

PVsyst - Simulation report

Grid-Connected System

Project: tfg1

Variant: 1

Building system

System power: 10.22 kWp

Venta de Baños - España

**PVsyst V7.1.4**

VC1, Simulation date:
01/02/21 17:13
with v7.1.4

Project summary**Geographical Site**

Venta de Baños
España

Situation

Latitude 41.92 °N
Longitude -4.49 °W
Altitude 719 m
Time zone UTC+1

Project settings

Albedo 0.20

Meteo data

Venta de Baños
PVGIS api TMY

System summary**Grid-Connected System****PV Field Orientation**

Fixed plane
Tilt/Azimuth 20 / -38 °

Building system**Near Shadings**

Detailed electrical calculation
acc. to module layout

User's needs

Ext. defined as file
Consumo_Edificio_PVSyst_1 - copia.CSV

System information**PV Array**

Nb. of modules 28 units
Pnom total 10.22 kWp

Inverters

Nb. of units 1 Unit
Pnom total 10.00 kWac
Pnom ratio 1.022

Results summary

Produced Energy	16.02 MWh/year	Specific production	1568 kWh/kWp/year	Perf. Ratio PR	84.02 %
				Solar Fraction SF	35.04 %

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General parameters**Grid-Connected System****PV Field Orientation****Orientation**

Fixed plane

Tilt/Azimuth 20 / -38 °

Near Shadings

Detailed electrical calculation
acc. to module layout

Building system**Models used**

Transposition

Diffuse

Circumsolar

Perez

Imported

separate

User's needs

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Horizon

Free Horizon

Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Year	
1183	1065	1162	1105	1193	1321	1118	1090	1303	1290	1131	1165	14126	kWh

PV Array Characteristics**PV module**

Manufacturer

Model

Generic

LG 365 Q1C-A5

(Original PVsyst database)

Unit Nom. Power

365 Wp

Number of PV modules

28 units

Nominal (STC)

10.22 kWp

Modules

2 Strings x 14 In series

At operating cond. (50°C)

Pmpp

9.46 kWp

U mpp

474 V

I mpp

20 A

Total PV power

Nominal (STC)

10 kWp

Total

28 modules

Module area

48.4 m²

Cell area

43.4 m²**Inverter**

Manufacturer

Model

Generic

PVI-10.0-TL-OUTD

(Custom parameters definition)

Unit Nom. Power

10.00 kWac

Number of inverters

2 * MPPT 50% 1 units

Total power

10.0 kWac

Operating voltage

175-850 V

Pnom ratio (DC:AC)

1.02

Total inverter power

Total power

10 kWac

Nb. of inverters

1 Unit

Pnom ratio

1.02

Array losses**Array Soiling Losses**

Loss Fraction

3.0 %

Thermal Loss factor

Module temperature according to irradiance

Uc (const)

29.0 W/m²K

Uv (wind)

0.0 W/m²K/m/s**DC wiring losses**

Global array res.

387 mΩ

Loss Fraction

1.5 % at STC

Module Quality Loss

Loss Fraction

-0.8 %

Module mismatch losses

Loss Fraction

2.0 % at MPP

Strings Mismatch loss

Loss Fraction

0.1 %

IAM loss factor

Incidence effect (IAM): Fresnel AR coating, n(glass)=1.526, n(AR)=1.290

0°	30°	50°	60°	70°	75°	80°	85°	90°
1.000	0.999	0.987	0.962	0.892	0.816	0.681	0.440	0.000



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Array losses

Spectral correction

FirstSolar model

Coefficient Set	C0	C1	C2	C3	C4	C5
	0	0	0	0	0	0



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System losses

Unavailability of the system

Time fraction	1.4 %
	5.0 days,
	3 periods

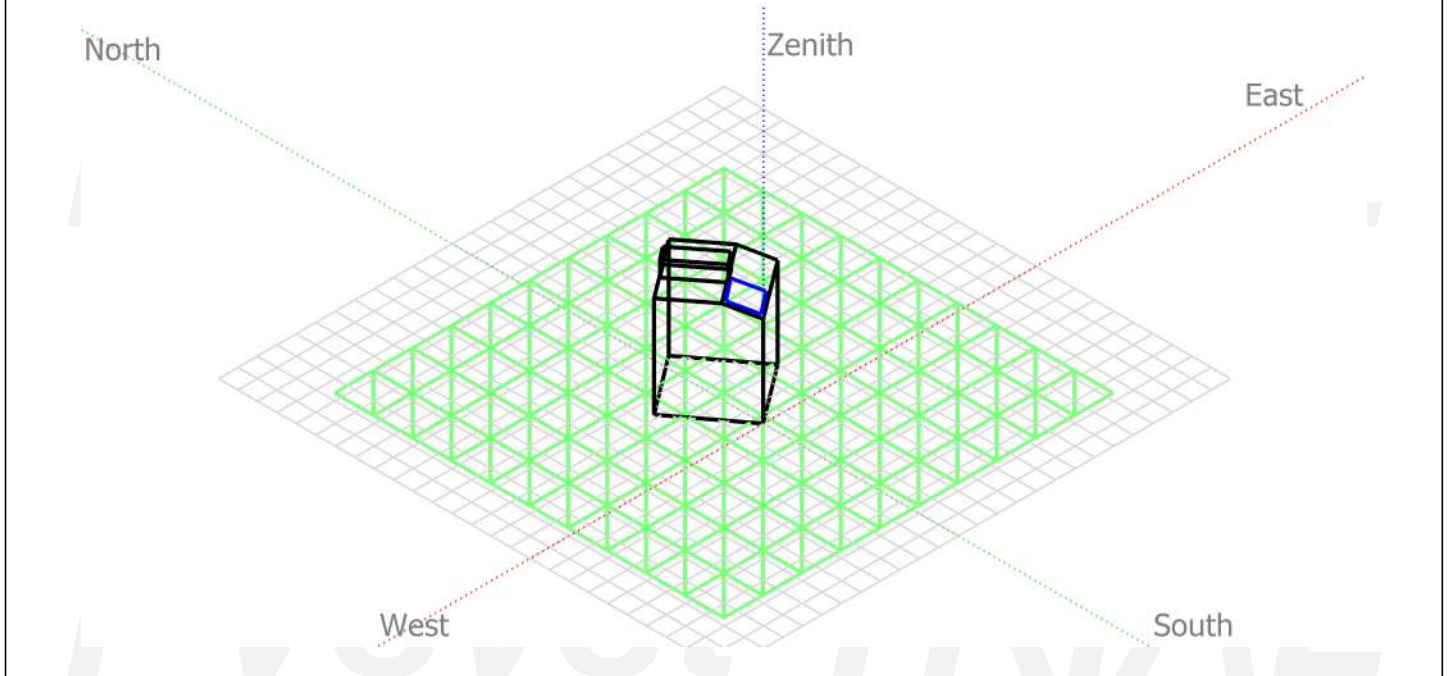


PVsyst V7.1.4

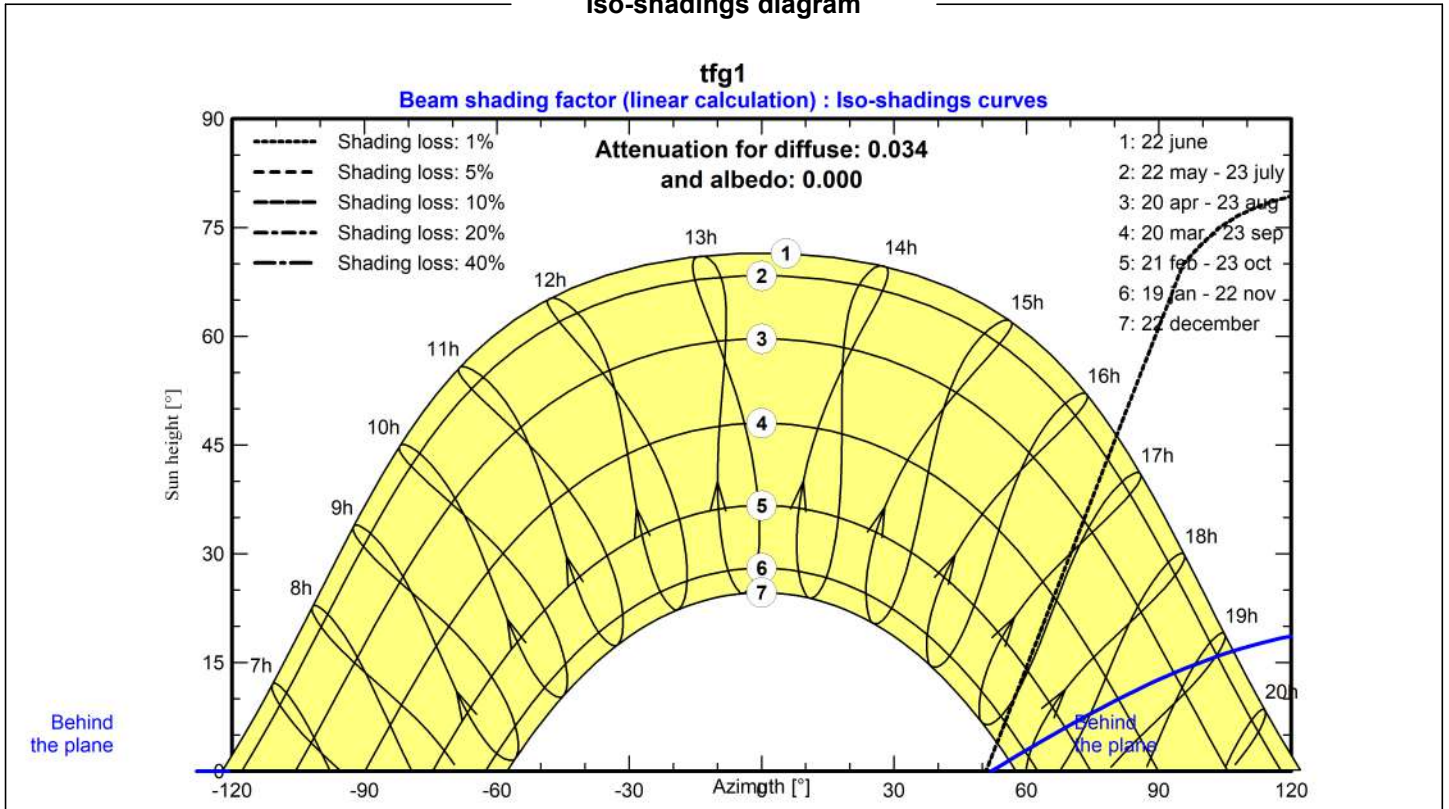
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Near shadings parameter

Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram





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Main results

System Production

Produced Energy 16.02 MWh/year

Specific production

1568 kWh/kWp/year

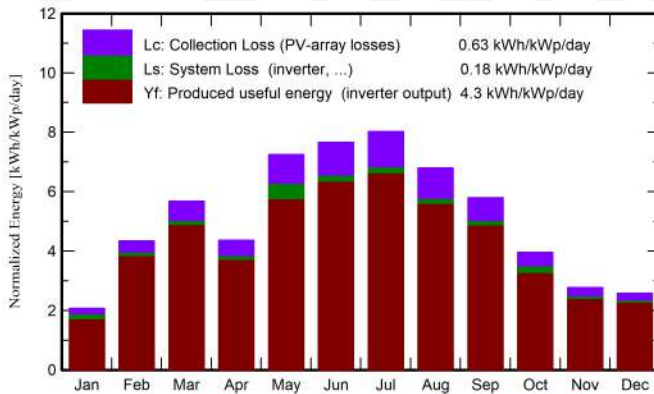
Performance Ratio PR

84.02 %

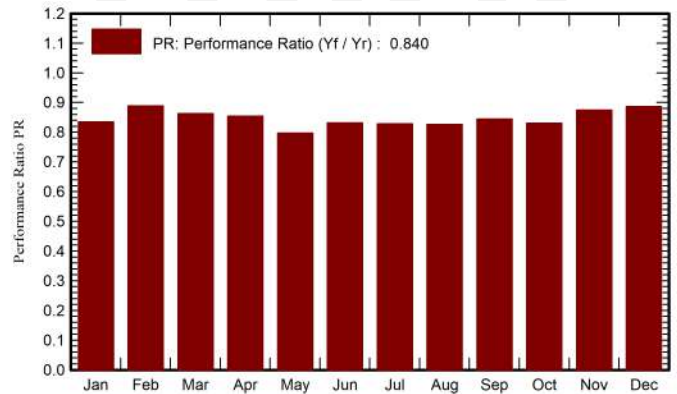
Solar Fraction SF

35.04 %

Normalized productions (per installed kWp)



Performance Ratio PR



Balances and main results

	GlobHor	DiffHor	T_Amb	GlobInc	GlobEff	EArray	E_User	E_Solar	E_Grid	EFrGrid
	kWh/m ²	kWh/m ²	°C	kWh/m ²	kWh/m ²	MWh	MWh	MWh	MWh	MWh
January	49.1	28.29	3.02	64.3	59.3	0.601	1.183	0.251	0.297	0.932
February	93.9	31.56	2.88	121.6	114.0	1.137	1.065	0.343	0.761	0.722
March	150.1	44.28	8.97	176.0	165.7	1.599	1.162	0.408	1.144	0.754
April	124.9	68.86	8.24	130.9	122.4	1.182	1.105	0.369	0.773	0.736
May	217.7	69.65	16.05	224.7	212.4	1.995	1.193	0.496	1.336	0.697
June	227.4	71.29	18.75	229.8	217.2	2.014	1.321	0.626	1.327	0.696
July	245.7	61.15	20.88	248.9	235.6	2.171	1.118	0.552	1.555	0.566
August	199.4	60.63	22.10	210.8	199.1	1.833	1.090	0.497	1.282	0.593
September	153.2	46.62	17.36	173.8	164.1	1.546	1.303	0.466	1.034	0.837
October	100.7	41.61	13.17	122.6	115.0	1.115	1.290	0.370	0.671	0.920
November	64.2	32.25	9.39	83.1	77.2	0.767	1.131	0.285	0.458	0.846
December	55.0	22.19	3.36	79.8	73.8	0.749	1.165	0.287	0.436	0.878
Year	1681.4	578.38	12.08	1866.2	1755.7	16.708	14.126	4.950	11.075	9.177

Legends

GlobHor Global horizontal irradiation

DiffHor Horizontal diffuse irradiation

T_Amb Ambient Temperature

GlobInc Global incident in coll. plane

GlobEff Effective Global, corr. for IAM and shadings

EArray Effective energy at the output of the array

E_User Energy supplied to the user

E_Solar Energy from the sun

E_Grid Energy injected into grid

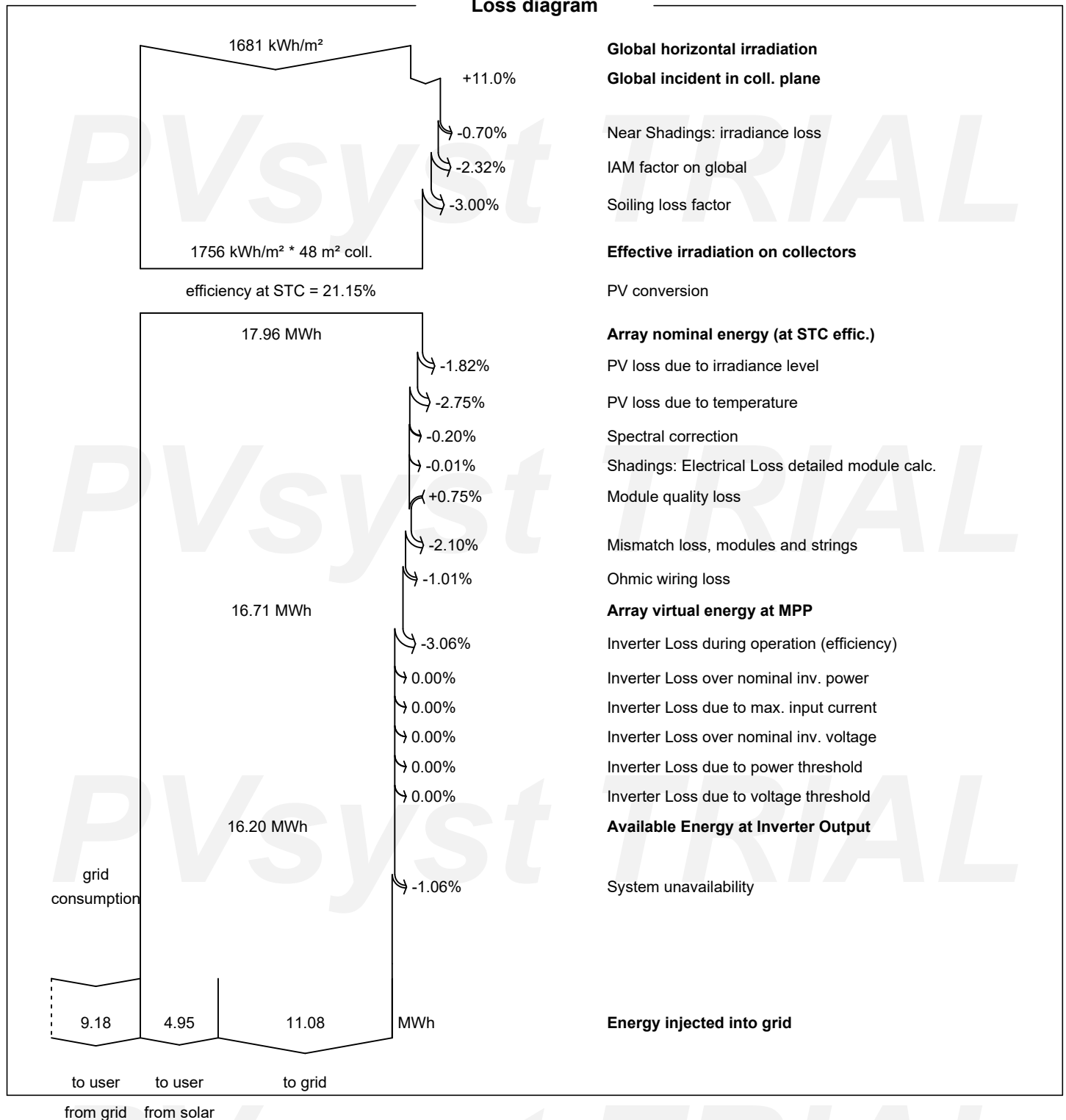
EFrGrid Energy from the grid



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Loss diagram



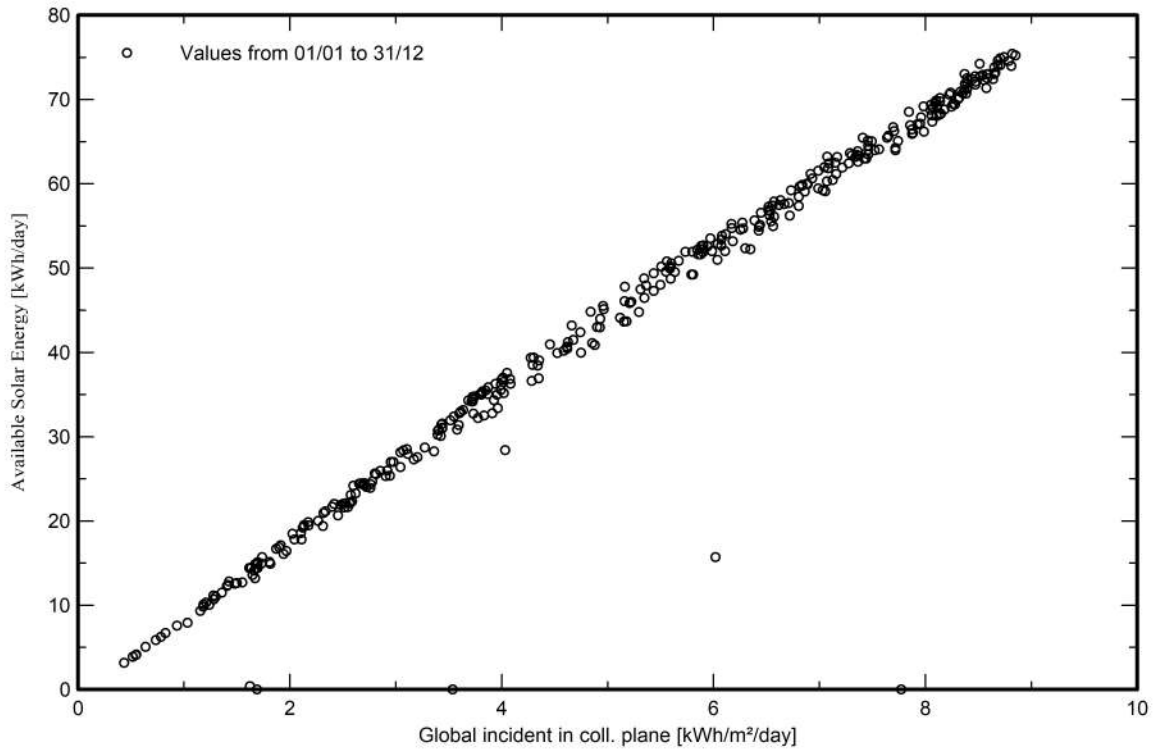


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Special graphs

Diagrama entrada/salida diaria



Distribución de potencia de salida del sistema

