

PVSYST V6.88		30/04/22		Page 1/6				
<h2 style="text-align: center;">Grid-Connected System: Simulation parameters</h2>								
Project : Daniel Ground Mount, Portugal								
Geographical Site		Daniel,Atalaia, Portugal		Country Portugal				
Situation		Latitude	38.70° N	Longitude	-8.92° W			
Time defined as		Legal Time	Time zone UT	Altitude	37 m			
		Albedo	0.20					
Meteo data:		Daniel,Atalaia, Portugal Meteonorm 7.2 (1991-2010), Sat=28% - Synthetic						
Simulation variant : Ground Mount Project								
		Simulation date	30/04/22 17h58					
Simulation parameters								
		System type	Sheds on ground					
Collector Plane Orientation		Tilt	10°	Azimuth	0°			
Sheds configuration		Nb. of sheds	8					
		Sheds spacing	5.65 m	Collector width	4.05 m			
Shading limit angle		Limit profile angle	23.0°	Ground cov. Ratio (GCR)	71.6 %			
Models used		Transposition	Perez	Diffuse	Perez, Meteonorm			
Horizon		Free Horizon						
Near Shadings		Linear shadings						
User's needs :		Unlimited load (grid)						
PV Array Characteristics								
PV module		Si-poly	Model	REC 350TP2S 72				
Original PVsyst database		Manufacturer	REC					
Number of PV modules		In series	18 modules	In parallel	43 strings			
Total number of PV modules		Nb. modules	774	Unit Nom. Power	350 Wp			
Array global power		Nominal (STC)	271 kWp	At operating cond.	247 kWp (50°C)			
Array operating characteristics (50°C)		U mpp	622 V	I mpp	397 A			
Total area		Module area	1553 m²	Cell area	1370 m²			
Inverter		Model	ECO 25.0-3-S					
Original PVsyst database		Manufacturer	Fronius International					
Characteristics		Operating Voltage	580-850 V	Unit Nom. Power	25.0 kWac			
Inverter pack		Nb. of inverters	9 units	Total Power	225 kWac			
				Pnom ratio	1.20			
PV Array loss factors								
Array Soiling Losses				Loss Fraction	2.0 %			
Thermal Loss factor		Uc (const)	29.0 W/m²K	Uv (wind)	0.0 W/m²K / m/s			
Wiring Ohmic Loss		Global array res.	26 mOhm	Loss Fraction	1.5 % at STC			
LID - Light Induced Degradation				Loss Fraction	2.0 %			
Module Quality Loss				Loss Fraction	-0.4 %			
Module Mismatch Losses				Loss Fraction	1.0 % at MPP			
Strings Mismatch loss				Loss Fraction	0.10 %			
Incidence effect (IAM): User defined profile								
0°	30°	45°	60°	70°	75°	80°	85°	90°
1.000	1.000	1.000	0.974	0.907	0.832	0.688	0.445	0.000

Grid-Connected System: Simulation parameters

System loss factors

Wiring Ohmic Loss

Wires: 3x240.0 mm² 150 m

Loss Fraction 2.0 % at STC

Unavailability of the system

7.3 days, 3 periods

Time fraction 2.0 %

*PVsyst TRIAL**PVsyst TRIAL**PVsyst TRIAL**PVsyst TRIAL*

Grid-Connected System: Near shading definition

Project : Daniel Ground Mount, Portugal

Simulation variant : Ground Mount Project

Main system parameters

System type **Sheds on ground**

Near Shadings

PV Field Orientation

PV modules

PV Array

Inverter

Inverter pack

User's needs

Linear shadings

tilt 10°

Model REC 350TP2S 72

Nb. of modules 774

Model ECO 25.0-3-S

Nb. of units 9.0

Unlimited load (grid)

azimuth 0°

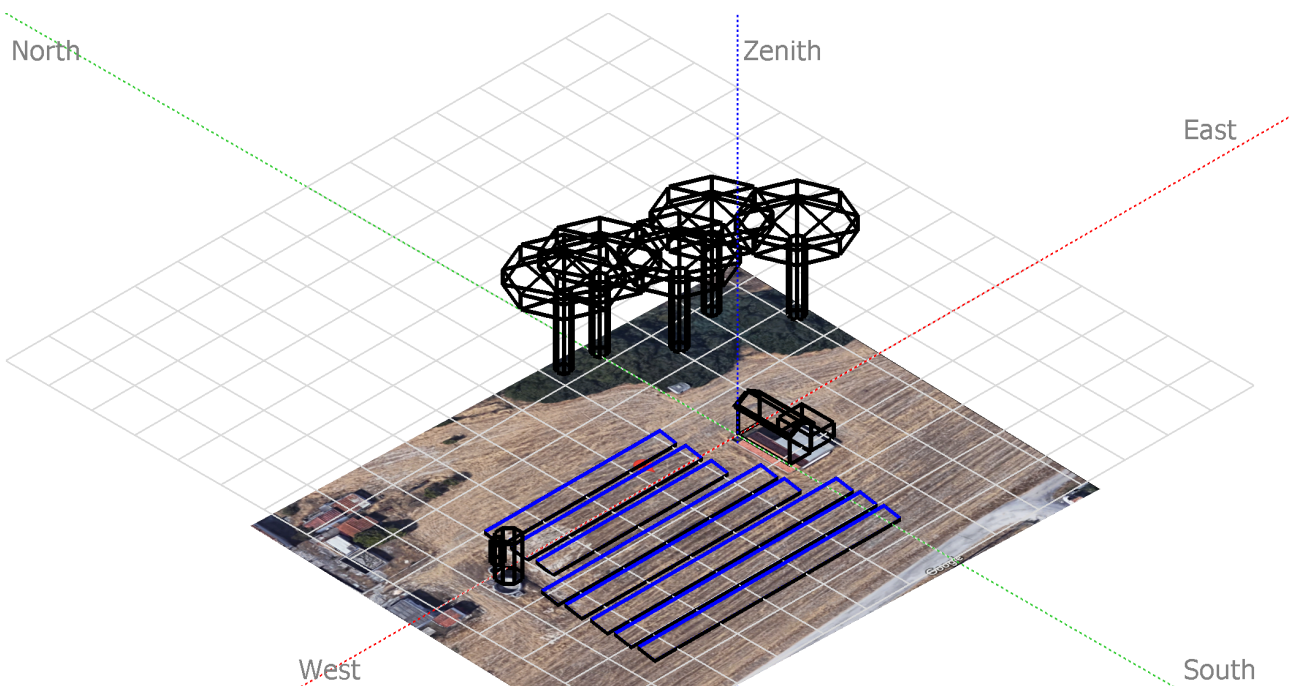
Pnom 350 Wp

Pnom total **271 kWp**

Pnom 25.00 kW ac

Pnom total **225 kW ac**

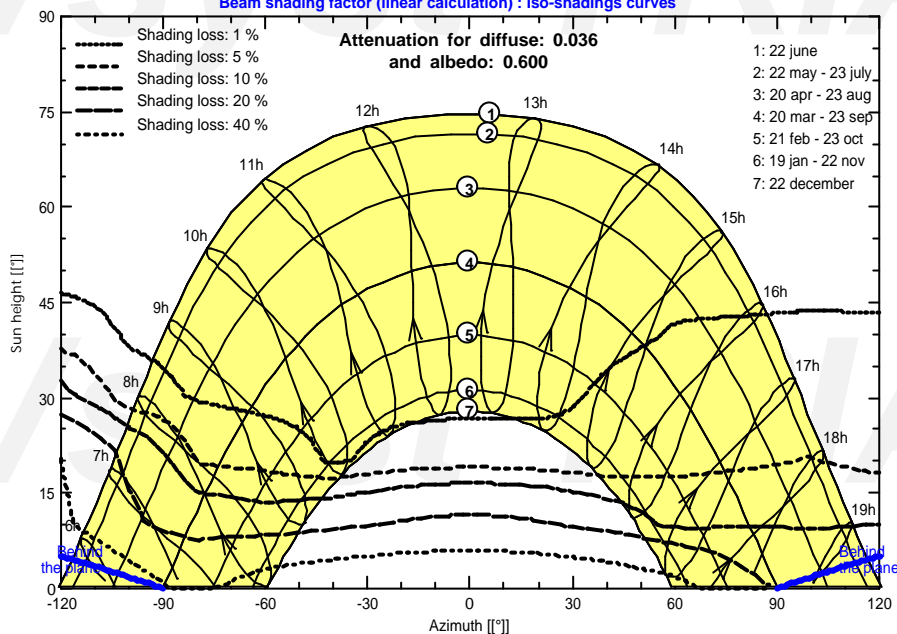
Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram

Daniel Ground Mount, Portugal

Beam shading factor (linear calculation) : Iso-shadings curves



Grid-Connected System: Main results

Project : Daniel Ground Mount, Portugal

Simulation variant : Ground Mount Project

Main system parameters

System type **Sheds on ground**

Near Shadings

Linear shadings

PV Field Orientation

tilt 10°

azimuth 0°

PV modules

Model REC 350TP2S 72

Pnom 350 Wp

PV Array

Nb. of modules 774

Pnom total **271 kWp**

Inverter

Model ECO 25.0-3-S

Pnom 25.00 kW ac

Inverter pack

Nb. of units 9.0

Pnom total **225 kW ac**

User's needs

Unlimited load (grid)

Main simulation results

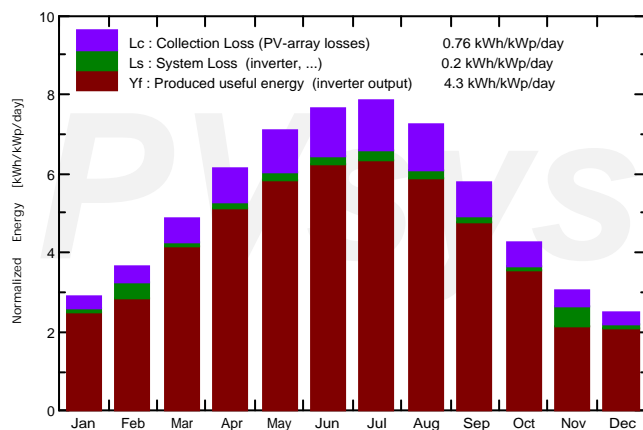
System Production

Produced Energy 425.4 MWh/year

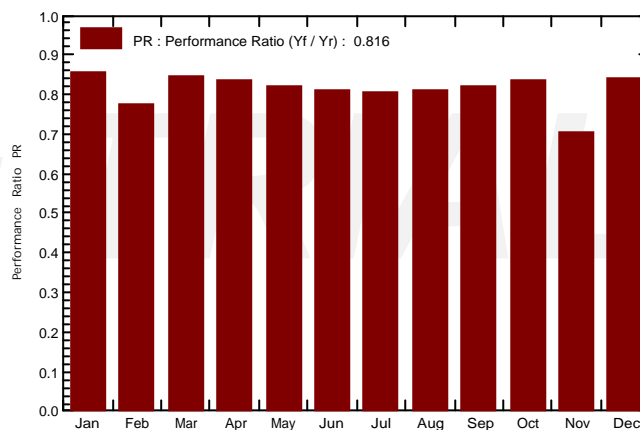
Specific prod. 1570 kWh/kWp/year

Performance Ratio PR 81.61 %

Normalized productions (per installed kWp): Nominal power 271 kWp



Performance Ratio PR



Ground Mount Project

Balances and main results

	GlobHor kWh/m ²	DiffHor kWh/m ²	T_Amb °C	GlobInc kWh/m ²	GlobEff kWh/m ²	EArray MWh	E_Grid MWh	PR
January	72.7	26.14	10.93	90.8	83.9	21.66	21.00	0.854
February	88.5	37.44	12.14	103.2	96.6	24.76	21.67	0.775
March	137.6	53.49	14.44	151.8	142.8	36.03	34.88	0.848
April	173.5	60.06	15.51	183.6	173.0	42.97	41.55	0.836
May	215.4	67.47	18.54	219.8	206.8	50.55	48.88	0.821
June	229.0	67.53	21.76	230.1	216.7	52.29	50.57	0.811
July	240.9	58.24	23.29	243.9	230.5	55.18	53.36	0.807
August	215.5	55.76	23.77	224.9	212.7	51.12	49.46	0.812
September	159.7	51.24	21.51	174.0	164.1	39.99	38.72	0.821
October	115.0	44.34	18.70	132.1	124.1	30.94	29.99	0.838
November	75.4	29.57	14.01	91.9	85.4	21.73	17.49	0.703
December	61.5	25.09	11.66	77.9	71.3	18.36	17.80	0.843
Year	1784.8	576.37	17.22	1924.0	1807.8	445.58	425.38	0.816

Legends:

- GlobHor: Horizontal global irradiation
- DiffHor: Horizontal diffuse irradiation
- T_Amb: T amb.
- 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

Grid-Connected System: Special graphs

Project : Daniel Ground Mount, Portugal

Simulation variant : Ground Mount Project

Main system parameters

System type Sheds on ground

Near Shadings

Linear shadings

PV Field Orientation

tilt 10°

azimuth 0°

PV modules

Model REC 350TP2S 72

Pnom 350 Wp

PV Array

Nb. of modules 774

Pnom total 271 kWp

Inverter

Model ECO 25.0-3-S

Pnom 25.00 kW ac

Inverter pack

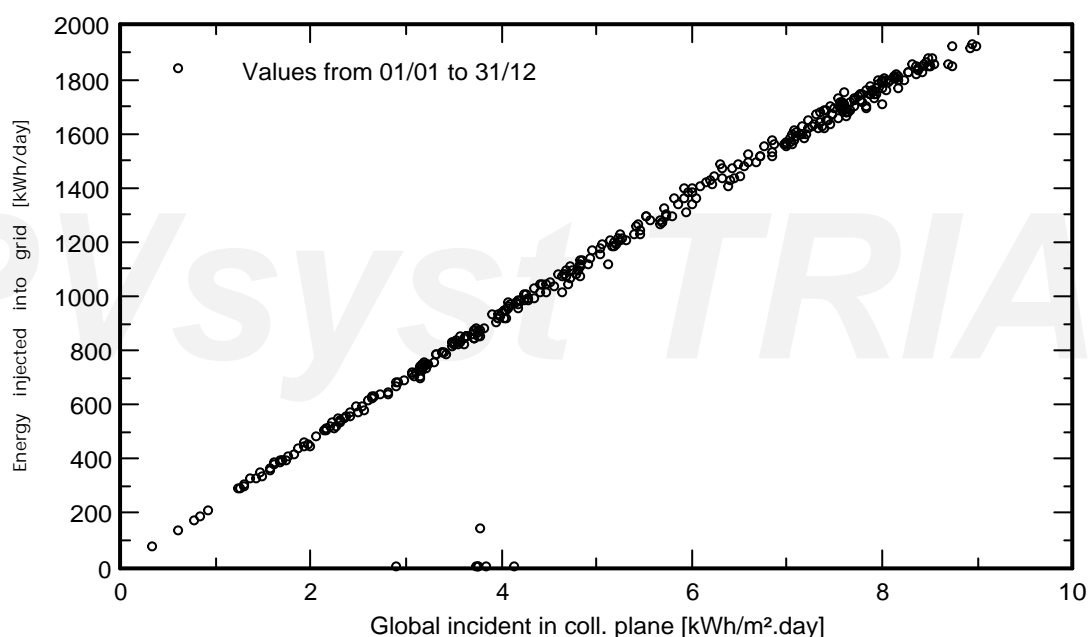
Nb. of units 9.0

Pnom total 225 kW ac

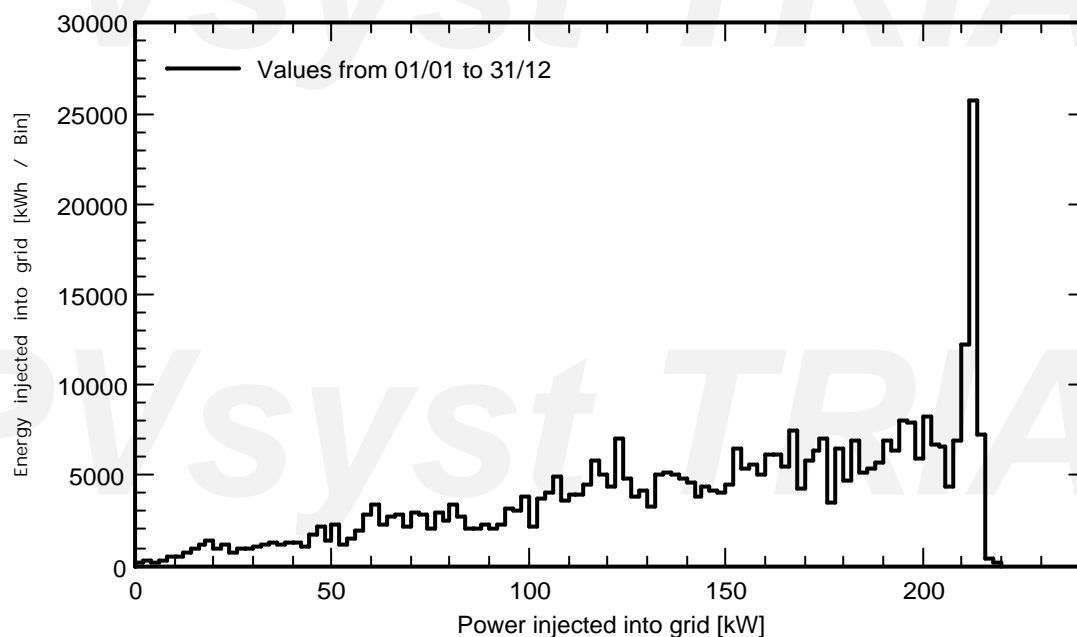
User's needs

Unlimited load (grid)

Daily Input/Output diagram



System Output Power Distribution



Grid-Connected System: Loss diagram

Project : Daniel Ground Mount, Portugal

Simulation variant : Ground Mount Project

Main system parameters

System type **Sheds on ground**

Near Shadings

PV Field Orientation

PV modules

PV Array

Inverter

Inverter pack

User's needs

Linear shadings

tilt 10°

Model REC 350TP2S 72

Nb. of modules 774

Model ECO 25.0-3-S

Nb. of units 9.0

Unlimited load (grid)

azimuth 0°

Pnom 350 Wp

Pnom total **271 kWp**

Pnom 25.00 kW ac

Pnom total **225 kW ac**

Loss diagram over the whole year

