



UNIVERSITAT  
POLITÈCNICA  
DE VALÈNCIA

ESCUELA TÉCNICA SUPERIOR  
DE INGENIEROS DE CAMINOS,  
CANALES Y PUERTOS



# **Diseño de una instalación solar fotovoltaica en la nave industrial Hermanos Calatayud situada en La Font de la Figuera (Valencia)**

**Anejos**

**Trabajo Final de Grado**

Titulación: Grado en Ingeniería de Obras Públicas

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**ANEJO 1. POTENCIA Y ENERGÍA DEL SOL**

**FIGURA 11**

Hour (24h)	21-dic	21-mar	21-jun				
4.875	0	0	0.01	9.625	0.65	0.9	1.01
5	0	0	0.03	9.75	0.67	0.9	1.02
5.125	0	0	0.09	9.875	0.68	0.9	1.02
5.25	0	0	0.15	10	0.70	0.9	1.02
5.375	0	0	0.22	10.125	0.71	0.9	1.03
5.5	0	0	0.29	10.25	0.73	1.0	1.03
5.625	0	0	0.35	10.375	0.74	1.0	1.03
5.75	0	0	0.41	10.5	0.75	1.0	1.04
5.875	0	0	0.47	10.625	0.76	1.0	1.04
6	0	0	0.52	10.75	0.77	1.0	1.04
6.125	0	0.0	0.56	10.875	0.77	1.0	1.04
6.25	0	0.0	0.60	11	0.78	1.0	1.05
6.375	0	0.0	0.64	11.125	0.78	1.0	1.05
6.5	0	0.1	0.67	11.25	0.79	1.0	1.05
6.625	0	0.2	0.70	11.375	0.79	1.0	1.05
6.75	0	0.3	0.73	11.5	0.80	1.0	1.05
6.875	0	0.3	0.75	11.625	0.80	1.0	1.05
7	0	0.4	0.78	11.75	0.80	1.0	1.05
7.125	0	0.5	0.80	11.875	0.80	0.99	1.05
7.25	0	0.5	0.82	12	0.80	0.99	1.05
7.375	0.00	0.6	0.84	12.125	0.80	0.99	1.05
7.5	0.00	0.6	0.85	12.25	0.80	0.99	1.05
7.625	0.01	0.6	0.87	12.375	0.80	0.99	1.05
7.75	0.03	0.7	0.88	12.5	0.80	0.99	1.05
7.875	0.08	0.7	0.90	12.625	0.79	0.99	1.05
8	0.14	0.7	0.91	12.75	0.79	0.98	1.05
8.125	0.20	0.7	0.92	12.875	0.78	0.98	1.05
8.25	0.26	0.8	0.93	13	0.78	0.98	1.05
8.375	0.31	0.8	0.94	13.125	0.77	0.98	1.04
8.5	0.36	0.8	0.95	13.25	0.77	0.97	1.04
8.625	0.41	0.8	0.96	13.375	0.76	0.97	1.04
8.75	0.45	0.8	0.97	13.5	0.75	0.96	1.04
8.875	0.49	0.9	0.97	13.625	0.74	0.96	1.03
9	0.52	0.9	0.98	13.75	0.73	0.95	1.03
9.125	0.55	0.9	0.99	13.875	0.71	0.95	1.03
9.25	0.58	0.9	0.99	14	0.70	0.94	1.02
9.375	0.61	0.9	1.00	14.125	0.68	0.94	1.02
9.5	0.63	0.9	1.01	14.25	0.67	0.93	1.02
				14.375	0.65	0.92	1.01

<b>14.5</b>	0.63	0.91	1.01
<b>14.625</b>	0.61	0.90	1.00
<b>14.75</b>	0.58	0.89	0.99
<b>14.875</b>	0.55	0.88	0.99
<b>15</b>	0.52	0.87	0.98
<b>15.125</b>	0.49	0.86	0.97
<b>15.25</b>	0.45	0.84	0.97
<b>15.375</b>	0.41	0.82	0.96
<b>15.5</b>	0.36	0.81	0.95
<b>15.625</b>	0.31	0.79	0.94
<b>15.75</b>	0.26	0.77	0.93
<b>15.875</b>	0.20	0.75	0.92
<b>16</b>	0.14	0.72	0.91
<b>16.125</b>	0.08	0.69	0.90
<b>16.25</b>	0.03	0.66	0.88
<b>16.375</b>	0.01	0.63	0.87
<b>16.5</b>	0.00	0.59	0.85
<b>16.625</b>	0.00	0.55	0.84
<b>16.75</b>	0	0.51	0.82
<b>16.875</b>	0	0.45	0.80

<b>17</b>	0	0.40	0.78
<b>17.125</b>	0	0.33	0.75
<b>17.25</b>	0	0.26	0.73
<b>17.375</b>	0	0.19	0.70
<b>17.5</b>	0	0.11	0.67
<b>17.625</b>	0	0.05	0.64
<b>17.75</b>	0	0.01	0.60
<b>17.875</b>	0	0.00	0.56
<b>18</b>	0	0	0.52
<b>18.125</b>	0	0	0.47
<b>18.25</b>	0	0	0.41
<b>18.375</b>	0	0	0.35
<b>18.5</b>	0	0	0.29
<b>18.625</b>	0	0	0.22
<b>18.75</b>	0	0	0.15
<b>18.875</b>	0	0	0.09
<b>19</b>	0	0	0.03
<b>19.125</b>	0	0	0.01

**FIGURA 12**

Time	Diciembre	Marzo	Junio
5:07			34
5:22			50
5:37			80
5:52			117
6:07			159
6:22		38	205
6:37		81	254
6:52		130	305
7:07		184	357
7:22		242	410
7:37	22	302	463
7:52	112	362	515
8:07	171	421	567
8:22	223	479	617
8:37	274	536	665
8:52	324	590	710
9:07	372	641	754
9:22	417	690	794
9:37	459	734	832
9:52	498	775	866
10:07	533	812	897
10:22	564	845	924
10:37	591	873	948
10:52	614	897	968
11:07	632	916	984
11:22	646	931	996
11:37	656	941	1000
11:52	660	945	1010
12:07	660	945	1010
12:22	656	941	1000
12:37	646	931	996
12:52	632	916	984
13:07	614	897	968
13:22	591	873	948
13:37	564	845	924
13:52	533	812	897
14:07	498	775	866
14:22	459	734	832
14:37	417	690	794
14:52	372	641	754
15:07	324	590	710
15:22	274	536	665
15:37	223	479	617
15:52	171	421	567
16:07	112	362	515
16:22	71	302	463
16:37	46	242	410
16:52	22	184	357
17:07	14	130	305
17:22	8	81	254
17:37	5	42	205
17:52	3	24	159
18:07	2	14	117
18:22	1	8	80
18:37	1	5	50
18:52	1	3	34
19:07	1	2	20

**FIGURA 13**

Time	Diciembre	Marzo	Junio
5:07			36
5:22			52
5:37			81
5:52			115
6:07			154
6:22		48	196
6:37		88	241
6:52		130	288
7:07		174	336
7:22		220	384
7:37	31	266	432
7:52	92	312	479
8:07	135	356	525
8:22	172	399	570
8:37	208	440	613
8:52	243	478	654
9:07	276	515	693
9:22	307	549	729
9:37	336	580	763
9:52	362	608	793
10:07	385	633	821
10:22	406	655	845
10:37	424	674	866
10:52	439	690	884
11:07	452	703	898
11:22	461	713	909
11:37	467	719	916
11:52	470	722	919
12:07	470	722	919
12:22	467	719	916
12:37	461	713	909
12:52	452	703	898
13:07	439	690	884
13:22	424	674	866
13:37	406	655	845
13:52	385	633	821
14:07	362	608	793
14:22	336	580	763
14:37	307	549	729
14:52	276	515	693
15:07	243	478	654
15:22	208	440	613
15:37	62	399	570
15:52	52	356	525
16:07	42	312	479
16:22	31	266	432
16:37	18	220	384
16:52		174	336
17:07		130	288
17:22		59	241
17:37		40	196
17:52		21	154
18:07			115
18:22			81
18:37			52
18:52			36
19:07			21

**FIGURA 14**

Time	Diciembre	Marzo	Junio
5:07			30
5:22			42
5:37			53
5:52			64
6:07			88
6:22		42	130
6:37		92	177
6:52		147	227
7:07		209	279
7:22		275	333
7:37	20	343	387
7:52	194	410	442
8:07	274	478	496
8:22	345	543	549
8:37	413	607	600
8:52	477	668	649
9:07	537	726	695
9:22	594	781	739
9:37	646	831	779
9:52	693	877	816
10:07	736	919	850
10:22	774	955	879
10:37	806	987	905
10:52	834	1010	927
11:07	856	1040	944
11:22	872	1050	957
11:37	883	1060	966
11:52	889	1070	971
12:07	889	1070	971
12:22	883	1060	966
12:37	872	1050	957
12:52	856	1040	944
13:07	834	1010	927
13:22	806	987	905
13:37	774	955	879
13:52	736	919	850
14:07	693	877	816
14:22	646	831	779
14:37	594	781	739
14:52	537	726	695
15:07	477	668	649
15:22	413	607	600
15:37	40	543	549
15:52	34	478	496
16:07	27	410	442
16:22	20	343	387
16:37	12	275	333
16:52		209	279
17:07		147	227
17:22		32	177
17:37		22	130
17:52		12	88
18:07			64
18:22			53
18:37			42
18:52			30
19:07			18

**FIGURA 15**

Time	Diciembre	Marzo	Junio
5:07			32
5:22			44
5:37			56
5:52			67
6:07			90
6:22		50	129
6:37		94	172
6:52		140	218
7:07		190	265
7:22		241	314
7:37	27	292	364
7:52	144	343	413
8:07	200	392	462
8:22	249	440	509
8:37	295	486	555
8:52	339	530	599
9:07	380	570	641
9:22	417	608	680
9:37	452	643	716
9:52	484	675	749
10:07	512	703	779
10:22	537	728	805
10:37	558	749	828
10:52	576	767	847
11:07	590	782	863
11:22	601	792	874
11:37	608	800	882
11:52	612	803	886
12:07	612	803	886
12:22	608	800	882
12:37	601	792	874
12:52	590	782	863
13:07	576	767	847
13:22	558	749	828
13:37	537	728	805
13:52	512	703	779
14:07	484	675	749
14:22	452	643	716
14:37	417	608	680
14:52	380	570	641
15:07	339	530	599
15:22	295	486	555
15:37	249	440	509
15:52	200	392	462
16:07	144	343	413
16:22	90	292	364
16:37	56	241	314
16:52	32	190	265
17:07	22	140	218
17:22	16	94	172
17:37	12	56	129
17:52	9	44	90
18:07	7	32	67
18:22	6	27	56
18:37	5	24	44
18:52	4	20	32
19:07	3	17	19

**FIGURA 16**

	<b>IRRADIANCIA MODELO APOYADO 13º</b>
<b>Enero</b>	509
<b>Febrero</b>	604
<b>Marzo</b>	722
<b>Abril</b>	737
<b>Mayo</b>	812
<b>Junio</b>	919
<b>Julio</b>	976
<b>Agosto</b>	906
<b>Septiembre</b>	783
<b>Octubre</b>	671
<b>Noviembre</b>	527
<b>Diciembre</b>	470

**FIGURA 17**

	<b>Irradiancia plano inclinado 35º</b>
<b>Enero</b>	652
<b>Febrero</b>	726
<b>Marzo</b>	803
<b>Abril</b>	766
<b>Mayo</b>	802
<b>Junio</b>	886
<b>Julio</b>	951
<b>Agosto</b>	924
<b>Septiembre</b>	852
<b>Octubre</b>	785
<b>Noviembre</b>	661
<b>Diciembre</b>	612

**FIGURA 18**

<b>Mes</b>	<b>H 13º (kWh/m2/mes)</b>	<b>H 35º (kWh/m2/mes)</b>
<b>Ene</b>	95.48	123.69
<b>Febrero</b>	112.28	136.36
<b>Mar</b>	165.85	182.9
<b>Abril</b>	175.5	177.3
<b>Mayo</b>	208.94	197.16
<b>Junio</b>	226.2	206.4
<b>Julio</b>	241.49	223.51
<b>Agosto</b>	215.45	212.66
<b>Septiembre</b>	169.8	182.4
<b>Octubre</b>	143.22	168.02
<b>Noviembre</b>	99	125.7
<b>Diciembre</b>	85.87	112.84
<b>AÑO</b>	<b>1939.08</b>	<b>2048.94</b>

**ANEJO 2. ESTUDIO DEMANDA ENERGÉTICA****FIGURA 20**

<b>Tiempo</b>	<b>Invierno</b>	<b>Primavera</b>	<b>Verano</b>
<b>0:00</b>	1.91	2.00	2.05
<b>1:00</b>	1.85	2.05	2.08
<b>2:00</b>	2.00	2.00	2.02
<b>3:00</b>	2.00	1.97	2.06
<b>4:00</b>	1.81	2.02	2.05
<b>5:00</b>	2.02	2.01	1.98
<b>6:00</b>	1.92	2.05	2.05
<b>7:00</b>	6.77	6.87	6.74
<b>8:00</b>	68.48	62.53	60.58
<b>9:00</b>	72.31	63.46	62.35
<b>10:00</b>	46.40	42.89	43.85
<b>11:00</b>	71.83	63.73	62.16
<b>12:00</b>	69.56	61.38	58.47
<b>13:00</b>	67.58	57.48	54.79
<b>14:00</b>	21.17	18.96	18.97
<b>15:00</b>	40.29	36.69	35.24
<b>16:00</b>	65.79	55.94	53.15
<b>17:00</b>	65.96	55.65	53.15
<b>18:00</b>	63.92	49.09	45.76
<b>19:00</b>	55.40	24.45	16.77
<b>20:00</b>	5.98	2.78	2.79
<b>21:00</b>	2.77	1.89	2.10
<b>22:00</b>	1.85	1.95	2.05
<b>23:00</b>	1.92	1.99	2.13

FIGURA 21

Tiempo	Invierno	Primavera	Verano
0:00	0.66	0.69	0.70
1:00	0.64	0.70	0.71
2:00	0.69	0.69	0.69
3:00	0.69	0.68	0.71
4:00	0.62	0.69	0.70
5:00	0.69	0.69	0.68
6:00	0.66	0.70	0.70
7:00	2.32	2.36	2.31
8:00	23.49	21.45	20.78
9:00	24.81	21.77	21.39
10:00	15.92	14.71	15.04
11:00	24.64	21.86	21.32
12:00	23.86	21.06	20.06
13:00	23.18	19.72	18.80
14:00	7.26	6.50	6.51
15:00	13.82	12.59	12.09
16:00	22.57	19.19	18.23
17:00	22.63	19.09	18.23
18:00	21.93	16.84	15.70
19:00	19.00	8.39	5.75
20:00	2.05	0.96	0.96
21:00	0.95	0.65	0.72
22:00	0.64	0.67	0.70
23:00	0.66	0.68	0.73

FIGURA 22

	Kwh/mes	
	2013	2014
<b>Enero</b>	-	17706
<b>Febrero</b>	22251	18294
<b>Marzo</b>	19519	18794
<b>Abril</b>	19805	16902
<b>Mayo</b>	17377	17327
<b>Junio</b>	19453	17488
<b>Julio</b>	19801	19564
<b>Agosto</b>	4461	4248
<b>Septiembre</b>	14858	13743
<b>Octubre</b>	17941	17420
<b>Noviembre</b>	19785	17763
<b>Diciembre</b>	15840	14228
<b>TOTAL</b>	<b>191091</b>	<b>193477</b>

FIGURA 23

	Kwh/mes/m <sup>2</sup>	
	2013	2014
<b>Enero</b>	-	6.07
<b>Febrero</b>	7.63	6.28
<b>Marzo</b>	6.70	6.45
<b>Abril</b>	6.79	5.80
<b>Mayo</b>	5.96	5.94
<b>Junio</b>	6.67	6.00
<b>Julio</b>	6.79	6.71
<b>Agosto</b>	1.53	1.46
<b>Septiembre</b>	5.10	4.71
<b>Octubre</b>	6.15	5.98
<b>Noviembre</b>	6.79	6.09
<b>Diciembre</b>	5.43	4.88
<b>TOTAL</b>	<b>65.55</b>	<b>66.37</b>

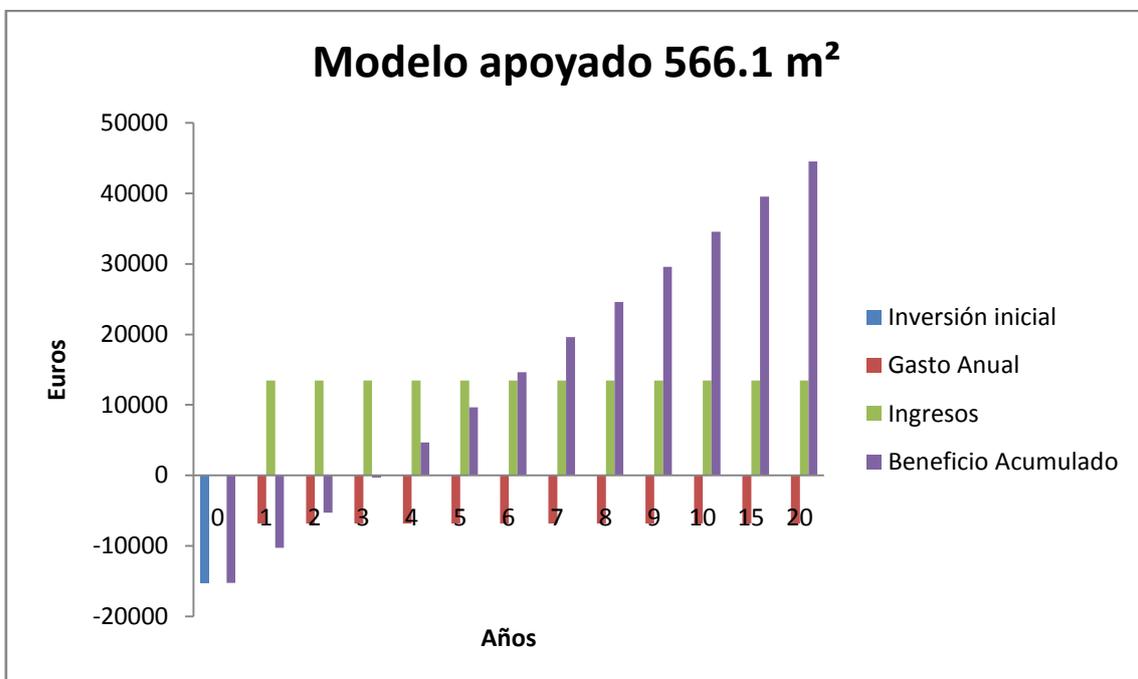
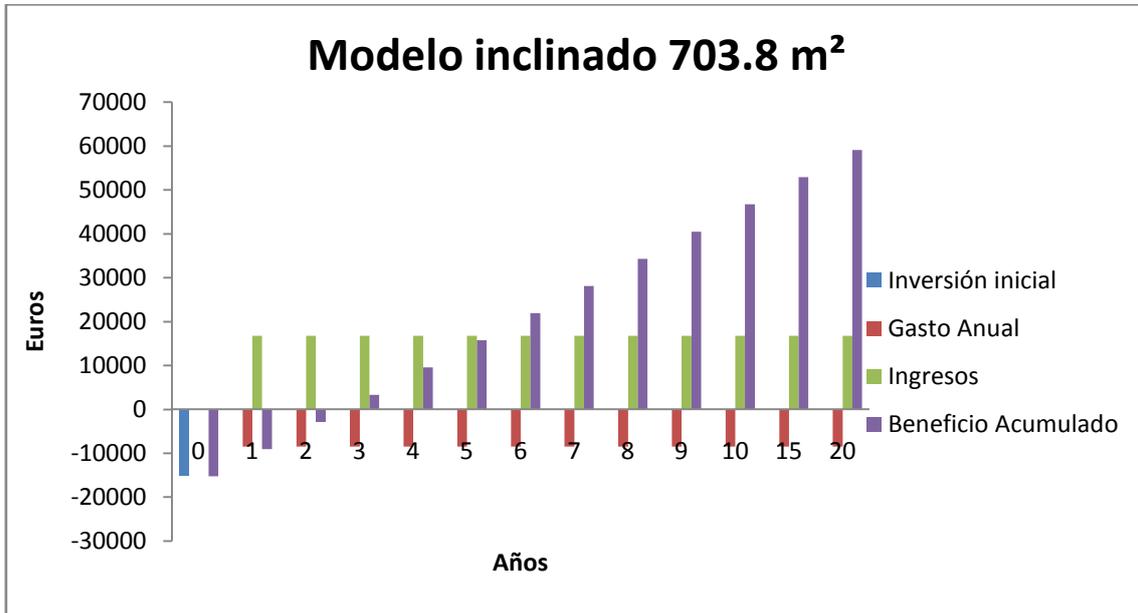
**ANEJO 3. POTENCIA****FIGURA 25**

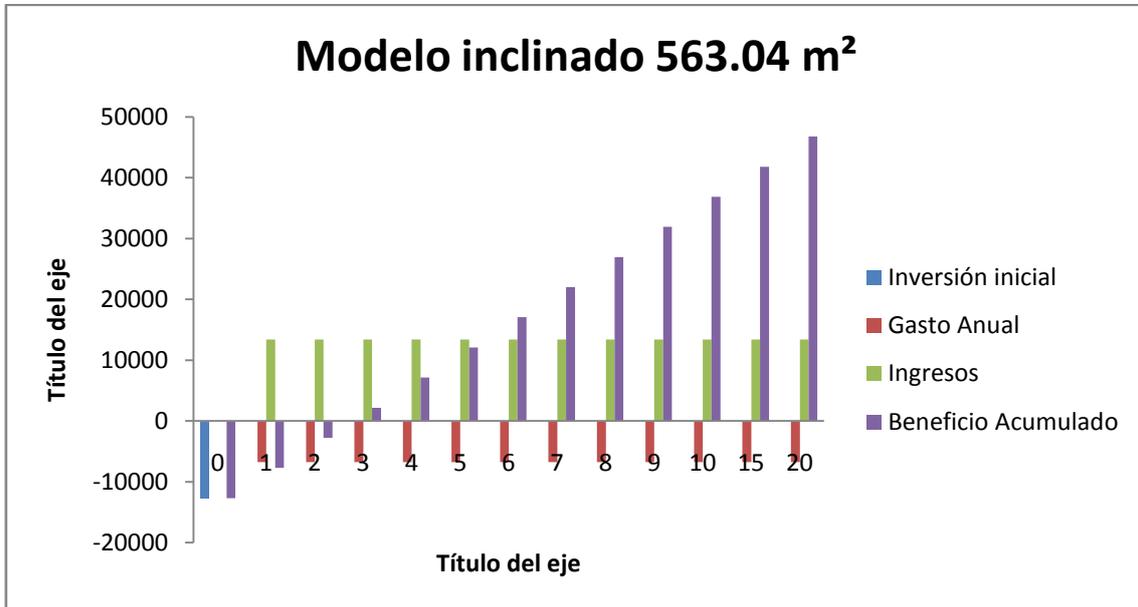
<b>Superficie útil (m<sup>2</sup>)</b>		<b>1245.42</b>	<b>905.76</b>	<b>792.54</b>	<b>566.1</b>
<b>Tiempo</b>	<b>Consumo total</b>	<b>Potencia</b>	<b>Potencia</b>	<b>Potencia</b>	<b>Potencia</b>
<b>0:00</b>	1.99	0	0	0	0
<b>1:00</b>	2.00	0	0	0	0
<b>2:00</b>	2.01	0	0	0	0
<b>3:00</b>	2.01	0	0	0	0
<b>4:00</b>	1.96	0	0	0	0
<b>5:00</b>	2.01	4.32	3.14	2.75	1.96
<b>6:00</b>	2.01	14.62	10.64	9.31	6.65
<b>7:00</b>	6.79	31.23	22.71	19.87	14.19
<b>8:00</b>	63.86	48.15	35.02	30.64	21.89
<b>9:00</b>	66.04	70.33	51.15	44.76	31.97
<b>10:00</b>	44.38	87.23	63.44	55.51	39.65
<b>11:00</b>	65.91	97.42	70.85	61.99	44.28
<b>12:00</b>	63.14	100.23	72.89	63.78	45.56
<b>13:00</b>	59.95	95.54	69.48	60.80	43.43
<b>14:00</b>	19.70	83.58	60.79	53.19	37.99
<b>15:00</b>	37.41	65.18	47.40	41.48	29.63
<b>16:00</b>	58.29	39.62	28.82	25.21	18.01
<b>17:00</b>	58.25	24.51	17.83	15.60	11.14
<b>18:00</b>	52.92	9.89	7.19	6.29	4.49
<b>19:00</b>	32.21	2.37	1.72	1.51	1.08
<b>20:00</b>	3.85	0	0	0	0
<b>21:00</b>	2.25	0	0	0	0
<b>22:00</b>	1.95	0	0	0	0
<b>23:00</b>	2.01	0	0	0	0

FIGURA 26

Superficie útil (m <sup>2</sup> )		1126.08	985.32	703.8	563.04
Tiempo	Consumo total	Potencia	Potencia	Potencia	Potencia
0:00	1.99	0	0	0	0
1:00	2.00	0	0	0	0
2:00	2.01	0	0	0	0
3:00	2.01	0	0	0	0
4:00	1.96	0	0	0	0
5:00	2.01	3.53	3.09	2.20	1.76
6:00	2.01	8.63	7.55	5.39	4.31
7:00	6.79	26.02	22.77	16.26	13.01
8:00	63.86	49.63	43.42	31.02	24.81
9:00	66.04	72.36	63.32	45.23	36.18
10:00	44.38	89.70	78.49	56.06	44.85
11:00	65.91	100.12	87.61	62.58	50.06
12:00	63.14	103.01	90.13	64.38	51.50
13:00	59.95	98.18	85.91	61.36	49.09
14:00	19.70	85.96	75.22	53.73	42.98
15:00	37.41	67.10	58.72	41.94	33.55
16:00	58.29	41.53	36.34	25.95	20.76
17:00	58.25	19.48	17.05	12.18	9.74
18:00	52.92	5.86	5.12	3.66	2.93
19:00	32.21	1.89	1.65	1.18	0.94
20:00	3.85	0.00	0.00	0.00	0.00
21:00	2.25	0.00	0.00	0.00	0.00
22:00	1.95	0.00	0.00	0.00	0.00
23:00	2.01	0.00	0.00	0.00	0.00

**ANEJO 4. ESTUDIO DE VIABILIDAD ECONÓMICA**





## ANEJO 5. MÓDULO FOTOVOLTAICO E INVERSOR

### 1. MÓDULO FOTOVOLTAICO

# Sunmodule Plus

## SW 250 - 260 poly



Data Sheet



-  Produced in Germany, the center for solar technology
-  TUV Power controlled: Lowest measuring tolerance in industry
-  Sunmodule Plus: Positive performance tolerance
-  25 year linear performance warranty and 10 year product warranty

SolarWorld AG relies on Germany as its technology location, thereby ensuring sustainable product quality.

The TUV Rheinland Power controlled inspection mark guarantees that the nominal power indicated for solar modules is inspected at regular intervals and thus ensured. The deviation to TUV is maximum 2 percent.

The positive power tolerance guarantees utmost system efficiency. Only modules achieving or exceeding the designated nominal power in performance tests are dispatched. The power tolerance ranges between -0 Wp and +5 Wp.

With its linear performance warranty covering a period of 25 years, SolarWorld guarantees a maximum performance depression of 0.7% p.a., a significant added value compared to the two-phase warranties common in the industry. Therefore, the service certificate offers comprehensive protection for your investment in the long term.

## Sunmodule Plus

### SW 250 - 260 poly



PERFORMANCE UNDER STANDARD TEST CONDITIONS (STC)\*

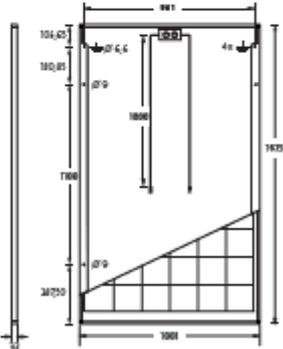
		SW 250	SW 255	SW 260
Maximum power	$P_{max}$	250 Wp	255 Wp	260 Wp
Open circuit voltage	$U_{oc}$	37.6 V	38.0 V	38.4 V
Maximum power point voltage	$U_{mp}$	30.5 V	30.9 V	31.4 V
Short circuit current	$I_{sc}$	8.81 A	8.88 A	8.94 A
Maximum power point current	$I_{mp}$	8.27 A	8.32 A	8.37 A
Module efficiency	$\eta_{mod}$	14.91%	15.21%	15.51%

Measuring tolerance ( $P_{max}$ ) traceable to TUV Rheinland, +/- 2% (TUV Power controlled) \*STC: 1000W/m<sup>2</sup>, 25°C, AM 1.5

PERFORMANCE AT 800 W/m<sup>2</sup>, NOCT, AM 1.5

		SW 250	SW 255	SW 260
Maximum power	$P_{max}$	185.4 Wp	188.7 Wp	192.4 Wp
Open circuit voltage	$U_{oc}$	34.2 V	34.5 V	34.8 V
Maximum power point voltage	$U_{mp}$	27.8 V	28.1 V	28.5 V
Short circuit current	$I_{sc}$	7.24 A	7.30 A	7.35 A
Maximum power point current	$I_{mp}$	6.68 A	6.72 A	6.76 A

Minor reduction in efficiency under partial load conditions at 25°C: at 200 W/m<sup>2</sup>, 100% (+/- 2%) of the STC efficiency (1000 W/m<sup>2</sup>) is achieved.



**DIMENSIONS**

Length	1675 mm
Width	1001 mm
Height	33 mm
Frame	Clear anodized aluminum
Weight	16.0 kg

**THERMAL CHARACTERISTICS**

NOCT	45 °C
TC $I_{sc}$	0.051 %/K
TC $U_{oc}$	-0.31 %/K
TC $P_{max}$	-0.41 %/K

**COMPONENT MATERIALS**

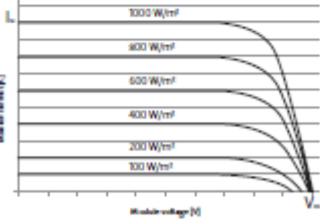
Cells per module	60
Cell type	Poly crystalline
Cell dimensions	156 mm x 156 mm
Front	tempered glass (3x1250)

**ADDITIONAL DATA**

Power sorting	-0 Wp / +5 Wp
J-Box	IP65
Connector	144

**PARAMETERS FOR OPTIMAL SYSTEM INTEGRATION**

Maximum system voltage (SC #)	1000 V
Maximum reverse current	25 A
Load / dynamic load	5.4 / 2.4 kN/m <sup>2</sup>
Number of bypass diodes	3
Operating range	-40 °C to +85 °C





SolarWorld AG reserves the right to make specification changes without notice.  
This data sheet complies with the requirements of EN 50383.

6 880011 26-01-02EN

## 2. INVERSOR

<b>Modelos</b>	<b>SIRIO K64</b>
Potencia nominal corriente alterna	64KVA
Potencia máxima corriente alterna	64KW (cosφ=1)
<b>ENTRADA</b>	
Tensión de continua máxima en circuito abierto	800Vcc
Rango completo de MPPT	330÷700Vcc
Intervalo de ejercicio	330÷700Vcc
Corriente de entrada máxima	206Acc
Tensión de umbral para el suministro hacia la red	390Vcc
Tensión de Ripple	<1%
Número de entradas	1
Número de MPPT	1
Conectores CC	Bus bar
<b>SALIDA</b>	
Tensión de ejercicio	400Vca
Intervalo operativo	340÷460Vca
Intervalo para la máxima potencia	340÷460Vca
Intervalo de frecuencia	47,5÷51,5Hz
Intervalo de frecuencia configurable	47÷53Hz
Corriente nominal	92Aca
Corriente máxima	103Aca
Corriente de cortocircuito	175Aca
Distorsión armónica (THDi)	<3%
Factor de potencia	desde 0,9 ind. hasta 0,9 cap.
Separación galvánica	Transformador BF
Conectores C.A.	Bus bar
<b>SISTEMA</b>	
Rendimiento máximo	96,1%
Rendimiento europeo	95%
Consumo en stand-by	<32W
Consumo de noche	<32W
Protecciones internas	Magnetotérmico lado AC y seccionador en lado CC
Protección de funcionamiento en isla	SI
Detección de dispersión hacia tierra	SI
Disipación de calor de convección	ventilación controlada
Temperatura de ejercicio	-20° C ÷ 45° C (sin reducción de potencia)
Temperatura de almacenamiento	-20° C ÷ 70° C
Humedad	5÷95% sin condensación
<b>CARACTERÍSTICAS</b>	
Ruido acústico	<68dBA
Nivel de protección	IP20
Color	RAL 7035
Peso	600kg
Tamaño (AxPxL)	800x800x1900mm
<b>COMUNICACIÓN</b>	
Interfaz de comunicación	Ethernet, USB, 2xRS232, 2 Ingressi per comandi remoti (blocco Inverter ed EPO) e 3 relè di segnalazione stato di funzionamento. RS485 opzionale (slot version)
Pantalla	LCD a color táctil
Protocolos	ModBUS y ModBUS TCP
<b>CERTIFICACIONES Y APROBACIONES</b>	
EMC	EN61000-6-3, EN61000-6-2, EN61000-3-11, EN61000-3-12
Seguridad	EN62109-1, EN62109-2
Directiva	Directiva de baja tensión: 2006/95/EC, EMC Directiva: 2004/108/EC
Criterios de enlace a la red eléctrica	CEI 0-21, CEI 0-16, A70, VDE 0126-1-1, G59/2, Real Decreto 413/2014, PO12.3