Version 7.2.5

PVsyst - Simulation report

Grid-Connected System

Project: Mega PV solar system Plant at Bareilly

Variant: New simulation variant

Unlimited trackers

System power: 1000 kWp

Bareilly - India

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19/09/21 13:12
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Project summary

Geographical Site
Bareilly
India

Situation

Latitude	28.34 °N
Longitude	79.39 °E
Altitude	268 m
Time zone	UTC+5.3

Project settings
Albedo 0.20

Meteo data
Bareilly
Meteonorm 8.0 (1981-2010), Sat=100% - Synthetic

System summary

Grid-Connected System

Unlimited trackers

PV Field Orientation
Orientation
Tracking horizontal axis

Tracking algorithm
Astronomic calculation

Near Shadings
No Shadings

System information

PV Array

Nb. of modules	2856 units
Pnom total	1000 kWp

Inverters

Nb. of units	1 Unit
Pnom total	800 kWac
Pnom ratio	1.250

User's needs
Unlimited load (grid)

Results summary

Produced Energy	1600 MWh/year	Specific production	1601 kWh/kWp/year	Perf. Ratio PR	78.11 %

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General parameters

Grid-Connected System | **Unlimited trackers**

PV Field Orientation

Orientation	Tracking algorithm	Trackers configuration	
Tracking horizontal axis	Astronomic calculation	Nb. of trackers	10 units
		Unlimited trackers	

Sizes

Tracker Spacing	6.60 m
Collector width	3.00 m
Ground Cov. Ratio (GCR)	45.5 %
Left inactive band	0.02 m
Right inactive band	0.02 m
Phi min / max.	-/+ 60.0 °

Shading limit angles

Phi limits	+/- 62.4 °

Models used

Transposition	Perez
Diffuse	Perez, Meteonorm
Circumsolar	separate

Horizon	Near Shadings	User's needs
Free Horizon	No Shadings	Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer	Generic
Model	JKM 350PP-72-DV
(Original PVsyst database)	
Unit Nom. Power	350 Wp
Number of PV modules	2856 units
Nominal (STC)	1000 kWp
Modules	168 Strings x 17 In series
At operating cond. (50°C)	
Pmpp	906 kWp
U mpp	604 V
I mpp	1501 A

Inverter

Manufacturer	Generic
Model	RPS 0900 Master-Slave
(Original PVsyst database)	
Unit Nom. Power	800 kWac
Number of inverters	1 unit
Total power	800 kWac
Operating voltage	550-875 V
Pnom ratio (DC:AC)	1.25

Total PV power

Nominal (STC)	1000 kWp
Total	2856 modules
Module area	5576 m²
Cell area	5004 m²

Total inverter power

Total power	800 kWac
Nb. of inverters	1 Unit
Pnom ratio	1.25

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.	6.8 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

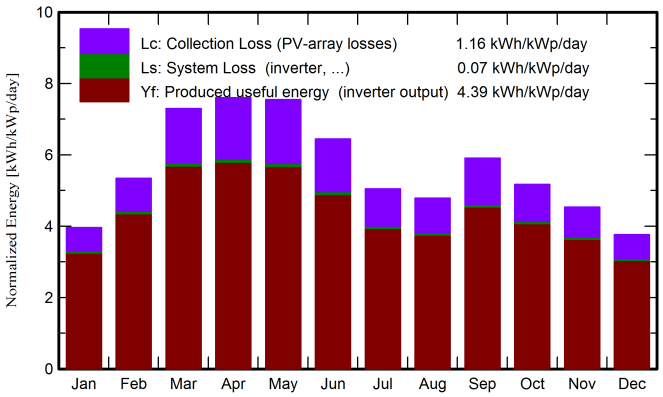
ASHRAE Param: IAM = 1 - bo(1/cosi -1)	
bo Param.	0.05

Main results

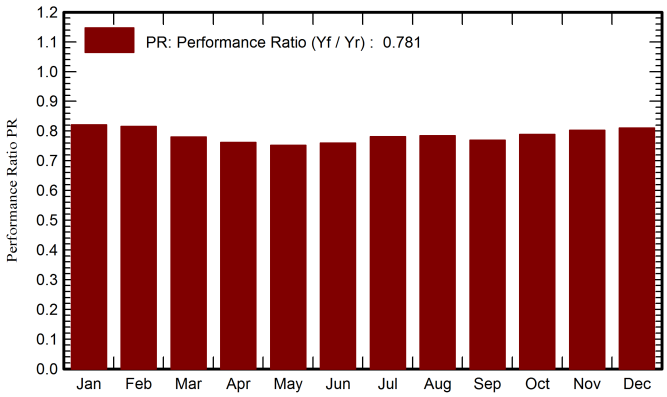
System Production

Produced Energy	1600 MWh/year	Specific production	1601 kWh/kWp/year
		Performance Ratio PR	78.11 %

Normalized productions (per installed kWp)



Performance Ratio PR



Balances and main results

	GlobHor kWh/m²	DiffHor kWh/m²	T_Amb °C	GlobInc kWh/m²	GlobEff kWh/m²	EArray MWh	PR ratio
January	94.3	49.4	13.42	122.9	109.2	102.7	0.821
February	115.3	53.6	17.69	149.6	136.7	124.0	0.815
March	170.2	68.8	23.83	226.1	207.6	179.2	0.780
April	179.2	85.1	29.56	228.2	211.4	176.6	0.762
May	193.3	99.2	33.38	234.0	221.0	178.7	0.752
June	169.3	101.6	32.91	193.3	182.4	149.1	0.759
July	140.4	95.7	31.31	156.5	146.5	124.1	0.781
August	131.4	91.5	30.30	148.5	138.0	118.3	0.784
September	140.3	76.9	28.99	177.1	161.4	138.4	0.769
October	132.4	73.1	26.58	160.3	147.7	128.4	0.788
November	106.1	54.0	20.25	136.1	122.2	111.0	0.802
December	91.2	49.4	14.92	116.7	103.0	96.1	0.810
Year	1663.4	898.3	25.29	2049.3	1887.2	1626.6	0.781

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
PR	Performance Ratio

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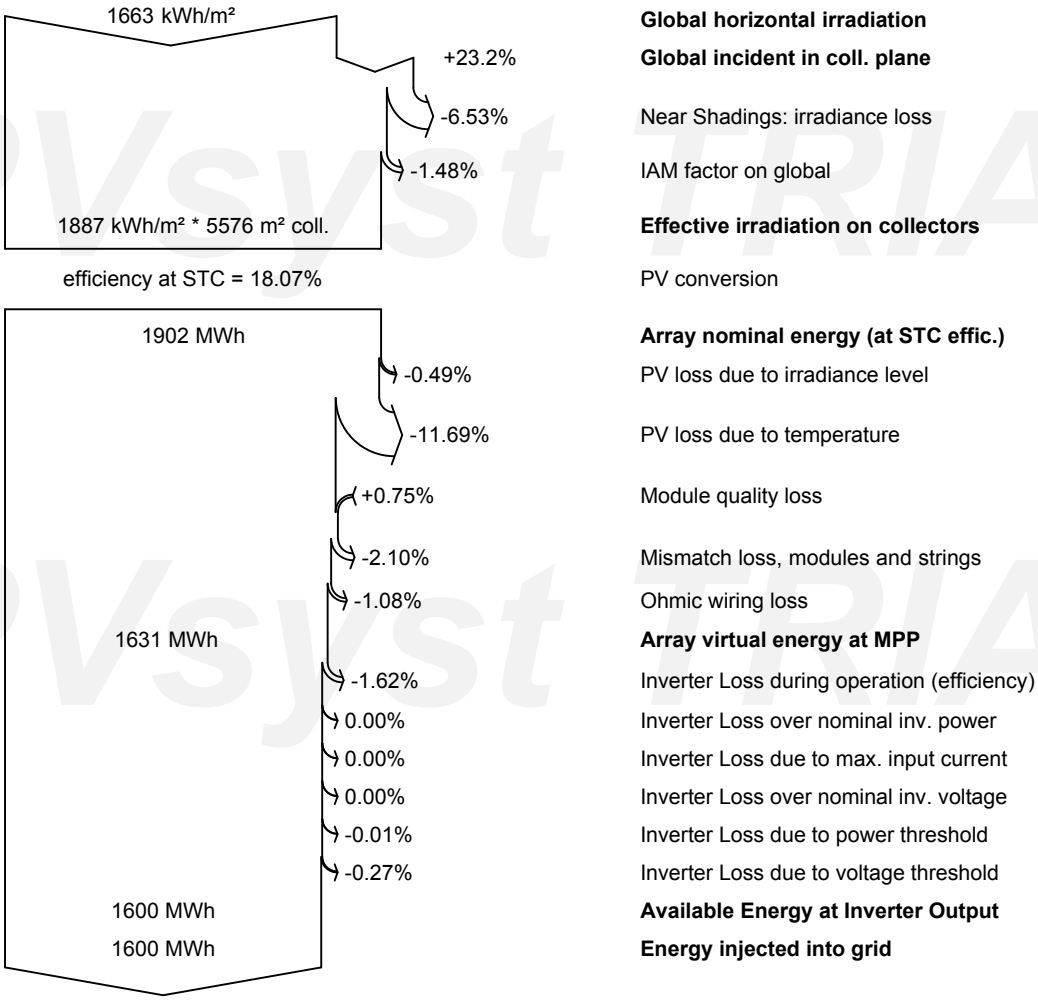
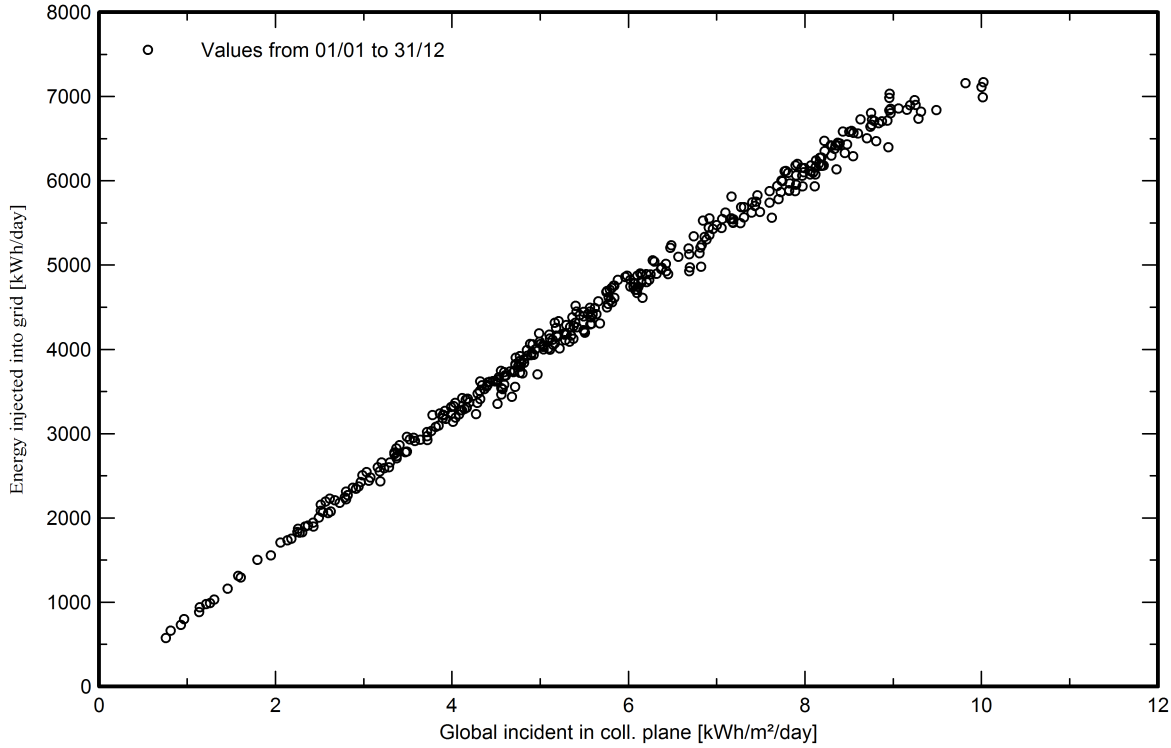
Loss diagram



Global horizontal irradiation
Global incident in coll. plane
Near Shadings: irradiance loss
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
Mismatch loss, modules and strings
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

Special graphs

Daily Input/Output diagram



System Output Power Distribution