22 09:14-10:51/97 19:08	06:56 09:04-10:17/73 17:23	07:30 08:16-08:44/28 17:00 08:44-08:51/7
3	06:00 21:00	06:24 20:40	06:54 09:36-10:11/35 19:56	07:23 09:14-10:55/101 19:06	06:57 09:05-10:17/72 17:22	07:31 08:17-08:44/27 17:00 08:44-08:51/7
4	06:00 21:00	06:25 20:39	06:55 09:34-10:14/40 19:55	07:24 09:14-10:58/104 19:05	06:58 09:05-10:16/71 17:20	07:32 08:18-08:44/26 17:00 08:44-08:51/7
5	06:01 21:00	06:26 20:37	06:56 09:32-10:16/44 19:53	07:25 09:15-11:00/105 19:03	06:59 09:06-10:15/69 17:19	07:33 08:19-08:44/25 16:59 08:44-08:51/7
6	06:01 20:59	06:27 20:36	06:57 09:29-10:16/47 19:51	07:26 09:15-11:02/107 19:02	07:01 08:19-08:28/9 17:18	07:34 08:20-08:44/24 16:59 08:44-08:52/8
7	06:02 20:59	06:28 20:35	06:58 07:48-07:54/6 19:50	07:27 08:17-08:21/4 09:28-10:18/50	07:02 08:17-08:32/15 09:08-10:15/67	07:35 08:21-08:44/23 16:59 08:44-08:52/8
8	06:03 20:59	06:29 20:34	06:59 07:45-07:56/11 19:48	07:28 08:14-08:28/14 09:26-10:19/53	07:03 08:15-08:34/19 09:08-10:14/66	07:36 08:22-08:44/22 16:59 08:44-08:52/8
9	06:03 20:58	06:30 20:33	07:00 07:43-07:58/15 19:46	07:30 08:12-08:29/17 09:25-10:21/56	07:04 08:13-08:35/22 09:09-10:13/64	07:37 08:23-08:44/21 16:59 08:44-08:52/8
10	06:04 20:58	06:31 20:31	07:01 07:42-07:58/16 19:45	07:31 08:11-08:30/19 09:24-10:22/58	07:05 08:12-08:36/24 09:10-10:12/62	07:39 08:24-08:44/20 16:59 08:44-08:53/9
11	06:05 20:58	06:32 20:30	07:02 07:41-07:59/18 19:43	07:32 08:10-08:30/20 09:23-10:23/60	07:06 08:12-08:38/26 09:12-10:12/60	07:38 08:26-08:44/18 16:59 08:44-08:53/9
12	06:05 20:57	06:33 20:29	07:03 07:40-07:59/19 19:42	07:33 08:09-08:31/22 09:22-10:24/62	07:08 08:11-08:39/28 09:13-10:11/58	07:39 08:27-08:44/17 16:59 08:44-08:53/9
13	06:06 20:57	06:34 20:27	07:04 07:40-07:59/19 19:40	07:34 08:09-08:31/22 09:21-10:25/64	07:09 08:10-08:39/29 09:14-10:10/56	07:40 08:27-08:43/16 17:00 08:43-08:53/10
14	06:07 20:56	06:35 20:26	07:05 07:40-07:58/18 19:38	07:35 08:08-08:30/22 09:20-10:26/66	07:10 08:10-08:40/30 09:15-10:08/53	07:41 08:28-08:43/15 17:00 08:43-08:53/10
15	06:08 20:56	06:36 20:25	07:06 07:40-07:57/17 19:37	07:36 08:08-08:30/22 09:19-10:26/67	07:11 08:10-08:42/32 09:17-10:08/51	07:41 08:29-08:43/14 17:00 08:43-08:54/11
16	06:08 20:55	06:37 20:23	07:07 07:40-07:56/16 19:35	07:37 08:09-08:29/20 09:18-10:27/69	07:12 08:10-08:43/33 09:18-10:07/49	07:42 08:28-08:42/14 17:00 08:42-08:54/12
17	06:09 20:55	06:38 20:22	07:08 07:41-07:55/14 19:33	07:38 08:09-08:28/19 09:18-10:28/70	10:03-11:16/73 09:33-10:00/27	07:43 08:29-08:43/14 17:01 08:43-08:54/11
18	06:10 20:54	06:39 20:21	07:09 07:43-07:53/10 19:31	07:39 08:10-08:27/17 09:17-10:28/71	10:03-11:16/73 09:38-09:55/17	07:43 08:30-08:43/13 17:01 08:43-08:55/12
19	06:11 20:53	06:40 20:19	07:10 09:16-10:29/73 19:30	07:40 08:13-08:26/13 10:03-11:17/74	07:16 08:10-08:46/36 09:23-10:02/39	07:44 08:30-08:43/13 17:01 08:43-08:55/12
20	06:12 20:52	06:41 20:18	07:11 09:15-10:28/73 19:28	07:41 08:16-08:23/7 10:03-11:18/75	07:17 08:10-08:47/37 09:25-10:01/36	07:45 08:31-08:43/12 17:02 08:43-08:56/13
21	06:12 20:52	06:42 20:16	07:12 09:14-10:28/74 19:26	07:42 10:02-11:18/76 18:39	07:18 08:10-08:47/37 09:27-10:00/33	07:45 08:31-08:43/12 17:02 08:43-08:56/13
22	06:13 20:51	06:43 20:15	07:12 09:14-10:29/75 19:25	07:43 10:02-11:18/76 18:37	07:19 08:10-08:47/37 09:30-09:57/27	07:46 08:32-08:44/12 17:03 08:44-08:57/13
23	06:14 20:50	06:43 20:13	07:13 09:14-10:29/75 19:23	07:45 10:02-11:18/76 18:36	07:20 08:11-08:48/37 09:32-09:55/23	07:46 08:32-08:44/12 17:03 08:44-08:57/13
24	06:15 20:49	06:44 20:12	07:14 09:14-10:29/75 19:21	07:46 10:01-11:18/77 18:34	07:21 08:12-08:49/37 09:36-09:51/15	07:47 08:33-08:45/12 17:04 08:45-08:58/13
25	06:16 20:49	06:45 20:10	07:15 09:13-10:29/76 19:20	06:47 09:02-10:19/77 17:33	07:23 08:12-08:45/33 08:45-08:49/4	07:47 08:33-08:46/13 17:04 08:46-08:58/12
26	06:17 20:48	06:46 20:09	07:16 09:13-10:29/76 19:18	06:48 09:02-10:19/77 17:32	07:24 08:13-08:45/32 08:45-08:50/5	07:48 08:33-08:46/13 17:05 08:46-08:58/12
27	06:18 20:47	06:47 20:07	07:17 09:13-10:28/75 19:16	06:49 09:02-10:18/76 17:30	07:25 08:13-08:45/32 08:45-08:50/5	07:48 08:34-08:48/14 17:05 08:48-09:00/12
28	06:19 20:46	06:48 20:06	07:18 09:13-10:28/75 19:15	06:50 09:02-10:18/76 17:29	07:26 08:14-08:45/31 08:45-08:50/5	07:48 08:35-08:49/14 17:06 08:49-09:00/11
29	06:19 20:45	06:49 20:04	07:19 09:13-10:28/75 19:13	06:51 09:02-10:18/76 17:28	07:27 08:14-08:45/31 08:45-08:50/5	07:49 08:35-08:50/15 17:07 08:50-09:00/10
30	06:20 20:44	06:50 20:03	07:20 09:13-10:27/74 19:11	06:52 09:03-10:18/75 17:26	07:28 08:15-08:45/30 08:45-08:50/5	07:49 08:35-08:51/16 17:08 08:51-09:01/10
31	06:21 20:43	06:51 09:45-10:02/17 20:01		06:54 09:03-10:18/75 17:25		07:49 08:35-08:51/16 17:08 08:51-09:01/10
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	0	17	2043	3106	2053	853

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 8 - AG09

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June
1	07:49 16:02-16:43/41 17:09	07:36 16:20-16:59/39 17:43 17:11-17:19/8	07:01 18:16 19:50	07:11 18:16 19:50	06:26 08:59-12:11/192 20:21 19:29-19:57/28	05:58 06:39-06:59/20 19:29-20:23/54 20:49 08:39-12:40/241
2	07:49 16:02-16:44/42 17:10	07:35 16:21-16:58/37 17:44 17:11-17:20/9	07:00 18:17 19:51	07:10 19:51	06:25 08:58-12:12/194 20:22 19:28-19:59/31	05:58 06:40-07:00/20 19:30-20:23/53 20:50 08:39-12:41/242
3	07:49 16:02-16:45/43 17:11	07:34 16:23-16:57/34 17:45 17:11-17:22/11	06:58 18:19 19:52	07:08 19:52	06:24 08:57-12:14/197 20:23 19:27-20:00/33	05:57 06:40-07:01/21 19:31-20:21/50 20:51 08:40-12:41/241
4	07:50 16:03-16:46/43 17:12	07:33 16:24-16:56/32 17:47 17:11-17:23/12	06:57 18:20 19:53	07:06 19:53	06:22 08:56-12:15/199 20:24 19:27-20:01/34	05:57 06:40-07:00/20 19:31-20:11/40 20:52 08:39-12:41/242 20:15-20:19/4
5	07:50 16:03-16:47/44 17:13	07:32 16:26-16:54/28 17:48 17:12-17:25/13	06:55 18:21 19:54	07:05 10:19-10:51/32 19:54	06:21 08:55-12:17/202 20:25 19:26-20:02/36	05:56 06:40-07:01/21 19:32-20:11/39 20:52 08:39-12:42/243
6	07:50 16:04-16:48/44 17:14	07:31 16:29-16:52/23 17:49 17:12-17:26/14	06:54 18:22 19:55	07:03 10:09-11:01/52 19:55	06:20 08:53-12:17/204 20:26 19:25-20:02/37	05:56 06:40-07:01/21 19:33-20:11/38 20:53 08:39-12:43/244
7	07:49 16:04-16:49/45 17:15	07:30 16:33-16:49/16 17:50 17:13-17:27/14	06:52 18:23 19:56	07:02 10:03-11:08/65 19:56	06:19 08:52-12:18/206 20:27 19:25-20:03/38	05:56 06:41-07:01/20 19:32-20:10/38 20:54 08:39-12:42/243
8	07:49 16:05-16:50/45 17:16	07:29 16:40-16:42/2 17:52 17:14-17:29/15	06:50 18:24 19:57	07:00 09:57-11:14/77 19:57	06:18 08:52-12:20/208 20:28 19:24-20:04/40	05:56 06:40-07:01/21 19:33-20:10/37 20:54 08:39-12:43/244
9	07:49 16:05-16:51/46 17:17	07:28 17:14-17:29/15 17:53	06:49 18:25 19:58	06:58 09:52-11:19/87 19:58	06:17 08:51-12:21/210 20:29 19:24-20:05/41	05:55 06:41-07:01/20 19:34-20:10/36 20:55 08:39-12:43/244
10	07:49 16:05-16:52/47 17:18	07:27 17:15-17:31/16 17:54	06:47 18:26 19:59	06:57 09:47-11:23/96 19:59	06:16 08:50-12:22/212 20:30 19:24-20:06/42	05:55 06:41-07:01/20 19:35-20:10/35 20:55 08:39-12:44/245
11	07:49 16:05-16:53/48 17:19	07:26 17:17-17:32/15 17:55	06:46 18:27 20:00	06:55 09:44-11:27/103 20:00	06:14 08:49-12:23/214 20:31 19:24-20:07/43	05:55 06:41-07:01/20 19:35-20:10/35 20:56 08:39-12:44/245
12	07:49 16:06-16:54/48 17:20	07:25 17:19-17:31/12 17:56	06:44 18:28 20:01	06:54 09:40-11:30/110 20:01	06:13 08:48-12:24/216 20:32 19:23-20:08/45	05:55 06:42-07:02/20 19:36-20:10/34 20:56 08:39-12:45/246
13	07:48 16:07-16:56/49 17:21	07:23 17:24-17:28/4 17:58	06:42 18:30 20:02	06:52 09:37-11:34/117 20:02	06:12 08:47-12:25/218 20:33 19:23-20:09/46	05:55 06:42-07:02/20 19:36-20:10/34 20:57 08:40-12:45/245
14	07:48 16:07-16:56/49 17:22	07:22 17:59 18:31	06:41 18:31 20:03	06:51 09:34-11:37/123 20:03	06:11 08:47-12:26/219 20:34 19:23-20:10/47	05:55 06:42-07:02/20 19:37-20:10/33 20:57 08:40-12:45/245
15	07:48 16:08-16:58/50 17:23	07:21 18:00 18:32	06:39 18:32 20:04	06:49 09:30-11:39/129 20:04	06:10 08:46-12:27/221 20:35 19:23-20:11/48	05:55 06:43-07:02/19 19:37-20:10/33 20:58 08:40-12:46/246
16	07:47 16:07-16:59/52 17:24	07:19 18:01 18:33	06:38 18:33 20:05	06:47 09:28-11:42/134 20:05	06:09 08:45-12:28/223 20:36 19:23-20:11/48	05:55 06:43-07:02/19 19:38-20:10/32 20:58 08:40-12:46/246
17	07:47 16:08-17:00/52 17:25	07:18 18:02 18:34	06:36 18:34 20:06	06:46 09:25-11:44/139 20:06	06:08 08:45-12:30/225 20:11-20:13/2 20:37 19:24-20:12/48	05:55 06:43-07:02/19 19:38-20:10/32 20:58 08:40-12:46/246
18	07:46 16:08-17:01/53 17:26	07:17 18:04 18:35	06:34 18:35 20:07	06:44 09:23-11:47/144 20:07	06:08 08:44-12:30/226 20:38 19:24-20:14/50	05:55 06:43-07:02/19 19:38-20:10/32 20:59 08:40-12:46/246
19	07:46 16:09-17:03/54 17:27	07:16 18:05 18:36	06:33 18:36 20:08	06:43 09:21-11:50/149 20:08	06:07 08:44-12:31/227 20:38 19:24-20:14/50	05:55 06:43-07:02/19 19:38-20:10/32 20:59 08:40-12:46/246
20	07:45 16:10-17:04/54 17:29	07:14 18:06 18:37	06:31 18:37 20:09	06:41 09:18-11:52/154 20:09	06:06 08:43-12:32/229 20:39 19:24-20:15/51	05:55 06:43-07:02/19 19:38-20:10/32 20:59 08:40-12:46/246
21	07:45 16:10-17:03/53 17:30	07:13 18:07 18:38	06:29 18:38 20:10	06:40 09:17-11:54/157 20:10	06:05 06:46-06:52/6 19:24-20:16/52 20:40 08:42-12:32/230	05:55 06:44-07:03/19 19:38-20:10/32 21:00 08:41-12:47/246
22	07:44 16:11-17:04/53 17:31	07:11 18:08 18:39	06:28 18:39 20:11	06:39 09:14-11:55/161 20:11	06:04 06:44-06:54/10 19:25-20:17/52 20:41 08:43-12:34/231	05:56 06:44-07:03/19 19:39-20:11/32 21:00 08:41-12:47/246
23	07:44 16:11-17:04/53 17:32	07:10 18:09 18:40	06:26 18:40 20:12	06:37 09:12-11:58/166 20:12	06:04 06:42-06:55/13 19:25-20:18/53 20:42 08:42-12:34/232	05:56 06:44-07:03/19 19:39-20:11/32 21:00 08:41-12:47/246
24	07:43 16:12-17:03/51 17:33	07:09 18:09 18:11	06:24 18:41 20:13	06:36 09:11-12:00/169 20:13 19:43-19:51/8	06:03 06:42-06:56/14 19:25-20:18/53 20:43 08:41-12:34/233	05:56 06:44-07:03/19 19:39-20:11/32 21:00 08:41-12:47/246
25	07:42 16:12-17:03/51 17:34	07:07 18:12 18:42	06:23 18:42 20:14	06:34 09:09-12:01/172 20:14 19:39-19:52/13	06:02 06:41-06:57/16 19:26-20:20/54 20:44 08:41-12:36/235	05:56 06:45-07:04/19 19:40-20:12/32 21:00 08:42-12:48/246
26	07:41 16:14-17:03/49 17:36	07:06 18:13 18:43	06:21 18:43 20:15	06:33 09:07-12:03/176 20:15 19:37-19:53/16	06:01 06:40-06:57/17 19:26-20:20/54 20:45 08:41-12:36/235	05:57 06:45-07:04/19 19:40-20:12/32 21:00 08:42-12:48/246
27	07:41 16:15-17:03/48 17:37	07:04 18:14 18:44	06:19 18:44 20:16	06:32 09:05-12:04/179 20:16 19:34-19:53/19	06:01 06:40-06:58/18 19:27-20:21/54 20:45 08:41-12:37/236	05:57 06:45-07:04/19 19:39-20:12/33 21:00 08:42-12:48/246
28	07:40 16:15-17:02/47 17:38	07:03 18:15 18:45	06:18 18:45 20:17	06:30 09:04-12:06/182 20:17 19:33-19:55/22	06:00 06:40-06:58/18 19:27-20:22/55 20:46 08:40-12:37/237	05:57 06:46-07:05/19 19:40-20:13/33 21:00 08:43-12:49/246
29	07:39 16:16-17:02/46 17:39	07:02 18:15 19:46	06:16 19:46 20:19	06:29 09:03-12:08/185 20:19 19:32-19:56/24	06:00 06:40-06:59/19 19:28-20:23/55 20:47 08:40-12:39/239	05:58 06:45-07:05/20 19:40-20:13/33 21:00 08:43-12:48/245
30	07:38 16:17-17:01/44 17:41	07:01 18:17 19:47	06:15 19:47 20:20	06:28 09:01-12:10/189 20:20 19:31-19:57/26	05:59 06:39-06:59/20 19:28-20:23/55 20:48 08:40-12:39/239	05:58 06:46-07:06/20 19:40-20:14/34 21:00 08:43-12:49/246
31	07:37 16:18-17:00/42 17:42	07:00 18:17 19:48	06:13 19:48 20:21	07:13 20:21	05:59 06:40-07:00/20 19:29-20:24/55 20:49 08:40-12:40/240	21:00 08:43-12:49/246
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	1502	369	0	3575	8430	9013

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

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

Project:

Giave WindPro - fotosimulazioni

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progettoWTG: 8 - AG09

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834

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

	July	August	September	October	November	December
1	05:59 06:46-07:05/19 19:39-20:14/35 21:00 08:43-12:49/246	06:22 08:59-12:34/215 20:42 19:34-20:18/44	06:52 09:43-11:26/103 19:59	07:21 19:10	06:55 16:45-17:00/15 17:24	07:29 15:47-16:35/48 17:00
2	05:59 06:46-07:06/20 19:39-20:14/35 21:00 08:43-12:48/245	06:23 09:00-12:33/213 20:41 19:34-20:17/43	06:53 09:46-11:22/96 19:58	07:22 19:08	06:56 16:43-16:59/16 17:23	07:30 15:48-16:35/47 17:00
3	06:00 06:46-07:06/20 19:39-20:15/36 21:00 08:44-12:49/245	06:24 09:01-12:32/211 20:40 19:34-20:16/42	06:54 09:50-11:17/87 19:56	07:23 19:06	06:57 16:07-16:13/6 17:21 16:42-16:57/15	07:31 15:48-16:34/46 17:00
4	06:00 06:46-07:07/21 19:39-20:16/37 21:00 08:45-12:49/244	06:25 09:02-12:31/209 20:38 19:35-20:16/41	06:55 09:53-11:11/78 19:55	07:24 19:05	06:58 16:02-16:20/18 17:20 16:43-16:57/14	07:32 15:49-16:34/45 16:59
5	06:01 06:46-07:06/20 19:39-20:16/37 21:00 08:45-12:49/244	06:26 09:03-12:30/207 20:37 19:35-20:15/40	06:56 09:58-11:05/67 19:53	07:25 19:03	06:59 15:59-16:22/23 17:19 16:42-16:56/14	07:33 15:49-16:34/45 16:59
6	06:01 06:47-07:07/20 19:39-20:17/38 20:59 08:45-12:49/244	06:27 09:03-12:29/206 20:36 19:35-20:13/38	06:57 10:05-10:57/52 19:51	07:26 19:01	07:01 15:56-16:24/28 17:18 16:42-16:54/12	07:34 15:50-16:34/44 16:59
7	06:02 06:46-07:07/21 19:38-20:17/39 20:59 08:45-12:48/243	06:28 09:03-12:26/203 20:35 19:35-20:11/36	06:58 10:14-10:47/33 19:50	07:27 19:00	07:02 15:54-16:26/32 17:17 16:41-16:53/12	07:35 15:50-16:34/44 16:59
8	06:03 06:47-07:07/20 19:38-20:18/40 20:59 08:46-12:49/243	06:29 09:04-12:25/201 20:34 19:35-20:10/35	06:59 19:48	07:28 18:58	07:03 15:53-16:28/35 17:16 16:42-16:52/10	07:36 15:51-16:34/43 16:59
9	06:03 06:47-07:08/21 19:37-20:18/41 20:58 08:47-12:49/242 20:20-20:27/7	06:30 09:05-12:24/199 20:33 19:36-20:09/33	07:00 19:46	07:29 18:57	07:04 15:52-16:29/37 17:15 16:42-16:51/9	07:37 15:51-16:34/43 16:59
10	06:04 06:47-07:07/20 19:38-20:29/51 20:58 08:47-12:48/241	06:31 09:06-12:22/196 20:31 19:36-20:08/32	07:01 19:45	07:30 18:55	07:05 15:50-16:30/40 17:14 16:42-16:50/8	07:37 15:52-16:34/42 16:59
11	06:05 06:47-07:08/21 19:38-20:31/53 20:58 08:47-12:48/241	06:32 09:07-12:20/193 20:30 19:37-20:07/30	07:02 19:43	07:32 18:54	07:06 15:49-16:31/42 17:13 16:42-16:49/7	07:38 15:53-16:34/41 16:59
12	06:05 06:48-07:08/20 19:37-20:32/55 20:57 08:48-12:48/240	06:33 09:08-12:19/191 20:29 19:38-20:06/28	07:03 19:41	07:33 18:52	07:08 15:49-16:33/44 17:12 16:44-16:48/4	07:39 15:52-16:33/41 16:59
13	06:06 06:48-07:07/19 19:37-20:32/55 20:57 08:48-12:47/239	06:34 09:09-12:17/188 20:27 19:39-20:05/26	07:04 19:40	07:34 18:50	07:09 15:48-16:34/46 17:11 16:44-16:47/3	07:40 15:53-16:34/41 16:59
14	06:07 06:48-07:08/20 19:37-20:32/55 20:56 08:49-12:47/238	06:35 09:11-12:15/184 20:26 19:40-20:03/23	07:05 19:38	07:35 18:49	07:10 15:47-16:34/47 17:10 16:45-16:46/1	07:41 15:54-16:34/40 17:00
15	06:07 06:49-07:08/19 19:37-20:31/54 20:56 08:49-12:47/238	06:36 09:12-12:14/182 20:25 19:41-20:02/21	07:06 19:36	07:36 18:47	07:11 15:47-16:35/48 17:09	07:41 15:55-16:35/40 17:00
16	06:08 06:49-07:08/19 19:36-20:30/54 20:55 08:49-12:46/237	06:37 09:13-12:12/179 20:23 19:43-20:01/18	07:07 19:35	07:37 18:46	07:12 15:47-16:36/49 17:08	07:42 15:54-16:34/40 17:00
17	06:09 06:49-07:07/18 19:36-20:30/54 20:54 08:50-12:46/236	06:38 09:14-12:10/176 20:22 19:44-20:00/16	07:08 19:33	07:38 18:44	07:13 15:46-16:37/51 17:08	07:43 15:55-16:35/40 17:00
18	06:10 06:50-07:07/17 19:36-20:29/53 20:54 08:51-12:45/234	06:39 09:16-12:08/172 20:21 19:47-19:58/11	07:09 19:31	07:39 18:43	07:15 15:46-16:37/51 17:07	07:43 15:56-16:36/40 17:01
19	06:11 06:51-07:06/15 19:36-20:29/53 20:53 08:51-12:45/234	06:39 09:17-12:05/168 20:19 19:50-19:57/7	07:09 19:30	07:40 18:41	07:16 15:45-16:38/53 17:06	07:44 15:56-16:35/39 17:01
20	06:11 06:52-07:06/14 19:36-20:29/53 20:52 08:52-12:45/233	06:40 09:19-12:03/164 20:18	07:10 19:28	07:41 18:40	07:17 15:46-16:39/53 17:05	07:45 15:57-16:36/39 17:02
21	06:12 06:53-07:05/12 19:35-20:27/52 20:52 08:52-12:43/231	06:41 09:20-12:01/161 20:16	07:11 19:26	07:42 18:38	07:18 15:46-16:39/53 17:05	07:45 15:57-16:36/39 17:02
22	06:13 06:54-07:03/9 19:35-20:27/52 20:51 08:52-12:43/231	06:42 09:21-11:58/157 20:15	07:12 19:25	07:43 18:37	07:19 15:46-16:40/54 17:04	07:46 15:58-16:37/39 17:02
23	06:14 06:57-07:00/3 19:35-20:26/51 20:50 08:53-12:42/229	06:43 09:22-11:55/153 20:13	07:13 19:23	07:44 18:36	07:20 15:46-16:39/53 17:04	07:46 15:58-16:37/39 17:03
24	06:15 08:54-12:42/228 20:49 19:35-20:25/50	06:44 09:24-11:52/148 20:12	07:14 19:21	07:46 18:34	07:21 15:45-16:38/53 17:03	07:47 15:59-16:38/39 17:03
25	06:16 08:55-12:41/226 20:48 19:35-20:25/50	06:45 09:26-11:50/144 20:10	07:15 19:20	06:47 17:33	07:22 15:46-16:38/52 17:02	07:47 15:59-16:38/39 17:04
26	06:17 08:55-12:41/226 20:20-20:24/4 20:48 19:35-20:21/46	06:46 09:28-11:47/139 20:09	07:16 19:18	06:48 17:32	07:24 15:46-16:38/52 17:02	07:48 15:59-16:39/40 17:05
27	06:18 08:56-12:40/224 20:47 19:34-20:22/48	06:47 09:30-11:44/134 20:07	07:17 19:16	06:49 17:30	07:25 15:47-16:37/50 17:02	07:48 16:00-16:40/40 17:05
28	06:18 08:56-12:38/222 20:46 19:34-20:22/48	06:48 09:32-11:41/129 20:06	07:18 19:15	06:50 17:29	07:26 15:47-16:37/50 17:01	07:48 16:01-16:41/40 17:06
29	06:19 08:57-12:37/220 20:45 19:34-20:21/47	06:49 09:35-11:37/122 20:04	07:19 19:13	06:51 16:51-16:58/7 17:28	07:27 15:47-16:36/49 17:01	07:48 16:01-16:41/40 17:07
30	06:20 08:57-12:36/219 20:44 19:34-20:20/46	06:50 09:37-11:34/117 20:03	07:20 19:11	06:52 16:47-17:01/14 17:26	07:28 15:47-16:36/49 17:00	07:49 16:01-16:42/41 17:07
31	06:21 08:58-12:35/217 20:43 19:34-20:19/45	06:51 09:40-11:30/110 20:01	07:21 17:25	06:54 16:46-17:02/16 17:25	07:29 17:00	07:49 16:01-16:42/41 17:08
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	9161	5935	516	37	1358	1285

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:59 / 15

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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 9 - AG11

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum

704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:49 16:04-16:26/22 17:09	07:36 08:14-09:03/49 17:43	07:01 17:12-17:33/21 18:16	07:11 07:41-08:08/27 19:49 18:35-18:57/22	06:26 19:07-19:41/34 20:21	05:58 06:44-07:20/36 20:49
2	07:49 16:04-16:26/22 17:10	07:35 08:14-09:03/49 17:44	07:00 17:10-17:34/24 18:17	07:10 07:40-08:07/27 19:51 18:37-18:55/18	06:25 19:07-19:41/34 20:22	05:58 06:44-07:22/38 20:50
3	07:49 16:05-16:27/22 17:11	07:34 08:14-09:03/49 17:45	06:58 17:09-17:35/26 18:19	07:08 07:39-08:07/28 19:52 18:38-18:53/15	06:24 07:01-07:04/3 20:23 19:07-19:42/35	05:57 06:44-07:23/39 20:51
4	07:49 16:06-16:27/21 17:12	07:33 08:14-09:03/49 17:47	06:57 17:08-17:36/28 18:20	07:06 07:39-08:07/28 19:53 18:42-18:50/8	06:22 06:57-07:08/11 20:24 19:07-19:42/35	05:57 06:42-07:23/41 20:52
5	07:49 16:06-16:27/21 17:13	07:32 08:14-09:03/49 17:48	06:55 17:07-17:37/30 18:21	07:05 07:39-08:06/27 19:54	06:21 06:54-07:11/17 20:25 19:07-19:42/35	05:56 06:42-07:25/43 20:52
6	07:49 08:27-08:34/7 17:14	07:31 08:15-09:03/48 17:49	06:53 17:06-17:37/31 18:22	07:03 07:39-08:05/26 19:55	06:20 06:52-07:11/19 20:26 19:07-19:40/33	05:56 06:42-07:26/44 20:53
7	07:49 08:25-08:37/12 17:15	07:30 08:15-09:03/48 17:50	06:52 17:06-17:37/31 18:23	07:01 07:40-08:05/25 19:56	06:19 06:51-07:12/21 20:27 19:07-19:40/33	05:56 06:41-07:26/45 20:53
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9	07:49 08:22-08:42/20 17:17	07:28 08:17-09:03/46 17:53	06:49 17:05-17:36/31 18:25	06:58 07:41-08:02/21 19:58	06:17 06:49-07:14/25 20:29 19:08-19:39/31	05:55 06:41-07:27/46 20:55
10	07:49 08:21-08:43/22 17:18	07:27 08:16-09:01/45 17:54	06:47 17:05-17:43/38 18:26	06:57 07:42-08:00/18 19:59 19:17-19:23/6	06:15 06:49-07:15/26 20:30 19:08-19:39/31	05:55 06:40-07:28/48 20:55
11	07:49 08:20-08:45/25 17:19	07:26 08:17-09:01/44 17:55	06:46 17:05-17:45/40 18:27	06:55 07:44-07:58/14 20:00 19:12-19:26/14	06:14 06:48-07:15/27 20:31 19:09-19:38/29	05:55 06:40-07:29/49 20:56
12	07:49 08:20-08:46/26 17:20	07:24 08:18-09:00/42 17:56	06:44 17:05-17:46/41 18:28	06:54 07:47-07:54/7 20:01 19:11-19:29/18	06:13 06:48-07:15/27 20:32 19:10-19:37/27	05:55 06:40-07:29/49 20:56
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14	07:48 08:18-08:49/31 17:22	07:22 08:20-08:58/38 17:59	06:41 17:06-17:49/43 18:31	06:50 19:08-19:31/23 20:03	06:11 06:47-07:16/29 20:34 19:11-19:36/25	05:55 06:40-07:30/50 20:57
15	07:48 08:18-08:51/33 17:23	07:21 08:21-08:57/36 18:00	06:39 17:08-17:54/46 18:32	06:49 19:06-19:31/25 20:04	06:10 06:47-07:16/29 20:35 19:12-19:34/22	05:55 06:40-07:31/51 20:58
16	07:47 08:17-08:51/34 17:24	07:19 08:23-08:56/33 18:01	06:37 17:09-17:55/46 18:33	06:47 19:06-19:32/26 20:05	06:09 06:47-07:15/28 20:36 19:14-19:33/19	05:55 06:40-07:31/51 20:58
17	07:47 08:17-08:53/36 17:25	07:18 08:24-08:53/29 18:02	06:36 17:10-17:56/46 18:34	06:46 19:04-19:31/27 20:06	06:08 06:48-07:16/28 20:37 19:16-19:32/16	05:55 06:40-07:31/51 20:58
18	07:46 08:16-08:54/38 17:26	07:17 08:26-08:51/25 18:04	06:34 17:13-17:57/44 18:35	06:44 19:04-19:32/28 20:07	06:08 06:48-07:16/28 20:37 19:18-19:30/12	05:55 06:40-07:31/51 20:59
19	07:46 08:16-08:55/39 17:27	07:15 08:29-08:49/20 18:05	06:33 17:17-17:58/41 18:36	06:43 19:03-19:31/28 20:08	06:07 06:48-07:16/28 20:38 19:21-19:26/5	05:55 06:40-07:32/52 20:59
20	07:45 08:16-08:56/40 17:29	07:14 08:32-08:44/12 18:06	06:31 17:17-17:58/41 18:37	06:41 19:04-19:31/27 20:09	06:06 06:48-07:15/27 20:39	05:55 06:40-07:32/52 20:59
21	07:45 08:15-08:57/42 17:30	07:13 18:07 18:07	06:29 17:17-17:59/42 18:38 17:59-18:00/1	06:40 19:04-19:33/29 20:10 19:33-19:34/1	06:05 06:48-07:15/27 20:40	05:55 06:40-07:32/52 20:59
22	07:44 08:15-08:58/43 17:31	07:11 18:08 18:08	06:28 17:17-17:59/42 18:39 17:59-18:01/2	06:39 19:04-19:31/27 20:11 19:31-19:36/5	06:04 06:49-07:15/26 20:41	05:56 06:41-07:33/52 21:00
23	07:43 08:15-08:59/44 17:32	07:10 18:09 18:09	06:26 17:17-17:58/41 18:40 17:58-18:01/3	06:37 19:04-19:31/27 20:12 19:31-19:37/6	06:03 06:49-07:15/26 20:42	05:56 06:41-07:33/52 21:00
24	07:43 08:14-08:59/45 17:33	07:08 18:11 18:11	06:24 17:18-17:58/40 18:41 17:58-18:02/4	06:36 19:04-19:30/26 20:13 19:30-19:38/8	06:03 06:49-07:14/25 20:43	05:56 06:41-07:32/51 21:00
25	07:42 08:14-09:00/46 17:34	07:07 18:12 18:12	06:23 17:19-17:57/38 18:42 17:57-18:02/5	06:34 19:05-19:29/24 20:14 19:29-19:39/10	06:02 06:50-07:05/15 20:44 07:05-07:14/9	05:56 06:42-07:33/51 21:00
26	07:41 08:14-09:01/47 17:36	07:06 18:13 18:13	06:21 06:49-07:02/13 17:56-18:01/5 18:43 17:19-17:56/37	06:33 19:06-19:28/22 20:15 19:28-19:40/12	06:01 06:51-07:10/19 20:45 07:10-07:13/3	05:57 06:42-07:33/51 21:00
27	07:41 08:14-09:01/47 17:37	07:04 17:18-17:28/10 18:14	06:19 06:47-07:04/17 17:55-18:02/7 18:44 17:21-17:55/34	06:32 19:07-19:26/19 20:16 19:26-19:40/14	06:01 06:52-07:13/21 20:45	05:57 06:42-07:33/51 21:00
28	07:40 08:14-09:02/48 17:38	07:03 17:14-17:30/16 18:15	06:18 06:45-07:05/20 17:54-18:01/7 18:45 17:23-17:54/31	06:30 19:08-19:25/17 20:17 19:25-19:41/16	06:00 06:50-07:15/25 20:46	05:57 06:43-07:33/50 21:00
29	07:39 08:14-09:02/48 17:39		07:16 07:44-08:07/23 18:51-19:00/9 19:46 18:25-18:51/26	06:29 19:08-19:22/14 20:18 19:22-19:41/19	06:00 06:48-07:17/29 20:47	05:58 06:43-07:33/50 21:00
30	07:38 08:14-09:02/48 17:40		07:14 07:42-08:07/25 18:49-19:00/11 19:47 18:35-18:49/14	06:28 19:08-19:42/34 20:19	05:59 06:47-07:18/31 20:48	05:58 06:44-07:33/49 21:00
31	07:37 08:14-09:03/49 17:42		07:13 07:41-08:07/26 19:48 18:35-18:58/23		05:58 06:46-07:20/34 20:49	
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	1170	825	1267	907	1230	1440

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

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

Project:

Giave WindPro - fotosimulazioni

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 07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 9 - AG11

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December
1	05:59 06:44-07:33/49 21:00	06:22 06:58-07:26/28 20:42 19:20-19:48/28	06:52 07:43-07:57/14 19:59 19:12-19:26/14	07:21 17:45-18:26/41 19:10	06:55 07:46-08:31/45 17:24	07:29 08:02-08:27/25 17:00 15:54-16:09/15
2	05:59 06:44-07:32/48 21:00	06:23 06:59-07:26/27 20:41 19:19-19:49/30	06:53 07:41-07:59/18 19:58 19:16-19:22/6	07:22 17:44-18:24/40 19:08	06:56 07:45-08:32/47 17:23	07:30 08:04-08:26/22 17:00 15:54-16:10/16
3	06:00 06:46-07:33/47 21:00	06:24 06:59-07:25/26 20:40 19:19-19:50/31	06:54 07:39-08:00/21 19:56	07:23 17:43-18:22/39 19:06	06:57 07:45-08:32/47 17:21	07:31 08:05-08:25/20 17:00 15:53-16:11/18
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5	06:01 06:47-07:32/45 21:00	06:26 07:01-07:24/23 20:37 19:18-19:51/33	06:56 07:36-08:01/25 19:53	07:25 17:42-18:14/32 19:03	06:59 07:45-08:33/48 17:19	07:33 08:09-08:22/13 16:59 15:53-16:13/20
6	06:01 06:48-07:32/44 20:59	06:27 07:02-07:23/21 20:36 19:16-19:50/34	06:57 07:35-08:01/26 19:51	07:26 17:42-18:13/31 19:01	07:00 07:44-08:33/49 17:18	07:34 08:12-08:20/8 16:59 15:53-16:14/21
7	06:02 06:48-07:31/43 20:59	06:28 07:02-07:20/18 20:35 19:16-19:50/34	06:58 07:34-08:01/27 19:50	07:27 17:42-18:13/31 19:00	07:02 07:44-08:33/49 17:17	07:35 15:54-16:14/20 16:59
8	06:02 06:49-07:31/42 20:59	06:29 07:04-07:19/15 20:34 19:16-19:50/34	06:59 07:34-08:01/27 19:48 18:36-18:44/8	07:28 17:42-18:12/30 18:58	07:03 07:45-08:34/49 17:16	07:36 15:54-16:15/21 16:59
9	06:03 06:49-07:30/41 20:58	06:30 07:06-07:16/10 20:32 19:16-19:50/34	07:00 07:33-08:01/28 19:46 18:33-18:47/14	07:29 17:42-18:11/29 18:57	07:04 07:45-08:34/49 17:15	07:37 15:54-16:16/22 16:59
10	06:04 06:51-07:29/38 20:58	06:31 19:16-19:50/34 20:31	07:01 07:33-08:01/28 19:45 18:30-18:48/18	07:30 17:42-18:10/28 18:55	07:05 07:44-08:34/50 17:14	07:37 15:55-16:16/21 16:59
11	06:04 06:52-07:29/37 20:58	06:32 19:16-19:50/34 20:30	07:02 07:33-08:00/27 19:43 18:28-18:50/22	07:31 17:43-18:08/25 18:53	07:06 07:44-08:34/50 17:13	07:38 15:55-16:17/22 16:59
12	06:05 06:53-07:28/35 20:57	06:33 19:16-19:50/34 20:29	07:03 07:33-07:59/26 19:41 18:27-18:50/23	07:33 17:45-18:08/23 18:52	07:07 07:45-08:34/49 17:12	07:39 15:54-16:17/23 16:59
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14	06:07 06:56-07:26/30 20:56	06:35 19:16-19:31/15 20:26 19:31-19:49/18	07:05 07:34-07:57/23 18:42-18:51/9 19:38 18:18-18:42/24	07:35 17:49-18:03/14 18:49	07:10 07:46-08:34/48 17:10	07:41 15:53-16:18/25 17:00
15	06:07 06:58-07:25/27 20:56	06:36 19:16-19:33/17 20:25 19:33-19:48/15	07:06 07:35-07:56/21 18:44-18:51/7 19:36 18:13-18:44/31	07:36 17:53-17:58/5 18:47	07:11 07:46-08:33/47 17:09	07:41 15:53-16:19/26 17:00
16	06:08 06:59-07:22/23 20:55	06:37 19:14-19:34/20 20:23 19:34-19:48/14	07:07 07:36-07:54/18 18:44-18:50/6 19:35 18:10-18:44/34	07:37 18:46	07:12 07:47-08:34/47 17:08	07:42 15:53-16:19/26 17:00
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18	06:10 07:00-07:18/18 20:54	06:38 19:12-19:36/24 20:21 19:36-19:46/10	07:08 07:41-07:46/5 18:44-18:49/5 19:31 18:06-18:44/38	07:39 18:43	07:14 07:48-08:33/45 17:07	07:43 15:54-16:21/27 17:01
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23	06:14 06:58-07:26/28 20:50	06:43 19:08-19:35/27 20:13	07:13 18:01-18:43/42 19:23	07:44 08:58-09:19/21 18:36	07:20 07:52-08:31/39 17:04	07:46 15:55-16:23/28 17:03
24	06:15 06:58-07:26/28 20:49	06:44 19:07-19:35/28 20:12	07:14 18:01-18:41/40 19:21	07:46 08:55-09:22/27 18:34	07:21 07:53-08:31/38 17:03	07:47 15:55-16:23/28 17:03
25	06:16 06:58-07:26/28 20:48	06:45 19:07-19:35/28 20:10	07:15 17:57-18:40/43 19:20	06:47 07:53-08:23/30 17:33	07:22 07:55-08:31/36 17:02	07:47 15:56-16:24/28 17:04
26	06:17 06:58-07:27/29 20:48	06:46 19:07-19:34/27 20:09	07:16 17:53-18:39/46 19:18	06:48 07:52-08:26/34 17:31	07:24 07:56-08:31/35 17:02	07:47 15:57-16:24/27 17:05
27	06:17 06:58-07:27/29 20:47	06:47 19:07-19:34/27 20:07	07:17 17:51-18:37/46 19:16	06:49 07:51-08:27/36 17:30	07:25 07:57-08:30/33 17:02	07:48 15:57-16:24/27 17:05
28	06:18 06:57-07:26/29 20:46	06:48 19:08-19:33/25 20:06	07:18 17:49-18:35/46 19:15	06:50 07:49-08:28/39 17:29	07:26 07:58-08:29/31 17:01 15:57-16:05/8	07:48 15:59-16:25/26 17:06
29	06:19 06:58-07:26/28 20:45	06:49 19:08-19:32/24 20:04	07:19 17:47-18:32/45 19:13	06:51 07:48-08:29/41 17:28	07:27 07:59-08:28/29 17:01 15:55-16:07/12	07:48 16:00-16:25/25 17:07
30	06:20 06:58-07:26/28 20:44	06:50 19:09-19:30/21 20:03	07:20 17:46-18:28/42 19:11	06:52 07:48-08:30/42 17:26	07:28 08:01-08:28/27 17:00 15:55-16:08/13	07:49 16:01-16:26/25 17:07
31	06:21 06:58-07:26/28 20:43	06:51 07:47-07:54/7 20:01 19:11-19:28/17		06:53 07:47-08:31/44 17:25		07:49 16:02-16:26/24 17:08
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	1165	1144	1247	750	1331	849

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

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

Project:

Giave WindPro - fotosimulazioni

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09/12/2022 09:59 / 17

Licensed user:

Ing. Bruno Manca
Via Vittorio Veneto 231
IT-09028 Sestu
+390702358125
BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 10 - AG10

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	January	February	March	April	May	June
1	07:49 14:18-14:54/36 17:09	07:36 17:43	07:01 16:39-17:17/38 18:16	07:11 18:08-18:59/51 19:49	06:26 20:21	05:58 20:49
2	07:49 14:19-14:53/34 17:10	07:35 17:44	07:00 16:37-17:17/40 18:17	07:10 18:08-19:00/52 19:50	06:25 20:22	05:58 20:50
3	07:49 14:21-14:53/32 17:11	07:34 17:45	06:58 16:37-17:19/42 18:18	07:08 18:07-19:00/53 19:52	06:24 20:23	05:57 20:51
4	07:49 14:22-14:53/31 17:12	07:33 17:47	06:57 16:35-17:19/44 18:20	07:06 18:08-19:02/54 19:53	06:22 20:24	05:57 20:52
5	07:49 14:24-14:52/28 17:13	07:32 17:48	06:55 16:35-17:20/45 18:21	07:05 18:07-19:01/54 19:54	06:21 20:25	05:56 20:52
6	07:49 14:25-14:52/27 17:14	07:31 17:49	06:53 16:34-17:20/46 18:22	07:03 18:07-19:01/54 19:55	06:20 20:26	05:56 20:53
7	07:49 14:27-14:51/24 17:15	07:30 17:50	06:52 16:34-17:20/46 18:23	07:01 18:08-19:02/54 19:56	06:19 20:27	05:56 20:53
8	07:49 14:29-14:50/21 17:15	07:29 17:51	06:50 16:33-17:20/47 18:24	07:00 18:08-19:01/53 19:57	06:18 20:28	05:56 20:54
9	07:49 14:32-14:49/17 17:16	07:28 17:53	06:49 16:33-17:20/47 18:25	06:58 18:09-19:02/53 19:58	06:17 20:29	05:55 20:55
10	07:49 14:35-14:46/11 17:17	07:27 17:54	06:47 16:33-17:20/47 18:26	06:57 18:09-19:01/52 19:59	06:15 20:30	05:55 20:55
11	07:49 17:19	07:26 17:55	06:46 16:32-17:20/48 18:27	06:55 18:09-19:00/51 20:00	06:14 20:31	05:55 20:56
12	07:49 17:20	07:24 17:56	06:44 16:32-17:19/47 18:28	06:54 18:11-19:00/49 20:01	06:13 20:32	05:55 20:56
13	07:48 17:21	07:23 18:02	06:42 16:33-17:19/46 18:29	06:52 18:11-18:59/48 20:02	06:12 20:33	05:55 20:57
14	07:48 17:22	07:22 17:59	06:41 16:33-17:18/45 18:31	06:50 18:13-18:59/46 20:03	06:11 20:34	05:55 20:57
15	07:48 17:23	07:21 18:00	06:39 16:33-17:18/45 18:32	06:49 18:14-18:58/44 20:04	06:10 20:35	05:55 20:58
16	07:47 17:24	07:19 18:01	06:37 16:34-17:17/43 18:33	06:47 18:17-18:57/40 20:05	06:09 20:36	05:55 20:58
17	07:47 17:25	07:18 18:02	06:36 16:34-17:16/42 18:34	06:46 18:20-18:56/36 20:06	06:08 20:37	05:55 20:58
18	07:46 17:26	07:17 18:04	06:34 16:35-17:15/40 18:35	06:44 18:23-18:55/32 20:07	06:07 20:37	05:55 20:59
19	07:46 17:27	07:15 18:05	06:33 16:36-17:14/38 18:36	06:43 18:23-18:53/30 20:08	06:07 20:38	05:55 20:59
20	07:45 17:28	07:14 18:06	06:31 16:36-17:12/36 18:37	06:41 18:25-18:52/27 20:09	06:06 20:39	05:55 20:59
21	07:45 17:30	07:13 18:07	06:29 16:38-17:11/33 18:38	06:40 18:27-18:50/23 17:23-17:44/21	06:05 20:40	05:55 21:00
22	07:44 17:31	07:11 18:08	06:28 16:39-17:09/30 18:39	06:38 18:28-18:47/19 17:20-17:46/26	06:04 20:41	05:55 21:00
23	07:43 17:32	07:10 16:57-17:00/3 18:09	06:26 16:41-17:06/25 18:40	06:37 18:32-18:44/12 17:17-17:47/30	06:03 20:42	05:56 21:00
24	07:43 17:33	07:08 16:50-17:07/17 18:11	06:24 16:44-17:04/20 18:41	06:36 17:16-17:49/33	06:03 20:43	05:56 21:00
25	07:42 17:34	07:07 16:47-17:10/23 18:12	06:23 16:48-16:59/11 18:42	06:34 17:14-17:50/36	06:02 20:44	05:56 21:00
26	07:41 17:36	07:06 16:44-17:12/28 18:13	06:21 17:12-17:51/39 18:43	06:33 20:15	06:01 20:45	05:57 21:00
27	07:41 17:37	07:04 16:42-17:14/32 18:14	06:19 17:12-17:50/38 18:44	06:31 17:50-17:52/2	06:01 20:45	05:57 21:00
28	07:40 17:38	07:03 16:40-17:15/35 18:15	06:18 17:11-17:53/42 18:45	06:30 20:17	06:00 20:46	05:57 21:00
29	07:39 17:39		07:16 18:09-18:55/46 19:46	06:29 20:18	05:59 20:47	05:58 21:00
30	07:38 17:40		07:14 18:09-18:57/48 19:47	06:27 20:19	05:59 20:48	05:58 21:00
31	07:37 17:42		07:13 18:08-18:58/50 19:48		05:58 20:49	
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	261	138	1416	987	0	0

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

Ing. Bruno Manca
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IT-09028 Sestu
+390702358125
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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 10 - AG10

Assumptions for shadow calculations

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

Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time

N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834

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

	July	August	September	October	November	December
1	05:59 21:00	06:22 20:42	06:52 18:09-19:00/51 19:59	07:21 17:12-17:58/46 19:10	06:55 17:24	07:29 17:00
2	05:59 21:00	06:23 20:41	06:53 18:08-18:59/51 19:58	07:22 17:11-17:58/47 19:08	06:56 17:23	07:30 14:18-14:28/10 17:00
3	06:00 21:00	06:24 20:40	06:54 18:06-18:59/53 19:56	07:23 17:11-17:58/47 19:06	06:57 17:21	07:31 14:16-14:32/16 17:00
4	06:00 21:00	06:25 20:38	06:55 18:05-18:58/53 19:55	07:24 17:10-17:57/47 19:05	06:58 17:20	07:32 14:14-14:34/20 16:59
5	06:01 21:00	06:26 20:37	06:56 18:04-18:58/54 19:53	07:25 17:10-17:57/47 19:03	06:59 17:19	07:33 14:12-14:36/24 16:59
6	06:01 20:59	06:27 20:36	06:57 18:03-18:57/54 19:51	07:26 17:10-17:56/46 19:01	07:00 17:18	07:34 14:11-14:38/27 16:59
7	06:02 20:59	06:28 20:35	06:58 18:02-18:57/55 19:50	07:27 17:10-17:56/46 19:00	07:02 17:17	07:35 14:11-14:39/28 16:59
8	06:02 20:59	06:29 20:34	06:59 18:02-18:56/54 19:48	07:28 17:10-17:55/45 18:58	07:03 17:16	07:36 14:10-14:41/31 16:59
9	06:03 20:58	06:30 20:32	07:00 18:01-18:55/54 19:46	07:29 17:10-17:54/44 18:57	07:04 17:15	07:37 14:10-14:42/32 16:59
10	06:04 20:58	06:31 20:31	07:01 18:01-18:54/53 19:45	07:30 17:10-17:53/43 18:55	07:05 17:14	07:37 14:10-14:43/33 16:59
11	06:04 20:58	06:32 20:30	07:02 18:01-18:52/51 19:43	07:31 17:11-17:51/40 18:53	07:06 17:13	07:38 14:09-14:45/36 16:59
12	06:05 20:57	06:33 20:29	07:03 18:01-18:51/50 19:41	07:33 17:12-17:51/39 18:52	07:07 17:12	07:39 14:08-14:45/37 16:59
13	06:06 20:57	06:34 20:27	07:04 18:00-18:49/49 19:40	07:34 17:13-17:50/37 18:50	07:09 17:11	07:40 14:09-14:46/37 16:59
14	06:07 20:56	06:35 20:26	07:05 18:01-18:47/46 19:38	07:35 17:14-17:48/34 18:49	07:10 17:10	07:41 14:09-14:47/38 16:59
15	06:07 20:56	06:35 20:25	07:06 18:01-18:44/43 19:36	07:36 17:15-17:46/31 18:47	07:11 17:09	07:41 14:09-14:48/39 17:00
16	06:08 20:55	06:36 20:23	07:07 18:00-18:40/40 19:35	07:37 17:17-17:43/26 18:46	07:12 17:08	07:42 14:09-14:48/39 17:00
17	06:09 20:54	06:37 20:22	07:07 18:01-18:39/38 19:33	07:38 17:19-17:41/22 18:44	07:13 17:08	07:43 14:09-14:49/40 17:00
18	06:10 20:54	06:38 20:21	07:08 17:37-17:45/8 19:31	07:39 17:23-17:37/14 18:43	07:14 17:07	07:43 14:10-14:50/40 17:01
19	06:10 20:53	06:39 20:19	07:09 17:31-17:49/18 19:30	07:40 18:02-18:36/34 18:41	07:16 17:06	07:44 14:10-14:50/40 17:01
20	06:11 20:52	06:40 18:36-18:50/14 20:18	07:10 17:28-17:52/24 19:28	07:41 18:03-18:34/31 18:40	07:17 17:05	07:45 14:10-14:51/41 17:01
21	06:12 20:52	06:41 18:33-18:52/19 20:16	07:11 17:25-17:53/28 19:26	07:42 18:05-18:32/27 18:38	07:18 17:05	07:45 14:10-14:51/41 17:02
22	06:13 20:51	06:42 18:30-18:54/24 20:15	07:12 17:23-17:55/32 19:25	07:43 18:07-18:29/22 18:37	07:19 17:04	07:46 14:11-14:52/41 17:02
23	06:14 20:50	06:43 18:29-18:56/27 20:13	07:13 17:21-17:56/35 19:23	07:44 18:09-18:26/17 18:36	07:20 17:03	07:46 14:11-14:52/41 17:03
24	06:15 20:49	06:44 18:27-18:57/30 20:12	07:14 17:19-17:57/38 19:21	07:46 17:19-17:57/38 18:34	07:21 17:03	07:47 14:13-14:53/40 17:03
25	06:16 20:48	06:45 18:25-18:58/33 20:10	07:15 17:18-17:57/39 19:20	06:47 17:33	07:22 17:02	07:47 14:13-14:53/40 17:04
26	06:16 20:48	06:46 18:22-18:59/37 20:09	07:16 17:16-17:58/42 19:18	06:48 17:31	07:24 17:02	07:47 14:13-14:53/40 17:05
27	06:17 20:47	06:47 18:19-18:59/40 20:07	07:17 17:15-17:58/43 19:16	06:49 17:30	07:25 17:01	07:48 14:15-14:54/39 17:05
28	06:18 20:46	06:48 18:16-19:00/44 20:06	07:18 17:14-17:58/44 19:15	06:50 17:29	07:26 17:01	07:48 14:15-14:54/39 17:06
29	06:19 20:45	06:49 18:14-19:00/46 20:04	07:19 17:13-17:59/46 19:13	06:51 17:27	07:27 17:01	07:48 14:16-14:54/38 17:07
30	06:20 20:44	06:50 18:12-19:00/48 20:03	07:20 17:12-17:59/47 19:11	06:52 17:26	07:28 17:00	07:49 14:16-14:54/38 17:07
31	06:21 20:43	06:51 18:11-19:00/49 20:01		06:53 17:25		07:49 14:17-14:54/37 17:08
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	0	411	1461	701	0	1042

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

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

Project:

Giave WindPro - fotosimulazioni

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Licensed user:

Ing. Bruno Manca
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BrunoManca / ingbrunomanca@gmail.com
Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 11 - AG08

Assumptions for shadow calculations

Sunshine probability S (Average daily sunshine hours) [ALGHERO]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
3,85 4,78 5,80 6,92 8,25 9,91 10,91 9,92 8,15 6,40 4,83 3,92

Operational time
N NE E SE S SW W NW Sum
704 820 622 355 622 1.039 1.312 1.360 6.834
Idle start wind speed: Cut in wind speed from power curve

	January	February	March	April	May	June
1	07:49 15:12-16:09/57 17:09	07:36 17:43	07:01 07:22-08:24/62 18:16	07:11 07:30-07:54/24 19:49	06:26 20:20	05:58 18:23-19:17/54 20:49 19:21-19:43/22
2	07:49 15:13-16:09/56 17:10	07:35 17:44	07:00 07:21-08:24/63 18:17	07:10 07:28-07:53/25 19:50	06:25 20:22	05:58 18:23-19:18/55 20:50 19:21-19:44/23
3	07:49 15:14-16:10/56 17:11	07:34 17:45	06:58 07:21-08:24/63 18:18	07:08 07:26-07:52/26 19:52	06:24 20:23	05:57 18:22-19:18/56 20:51 19:19-19:45/26
4	07:49 15:15-16:10/55 17:12	07:33 17:47	06:57 07:20-08:24/64 18:20	07:06 07:25-07:52/27 19:53	06:22 20:24	05:57 18:21-19:46/85 20:51
5	07:49 15:16-16:11/55 17:13	07:32 17:48	06:55 07:20-08:24/64 18:21	07:05 07:25-07:51/26 19:54	06:21 20:25	05:56 18:21-19:48/87 20:52
6	07:49 15:18-16:11/53 17:14	07:31 17:49	06:53 07:19-08:24/65 18:22	07:03 07:25-07:50/25 19:55	06:20 20:26	05:56 18:21-19:49/88 20:53
7	07:49 15:19-16:12/53 17:15	07:30 17:50	06:52 07:19-08:24/65 18:23	07:01 07:26-07:49/23 19:56	06:19 20:27	05:56 18:21-19:49/88 20:53
8	07:49 15:21-16:12/51 17:15	07:29 17:51	06:50 07:19-08:23/64 18:24	07:00 07:27-07:47/20 19:57	06:18 20:28	05:56 18:21-19:50/89 20:54
9	07:49 15:22-16:13/51 17:16	07:28 17:53	06:49 07:18-08:23/65 18:25	06:58 07:29-07:46/17 19:58	06:17 20:29	05:55 18:21-19:51/90 20:55
10	07:49 15:23-16:12/49 17:17	07:27 17:54	06:47 07:19-08:23/64 18:26	06:57 07:31-07:42/11 19:59	06:15 20:30	05:55 18:21-19:51/90 20:55
11	07:49 15:26-16:13/47 17:19	07:26 17:55	06:46 07:18-08:22/64 18:27	06:55 20:00	06:14 20:31	05:55 18:21-19:52/91 20:56
12	07:49 15:29-16:13/44 17:20	07:24 17:56	06:44 07:19-08:22/63 18:28	06:54 20:01	06:13 20:32	05:55 06:17-06:20/3 20:56 18:21-19:53/92
13	07:48 15:32-16:13/41 17:21	07:23 17:58	06:42 07:19-08:20/61 18:29	06:52 20:02	06:12 20:33	05:55 06:17-06:21/4 20:57 18:21-19:53/92
14	07:48 15:33-16:13/40 17:22	07:22 07:48-08:00/12 17:59	06:41 07:19-08:19/60 18:31	06:50 20:03	06:11 20:34	05:55 06:17-06:22/5 20:57 18:21-19:54/93
15	07:48 15:35-16:14/39 17:23	07:21 07:43-08:06/23 18:00	06:39 07:20-08:19/59 18:32	06:49 20:04	06:10 20:35	05:55 06:17-06:23/6 20:58 18:21-19:54/93
16	07:47 15:35-16:13/38 17:24	07:19 07:40-08:09/29 18:01	06:37 07:20-08:17/57 18:33	06:47 20:05	06:09 20:36	05:55 06:17-06:23/6 20:58 18:21-19:54/93
17	07:47 15:36-16:13/37 17:25	07:18 07:37-08:11/34 18:02	06:36 07:20-08:16/56 18:34	06:46 20:06	06:08 20:36	05:55 06:17-06:24/7 20:58 18:21-19:55/94
18	07:46 15:37-16:13/36 17:26	07:17 07:36-08:13/37 18:03	06:34 07:21-08:15/54 18:35	06:44 20:07	06:07 20:37	05:55 06:17-06:24/7 20:59 18:21-19:55/94
19	07:46 15:38-16:13/35 17:27	07:15 07:35-08:16/41 18:05	06:33 07:21-08:13/52 18:36	06:43 20:08	06:07 18:47-18:50/3 20:38	05:55 06:17-06:24/7 20:59 18:21-19:55/94
20	07:45 15:39-16:12/33 17:28	07:14 07:33-08:16/43 18:06	06:31 07:22-08:12/50 18:37	06:41 20:09	06:06 18:39-18:57/18 20:39	05:55 06:17-06:25/8 20:59 18:21-19:55/94
21	07:45 15:40-16:11/31 17:30	07:13 07:32-08:18/46 18:07	06:29 07:23-08:10/47 18:38	06:40 20:10	06:05 18:36-19:00/24 20:40	05:55 06:17-06:25/8 20:59 18:21-19:55/94
22	07:44 15:42-16:12/30 17:31	07:11 07:30-08:19/49 18:08	06:28 07:24-08:08/44 18:39	06:38 20:11	06:04 18:34-19:04/30 20:41	05:55 06:18-06:26/8 21:00 18:22-19:56/94
23	07:43 15:43-16:10/27 17:32	07:10 07:29-08:20/51 18:09	06:26 07:25-08:06/41 18:40	06:37 20:12	06:03 18:32-19:06/34 20:42	05:56 06:18-06:25/7 21:00 18:22-19:56/94
24	07:43 15:44-16:09/25 17:33	07:08 07:27-08:21/54 18:11	06:24 06:43-06:46/3 18:41	06:36 20:13	06:03 18:30-19:07/37 20:43	05:56 06:18-06:25/7 21:00 18:22-19:56/94
25	07:42 15:46-16:08/22 17:34	07:07 07:26-08:22/56 18:12	06:23 06:41-06:49/8 18:42	06:34 20:14	06:02 18:29-19:09/40 20:44	05:56 06:19-06:26/7 21:00 18:22-19:56/94
26	07:41 15:49-16:07/18 17:36	07:06 07:24-08:22/58 18:13	06:21 06:39-06:50/11 18:43	06:33 20:15	06:01 18:27-19:10/43 20:45	05:57 06:19-06:26/7 21:00 18:23-19:57/94
27	07:41 15:52-16:04/12 17:37	07:04 07:23-08:23/60 18:14	06:19 06:38-06:52/14 18:44	06:31 20:16	06:01 18:27-19:12/45 20:45	05:57 06:19-06:25/6 21:00 18:23-19:56/93
28	07:40 17:38	07:03 07:22-08:23/61 18:15	06:18 06:36-06:53/17 18:45	06:30 20:17	06:00 18:26-19:13/47 20:46	05:57 06:20-06:25/5 21:00 18:24-19:57/93
29	07:39 17:39		07:16 07:34-07:53/19 19:46	06:29 20:18	05:59 18:24-19:14/50 20:47	05:58 06:20-06:24/4 21:00 18:24-19:56/92
30	07:38 17:40		07:14 07:33-07:54/21 19:47	06:27 20:19	05:59 18:24-19:15/51 20:48	05:58 06:21-06:24/3 21:00 18:24-19:56/92
31	07:37 17:42		07:13 07:31-07:53/22 19:48		05:58 18:24-19:17/53 20:49	
Potential sun hours	299	298	370	398	447	450
Sum of minutes with flicker	1091	654	1574	224	516	2832

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

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

Project:

Giave WindPro - fotosimulazioni

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+390702358125
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Calculated:
07/12/2022 15:04/2.8.579

SHADOW - Calendar per WTG

Calculation: Giave progetto WTG: 11 - AG08

Assumptions for shadow calculations

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

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
3,85	4,78	5,80	6,92	8,25	9,91	10,91	9,92	8,15	6,40	4,83	3,92

Operational time

N	NE	E	SE	S	SW	W	NW	Sum
704	820	622	355	622	1.039	1.312	1.360	6.834

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

	July	August	September	October	November	December
1	05:59 06:21-06:22/1 21:00 18:25-19:56/91	06:22 20:42	06:52 19:59	07:21 07:58-09:00/62 19:10	06:55 17:24	07:29 15:08-15:55/47 17:00
2	05:59 18:25-19:56/91 21:00 06:00 18:26-19:56/90	06:23 20:41	06:53 07:29-07:41/12 19:58	07:22 07:57-09:00/63 19:08	06:56 17:23	07:30 15:07-15:55/48 17:00
3	06:00 18:26-19:56/90 21:00	06:24 20:40	06:54 07:27-07:44/17 19:56	07:23 07:56-09:00/64 19:06	06:57 17:21	07:31 15:05-15:56/51 17:00
4	06:00 18:26-19:55/89 21:00	06:25 20:38	06:55 07:24-07:44/20 19:55	07:24 07:56-09:00/64 19:05	06:58 17:20	07:32 15:05-15:56/51 16:59
5	06:01 18:27-19:55/88 21:00	06:26 20:37	06:56 07:22-07:45/23 19:53	07:25 07:55-09:00/65 19:03	06:59 17:19	07:33 15:04-15:57/53 16:59
6	06:01 18:27-19:55/88 20:59	06:27 20:36	06:57 07:21-07:46/25 19:51	07:26 07:55-09:00/65 19:01	07:00 17:18	07:34 15:04-15:57/53 16:59
7	06:02 18:27-19:54/87 20:59	06:28 20:35	06:58 07:20-07:46/26 19:50	07:27 07:55-08:59/64 19:00	07:02 17:17	07:35 15:03-15:58/55 16:59
8	06:02 18:28-19:54/86 20:59	06:29 20:34	06:59 07:19-07:46/27 19:48	07:28 07:55-08:59/64 18:58	07:03 17:16	07:36 15:03-15:58/55 16:59
9	06:03 18:28-19:53/85 20:58	06:30 20:32	07:00 07:20-07:46/26 19:46	07:29 07:54-08:59/65 18:57	07:04 17:15	07:37 15:03-15:59/56 16:59
10	06:04 18:30-19:26/56 20:58	06:31 20:31	07:01 07:21-07:46/25 19:45	07:30 07:54-08:58/64 18:55	07:05 17:14	07:37 15:03-15:59/56 16:59
11	06:04 18:31-19:25/54 20:58	06:32 20:30	07:02 07:22-07:46/24 19:43	07:31 07:55-08:58/63 18:53	07:06 17:13	07:38 15:03-16:00/57 16:59
12	06:05 18:31-19:24/53 20:57	06:33 20:29	07:03 07:23-07:46/23 19:41	07:33 07:55-08:58/63 18:52	07:07 17:12	07:39 15:03-16:00/57 16:59
13	06:06 18:32-19:24/52 20:57	06:34 20:27	07:04 07:24-07:45/21 19:40	07:34 07:55-08:57/62 18:50	07:09 17:11	07:40 15:03-16:00/57 16:59
14	06:07 18:33-19:23/50 20:56	06:35 20:26	07:05 07:25-07:44/19 19:38	07:35 07:56-08:56/60 18:49	07:10 17:10	07:41 15:04-16:01/57 16:59
15	06:07 18:34-19:23/49 20:56	06:35 20:25	07:06 07:26-07:43/17 19:36	07:36 07:56-08:55/59 18:47	07:11 15:24-15:36/12 17:09	07:41 15:04-16:02/58 17:00
16	06:08 18:35-19:21/46 20:55	06:36 20:23	07:06 07:27-07:42/15 19:35	07:37 07:57-08:54/57 18:46	07:12 15:22-15:40/18 17:08	07:42 15:04-16:02/58 17:00
17	06:09 18:36-19:20/44 20:54	06:37 20:22	07:07 07:28-07:40/12 19:33	07:38 07:58-08:53/55 18:44	07:13 15:20-15:42/22 17:08	07:43 15:04-16:02/58 17:00
18	06:10 18:38-19:19/41 20:54	06:38 20:20	07:08 07:28-07:37/9 19:31	07:39 07:59-08:52/53 18:43	07:14 15:18-15:43/25 17:07	07:43 15:05-16:03/58 17:01
19	06:10 18:39-19:18/39 20:53	06:39 20:19	07:09 07:29-07:33/4 19:30	07:40 08:00-08:50/50 18:41	07:16 15:17-15:44/27 17:06	07:44 15:05-16:03/58 17:01
20	06:11 18:40-19:16/36 20:52	06:40 20:18	07:10 08:12-08:52/40 19:28	07:41 08:02-08:50/48 18:40	07:17 15:17-15:47/30 17:05	07:45 15:06-16:04/58 17:01
21	06:12 18:42-19:14/32 20:52	06:41 20:16	07:11 08:10-08:53/43 19:26	07:42 08:03-08:48/45 18:38	07:18 15:16-15:47/31 17:05	07:45 15:05-16:04/59 17:02
22	06:13 18:45-19:12/27 20:51	06:42 20:15	07:12 08:08-08:54/46 19:25	07:43 08:04-08:47/43 18:37	07:19 15:15-15:48/33 17:04	07:46 15:06-16:05/59 17:02
23	06:14 18:48-19:10/22 20:50	06:43 20:13	07:13 08:07-08:56/49 19:23	07:44 08:05-08:45/40 18:36	07:20 15:14-15:49/35 17:03	07:46 15:07-16:05/58 17:03
24	06:15 18:52-19:06/14 20:49	06:44 20:12	07:14 08:05-08:57/52 19:21	07:46 08:06-08:42/36 18:34	07:21 15:14-15:50/36 17:03	07:47 15:07-16:05/58 17:03
25	06:16 20:48	06:45 20:10	07:15 08:04-08:57/53 19:20	06:47 07:07-07:40/33 17:33	07:22 15:13-15:50/37 17:02	07:47 15:08-16:06/58 17:04
26	06:16 20:48	06:46 20:09	07:16 08:02-08:58/56 19:18	06:48 07:10-07:38/28 17:31	07:24 15:14-15:52/38 17:02	07:47 15:08-16:06/58 17:05
27	06:17 20:47	06:47 20:07	07:17 08:01-08:59/58 19:16	06:49 07:14-07:34/20 17:30	07:25 15:14-15:53/39 17:01	07:48 15:08-16:07/59 17:05
28	06:18 20:46	06:48 20:06	07:18 08:00-08:59/59 19:15	06:50 07:19-07:28/9 17:29	07:26 15:14-15:53/39 17:01	07:48 15:10-16:08/58 17:06
29	06:19 20:45	06:49 20:04	07:19 07:59-08:59/60 19:13	06:51 17:27	07:27 15:13-15:54/41 17:01	07:48 15:10-16:08/58 17:07
30	06:20 20:44	06:50 20:03	07:20 07:59-09:00/61 19:11	06:52 17:26	07:28 15:11-15:54/43 17:00	07:49 15:11-16:08/57 17:07
31	06:21 20:43	06:51 20:01		06:53 17:25		07:49 15:11-16:09/58 17:08
Potential sun hours	457	427	375	346	299	290
Sum of minutes with flicker	1506	0	1030	1464	506	1741

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

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