PVSYST
PHOTOVOLTAIC SOFTWARE

PVsyst - Simulation report

Grid-Connected System

Project: First Project

Variant: My_First_Simulation

Building system

System power: 9.00 kWp

Nagpur/Dhantoli - India

Author

PVsyst V8.0.7
VC0, Simulation date:
28/02/25 11:38
with V8.0.7

Project summary

Geographical Site
Nagpur/Dhantoli
India

Situation

Latitude	21.09 °N
Longitude	79.05 °E
Altitude	313 m
Time zone	UTC+6

Project settings

Albedo	0.20

Weather data
Nagpur/Dhantoli
MeteoNorm 8.2 station - Synthetic

System summary

Grid-Connected System

Building system

Orientation #1
Fixed plane
Tilt/Azimuth 25 / 90 °

Near Shadings
Linear shadings : Fast (table)

User's needs
Unlimited load (grid)

System information

PV Array		Inverters	
Nb. of modules	30 units	Nb. of units	3 units
Pnom total	9.00 kWp	Pnom total	9.00 kWac
		Pnom ratio	1.000

Results summary

Produced Energy	12002 kWh/year	Specific production	1334 kWh/kWp/year	Perf. Ratio PR	80.03 %

Table of contents

General parameters

Grid-Connected System

Orientation #1

Fixed plane	
Tilt/Azimuth	25 / 90 °

Building system

Sheds configuration	
Nb. of sheds	1 Unit
Single table	
Shading limit angle	
Limit profile angle	°

Sizes

Sheds spacing	0.00 m
Collector width	0.00 m
Average GCR	%

Models used

Transposition	Perez
Diffuse	Perez, Meteonorm
Circumsolar	separate

Horizon

Free Horizon

Near Shadings

Linear shadings : Fast (table)

User's needs

Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer	Generic
Model	Mono 300 Wp 60 cells
(Original PVsyst database)	
Unit Nom. Power	300 Wp
Number of PV modules	30 units
Nominal (STC)	9.00 kWp
Modules	3 string x 10 In series
At operating cond. (50°C)	
Pmpp	8.10 kWp
U mpp	284 V
I mpp	28 A

Inverter

Manufacturer	Generic
Model	3 kWac inverter
(Original PVsyst database)	
Unit Nom. Power	3.00 kWac
Number of inverters	3 units
Total power	9.0 kWac
Operating voltage	125-440 V
Pnom ratio (DC:AC)	1.00

Total PV power

Nominal (STC)	9 kWp
Total	30 modules
Module area	48.8 m²
Cell area	42.7 m²

Total inverter power

Total power	9 kWac
Number of inverters	3 units
Pnom ratio	1.00

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.	168 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, 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	0.963	0.892	0.814	0.679	0.438	0.000

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VC0, Simulation date:
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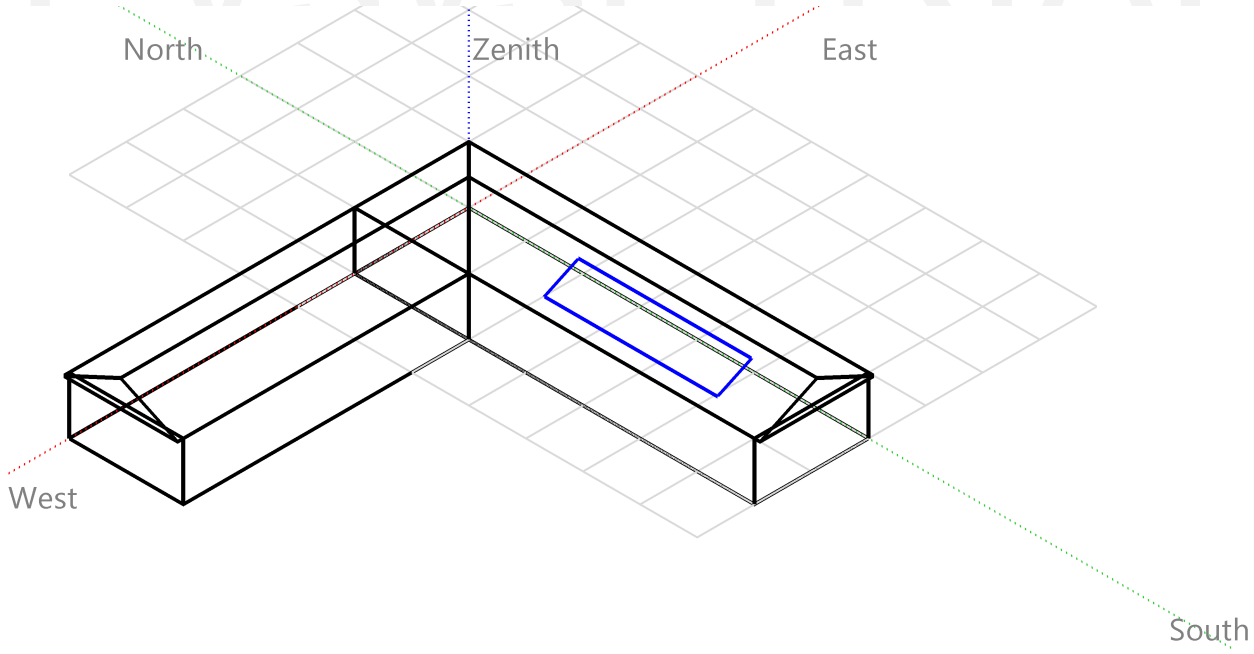
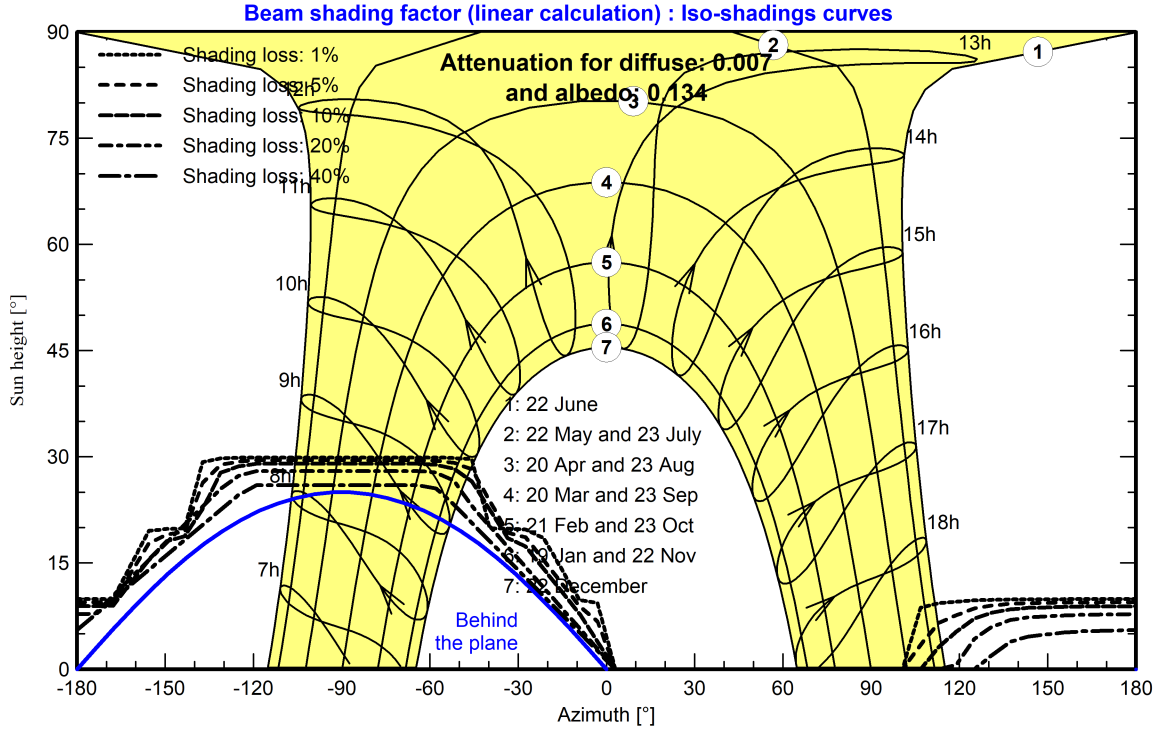
Near shadings parameter

Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram

Orientation #1 - Fixed plane, Tilts/azimuths: 25°/ 90°



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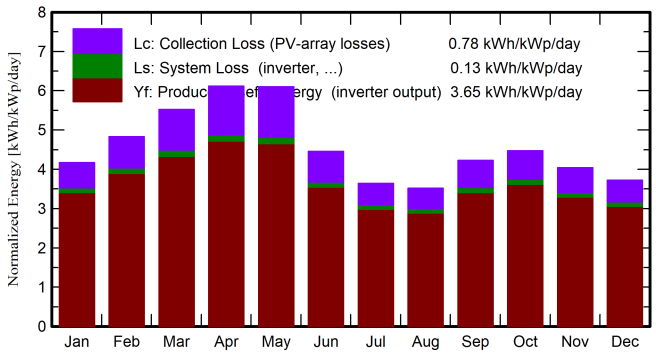
Main results

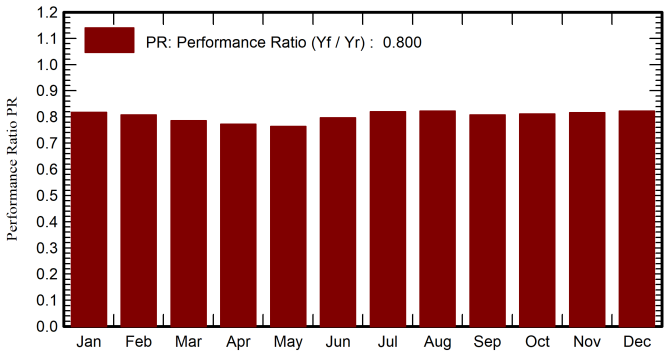
System Production

Produced Energy	12002 kWh/year	Specific production	1334 kWh/kWp/year
		Perf. Ratio PR	80.03 %

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 kWh	E_Grid kWh	PR ratio
January	134.5	54.10	22.30	129.3	124.6	985	952	0.818
February	139.5	60.40	25.20	135.3	131.3	1019	984	0.808
March	179.9	73.90	29.40	171.2	167.2	1254	1210	0.786
April	192.6	81.20	32.50	183.5	179.4	1320	1275	0.772
May	196.8	93.60	35.60	189.2	184.9	1347	1301	0.764
June	144.1	91.10	31.20	133.7	129.9	995	959	0.797
July	119.8	74.20	28.10	113.0	109.8	868	834	0.820
August	115.5	79.60	27.30	109.1	105.9	840	808	0.823
September	135.6	76.30	27.30	126.7	123.2	956	921	0.808
October	144.5	72.60	26.90	138.6	134.8	1048	1012	0.811
November	125.8	54.10	24.00	121.2	117.4	924	891	0.817
December	121.2	49.00	20.79	115.5	111.0	887	855	0.823
Year	1749.8	860.10	27.56	1666.4	1619.4	12445	12002	0.800

Legends

GlobHor	Global horizontal irradiation	EArray	Effective energy at the output of the array
DiffHor	Horizontal diffuse irradiation	E_Grid	Energy injected into grid
T_Amb	Ambient Temperature	PR	Performance Ratio
GlobInc	Global incident in coll. plane		
GlobEff	Effective Global, corr. for IAM and shadings		

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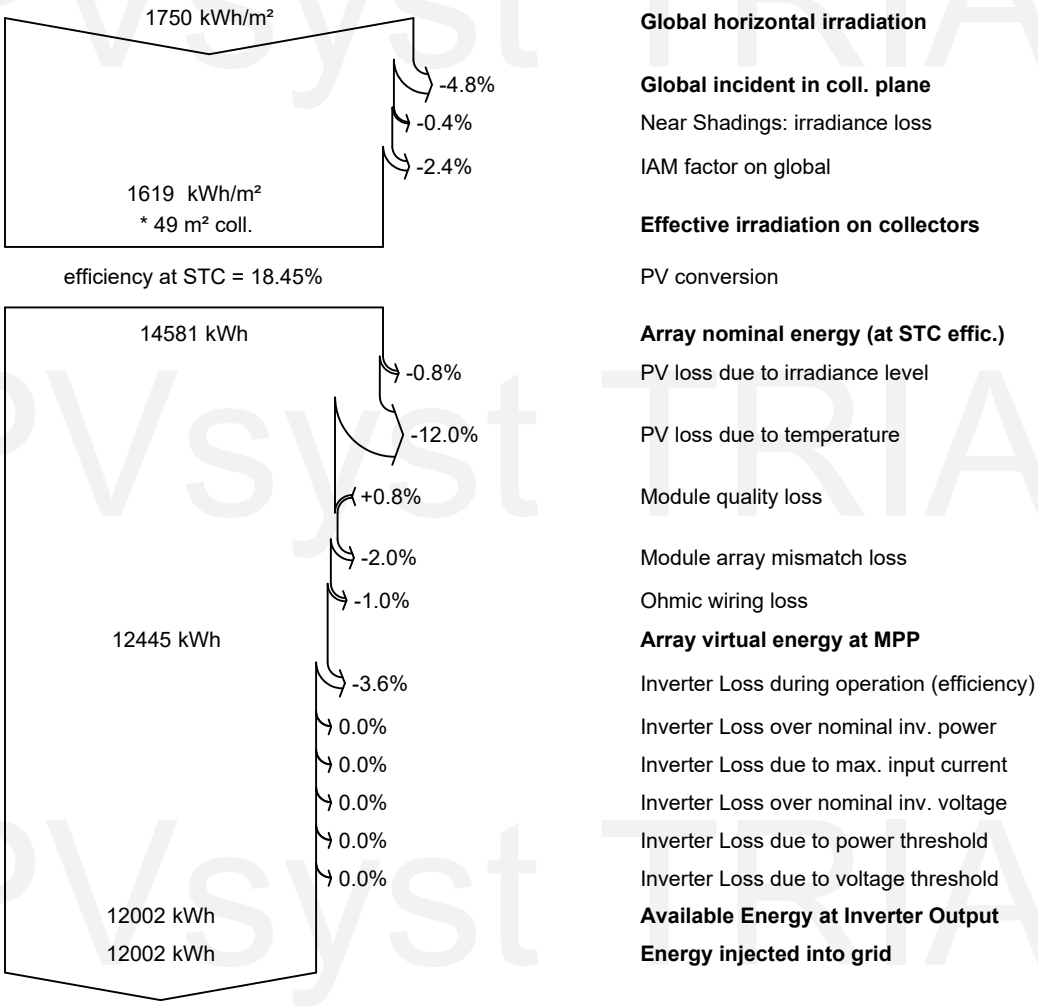
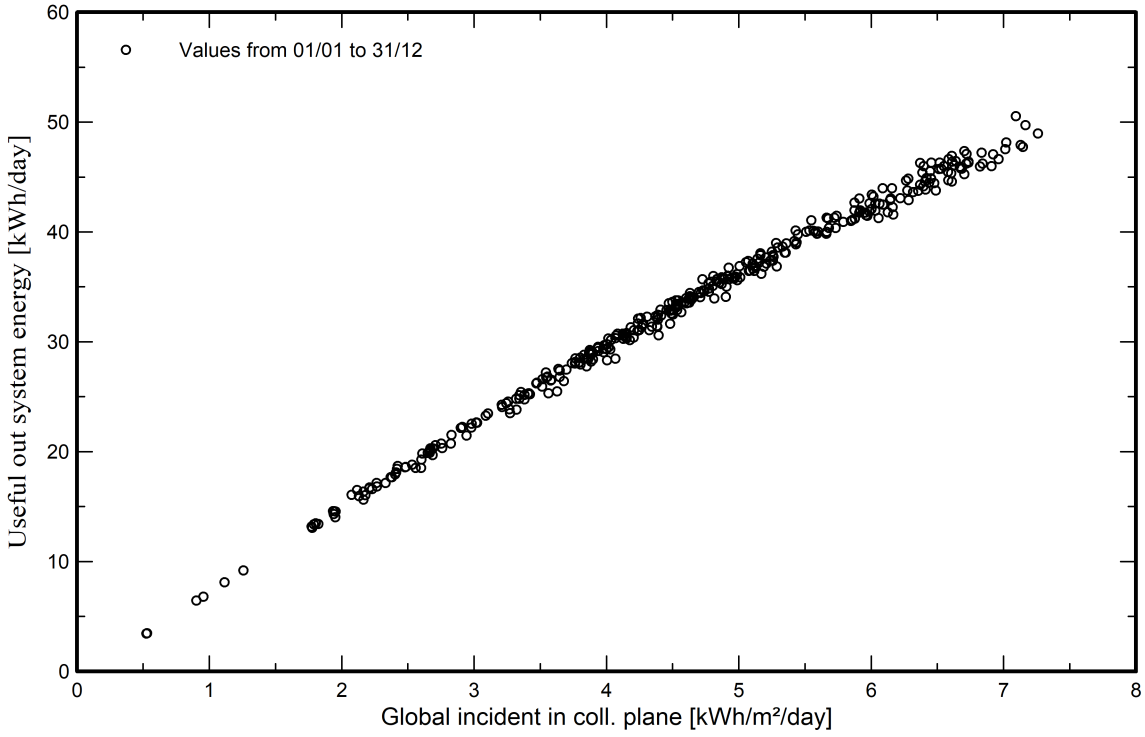
Loss diagram

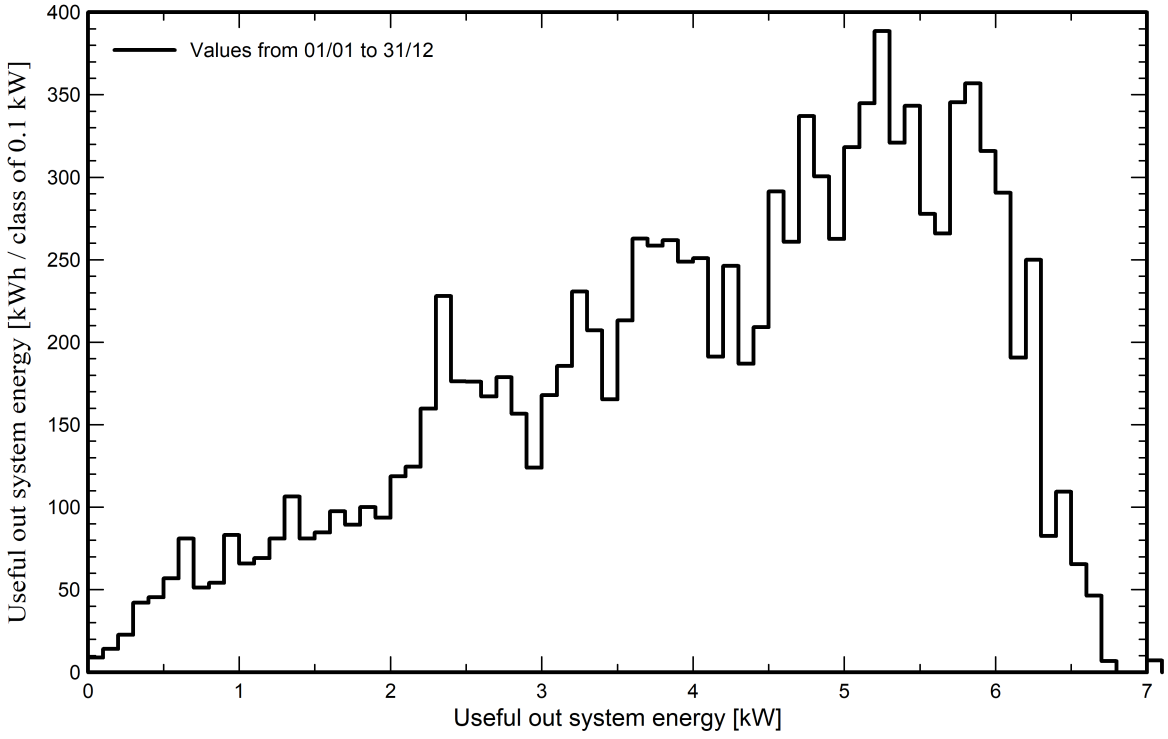


Predef. graphs

Daily Input/Output diagram



System Output Power Distribution



Single-line diagram

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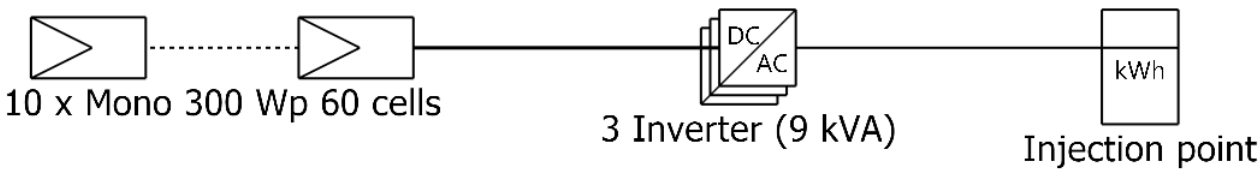

PV module	Mono 300 Wp 60 cells
Inverter	3 kWac inverter
String	10 x Mono 300 Wp 60 cells

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