

PVsyst - Simulation report

Grid-Connected System

Project: Nuevo Proyecto

Variant: Nueva variante de simulación

No 3D scene defined, no shadings

System power: 1100 Wp

Lavapiés - Spain

Author



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PVsyst V7.4.8

VC0, Simulation date:
03/09/24 10:57
with V7.4.8

Project summary

Geographical Site

Lavapiés
Spain

Situation

Latitude 40.40 °N
Longitude -3.70 °W
Altitude 626 m
Time zone UTC+1

Project settings

Albedo 0.20

Weather data

Lavapiés
PVGIS api TMY

System summary

Grid-Connected System

No 3D scene defined, no shadings

PV Field Orientation

Fixed plane
Tilt/Azimuth 30 / -19 °

Near Shadings

No Shadings

User's needs

Unlimited load (grid)

System information

PV Array

Nb. of modules 5 units
Pnom total 1100 Wp

Inverters

Nb. of units 1 unit
Pnom total 1200 W
Pnom ratio 0.917

Results summary

Produced Energy 1766.72 kWh/year Specific production 1606 kWh/kWp/year Perf. Ratio PR 78.78 %

Table of contents

Project and results summary	2
General parameters, PV Array Characteristics, System losses	3
Main results	4
Loss diagram	5
Predef. graphs	6
Single-line diagram	7



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General parameters

Grid-Connected System

No 3D scene defined, no shadings

PV Field Orientation

Orientation

Fixed plane

Tilt/Azimuth 30 / -19 °

Sheds configuration

No 3D scene defined

Models used

Transposition

Perez

Diffuse

Imported

Circumsolar

separate

Horizon

Free Horizon

Near Shadings

No Shadings

User's needs

Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer

Generic

Model

Poly 250 Wp 60 cells

(Custom parameters definition)

Unit Nom. Power

220 Wp

Number of PV modules

5 units

Nominal (STC)

1100 Wp

Modules

1 strings x 5 In series

At operating cond. (50°C)

Pmpp

992 Wp

U mpp

130 V

I mpp

7.6 A

Total PV power

Nominal (STC)

1.10 kWp

Total

5 modules

Module area

8.1 m²

Cell area

7.3 m²

Inverter

Manufacturer

Generic

Model

Sunny Boy 1200

(Original PVsyst database)

Unit Nom. Power

1.20 kWac

Number of inverters

1 unit

Total power

1.2 kWac

Operating voltage

100-320 V

Pnom ratio (DC:AC)

0.92

Total inverter power

Total power

1.2 kWac

Number of inverters

1 unit

Pnom ratio

0.92

Array losses

Thermal Loss factor

Module temperature according to irradiance

Uc (const)

20.0 W/m²K

Uv (wind)

0.0 W/m²K/m/s

DC wiring losses

Global array res.

286 mΩ

Loss Fraction

1.5 % at STC

Module Quality Loss

Loss Fraction

-0.8 %

Module mismatch losses

Loss Fraction

2.0 % at MPP

IAM loss factor

Incidence effect (IAM): Fresnel smooth glass, n = 1.526

0°	30°	50°	60°	70°	75°	80°	85°	90°
1.000	0.998	0.981	0.948	0.862	0.776	0.636	0.403	0.000



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Main results

System Production

Produced Energy 1766.72 kWh/year

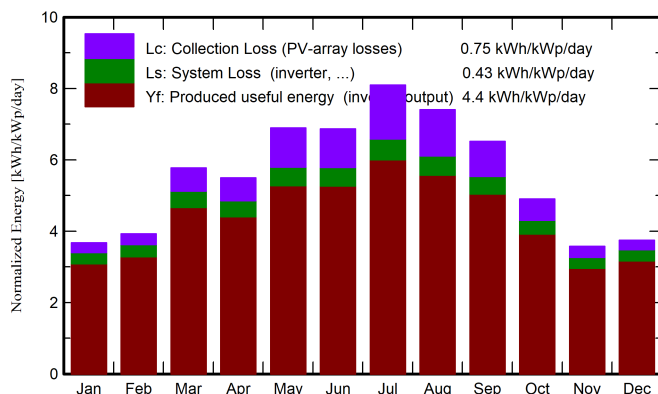
Specific production

1606 kWh/kWp/year

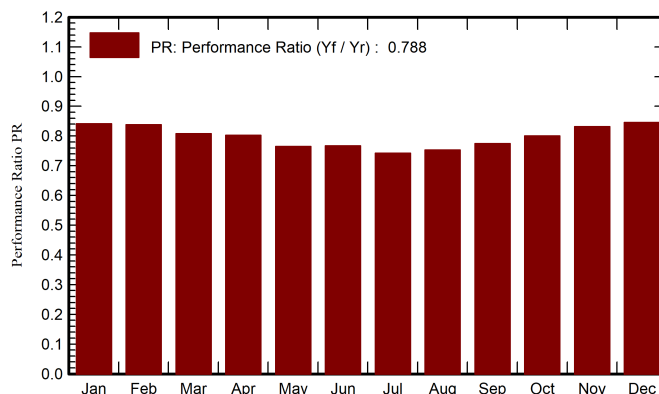
Perf. Ratio PR

78.78 %

Normalized productions (per installed kWp)



Performance Ratio PR



Balances and main results

	GlobHor	DiffHor	T_Amb	GlobInc	GlobEff	EArray	E_Grid	PR
	kWh/m ²	kWh/m ²	°C	kWh/m ²	kWh/m ²	kWh	kWh	ratio
January	68.9	25.74	4.98	113.8	110.9	116.0	105.4	0.842
February	77.5	33.33	4.90	109.9	107.0	111.7	101.3	0.838
March	140.9	46.68	8.96	179.0	174.7	174.7	159.1	0.808
April	152.6	68.59	11.29	164.9	160.2	160.2	145.6	0.802
May	213.7	62.33	18.81	213.7	207.8	197.6	179.9	0.765
June	214.5	72.33	19.92	206.1	200.2	191.2	174.0	0.767
July	256.7	53.09	25.54	251.0	244.2	224.6	204.9	0.742
August	215.6	52.29	23.11	229.5	223.7	208.6	190.2	0.753
September	162.8	50.01	19.37	195.6	191.0	182.7	166.6	0.774
October	111.9	39.22	13.81	152.0	148.2	147.0	133.8	0.800
November	70.3	30.99	9.05	107.1	104.4	107.9	98.0	0.831
December	65.1	23.05	5.02	116.2	112.8	118.8	108.0	0.845
Year	1750.7	557.66	13.79	2038.8	1985.1	1941.1	1766.7	0.788

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_Grid Energy injected into grid

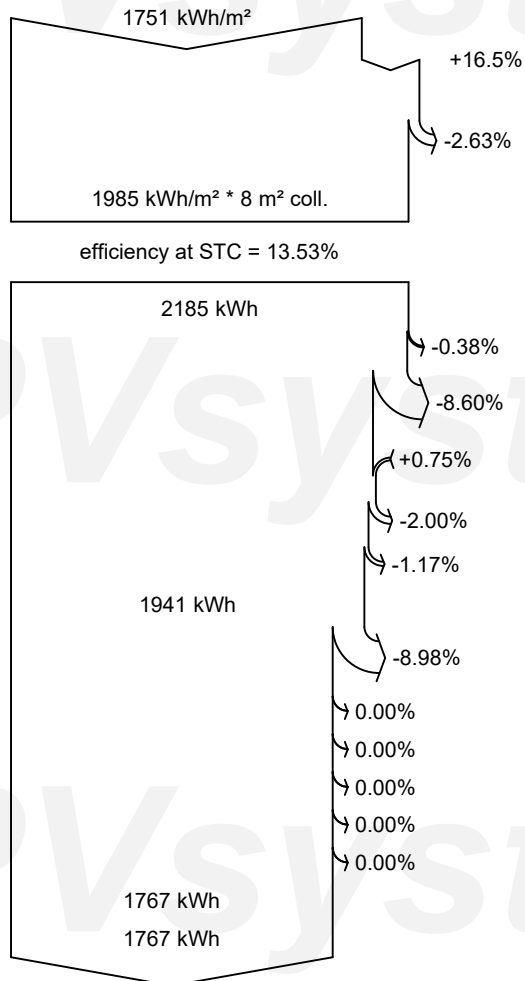
PR Performance Ratio



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Loss diagram



Global horizontal irradiation
Global incident in coll. plane

IAM factor on global

Effective irradiation on collectors

PV conversion

Array nominal energy (at STC effic.)

PV loss due to irradiance level

PV loss due to temperature

Module quality loss

Module array mismatch loss

Ohmic wiring loss

Array virtual energy at MPP

Inverter Loss during operation (efficiency)

Inverter Loss over nominal inv. power

Inverter Loss due to max. input current

Inverter Loss over nominal inv. voltage

Inverter Loss due to power threshold

Inverter Loss due to voltage threshold

Available Energy at Inverter Output

Energy injected into grid

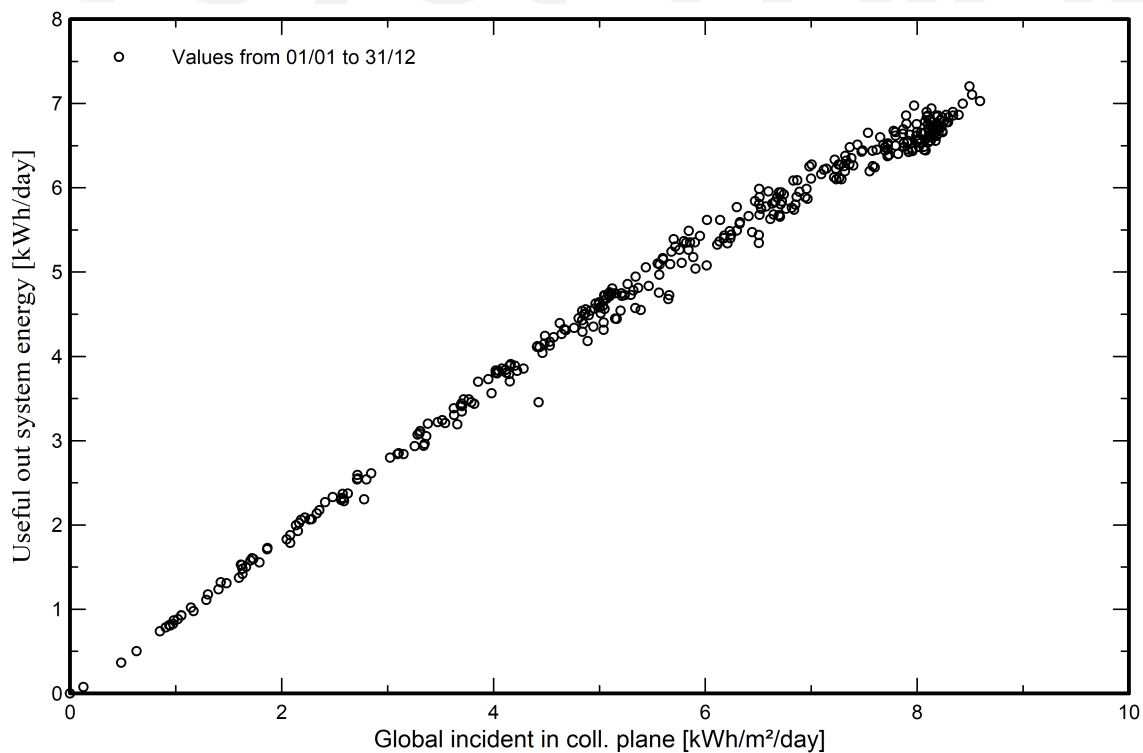


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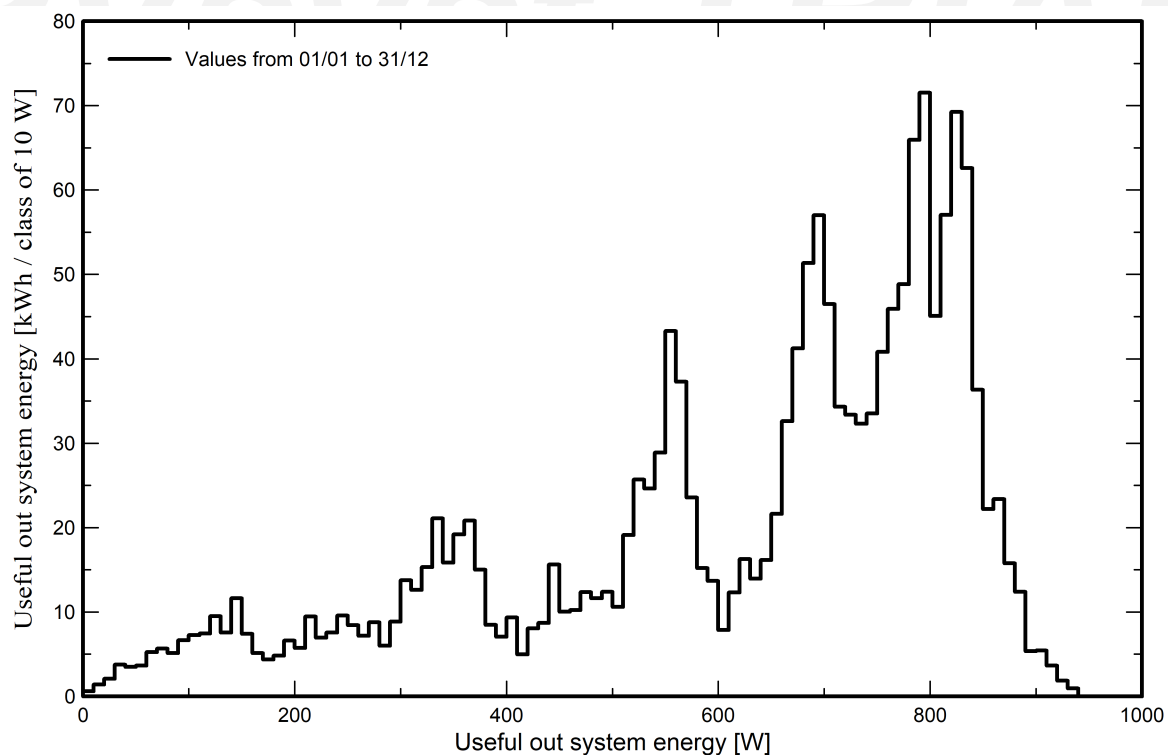
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Predef. graphs

Diagrama entrada/salida diaria



Distribución de potencia de salida del sistema

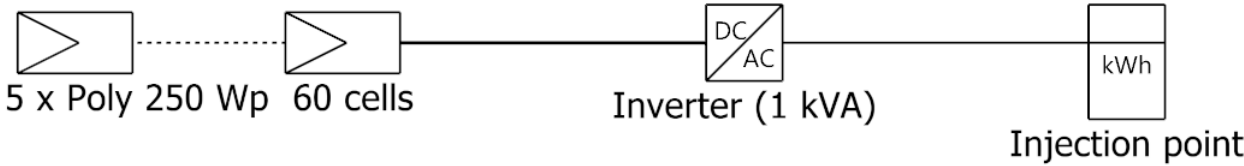




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Single-line diagram



PV module	Poly 250 Wp 60 cells
Inverter	Sunny Boy 1200
String	5 x Poly 250 Wp 60 cells

Nuevo Proyecto

VC0 : Nueva variante de simulación

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