Version 7.4.1

PVsyst - Simulation report

Grid-Connected System

Project: 5 KW ON grid

Variant: New simulation variant

No 3D scene defined, no shadings

System power: 5.04 kWp

Hall 11, IIT Kanpur - India

Author

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23/08/23 12:55
with v7.4.1

Project summary

Geographical Site
Hall 11, IIT Kanpur
India

Situation

Latitude	26.51 °N
Longitude	80.23 °E
Altitude	126 m
Time zone	UTC+5.5

Project settings
Albedo 0.20

Meteo data
Hall 11, IIT Kanpur
Meteonorm 8.1 (1996-2015), Sat=100% - Synthetic

System summary

Grid-Connected System
No 3D scene defined, no shadings

PV Field Orientation
Fixed plane
Tilt/Azimuth 25 / 0 °

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	16 units
Pnom total	5.04 kWp

Inverters

Nb. of units	1 unit
Pnom total	4950 W
Pnom ratio	1.018

Results summary

Produced Energy	6984.76 kWh/year	Specific production	1386 kWh/kWp/year	Perf. Ratio PR	81.87 %

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General parameters

Grid-Connected System — **No 3D scene defined, no shadings**

PV Field Orientation

Orientation	Sheds configuration	Models used
Fixed plane	No 3D scene defined	Transposition Perez
Tilt/Azimuth 25 / 0 °		Diffuse Perez, Meteonorm
		Circumsolar separate

Horizon
Free Horizon

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer	Generic
Model	PM318B01_315
(Custom parameters definition)	
Unit Nom. Power	315 Wp
Number of PV modules	16 units
Nominal (STC)	5.04 kWp
Modules	2 Strings x 8 In series
At operating cond. (50°C)	
Pmpp	4567 Wp
U mpp	388 V
I mpp	12 A

Inverter

Manufacturer	Generic
Model	SUN2000-4.95KTL-JPL1
(Original PVsyst database)	
Unit Nom. Power	4.95 kWac
Number of inverters	2 * MPPT 50% 1 unit
Total power	5.0 kWac
Operating voltage	90-560 V
Max. power (=>40°C)	5.21 kWac
Pnom ratio (DC:AC)	1.02
No power sharing between MPPTs	

Total PV power

Nominal (STC)	5 kWp
Total	16 modules
Module area	26.1 m²
Cell area	23.4 m²

Total inverter power

Total power	5 kWac
Number of inverters	1 unit
Pnom ratio	1.02

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. 555 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
ASHRAE Param.: IAM = 1 - bo (1/cosi -1)
bo Param. 0.05

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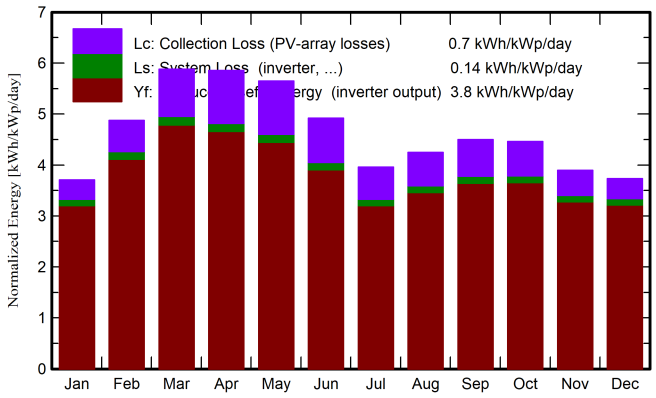
Main results

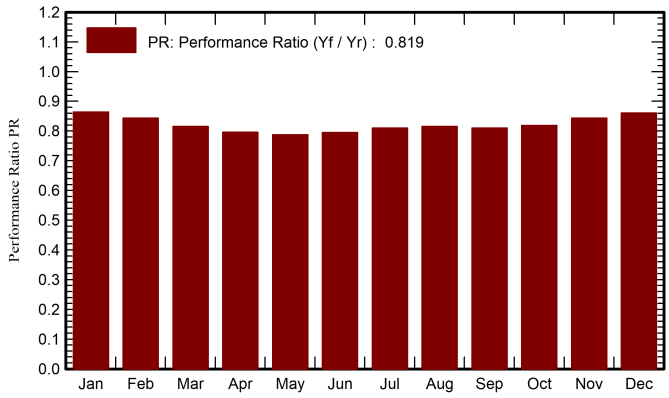
System Production

Produced Energy	6984.76 kWh/year	Specific production	1386 kWh/kWp/year
		Perf. Ratio PR	81.87 %

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
January	92.2	51.7	14.11	115.0	112.3	520.6
February	113.7	58.2	18.43	136.6	133.5	601.9
March	163.6	75.0	24.23	182.2	178.1	774.3
April	173.4	90.7	29.93	175.7	171.4	728.9
May	184.7	102.2	32.74	175.2	170.3	719.7
June	159.7	98.0	32.23	147.5	143.2	612.8
July	131.6	90.9	29.99	122.8	118.9	520.8
August	136.1	93.0	29.45	131.8	127.9	561.9
September	129.0	75.7	28.47	134.9	131.3	571.6
October	121.8	72.2	26.25	138.3	135.2	592.3
November	95.7	58.5	20.54	116.9	114.0	515.6
December	89.6	51.3	15.71	115.8	112.9	522.0
Year	1591.2	917.4	25.20	1692.7	1649.0	7242.4

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

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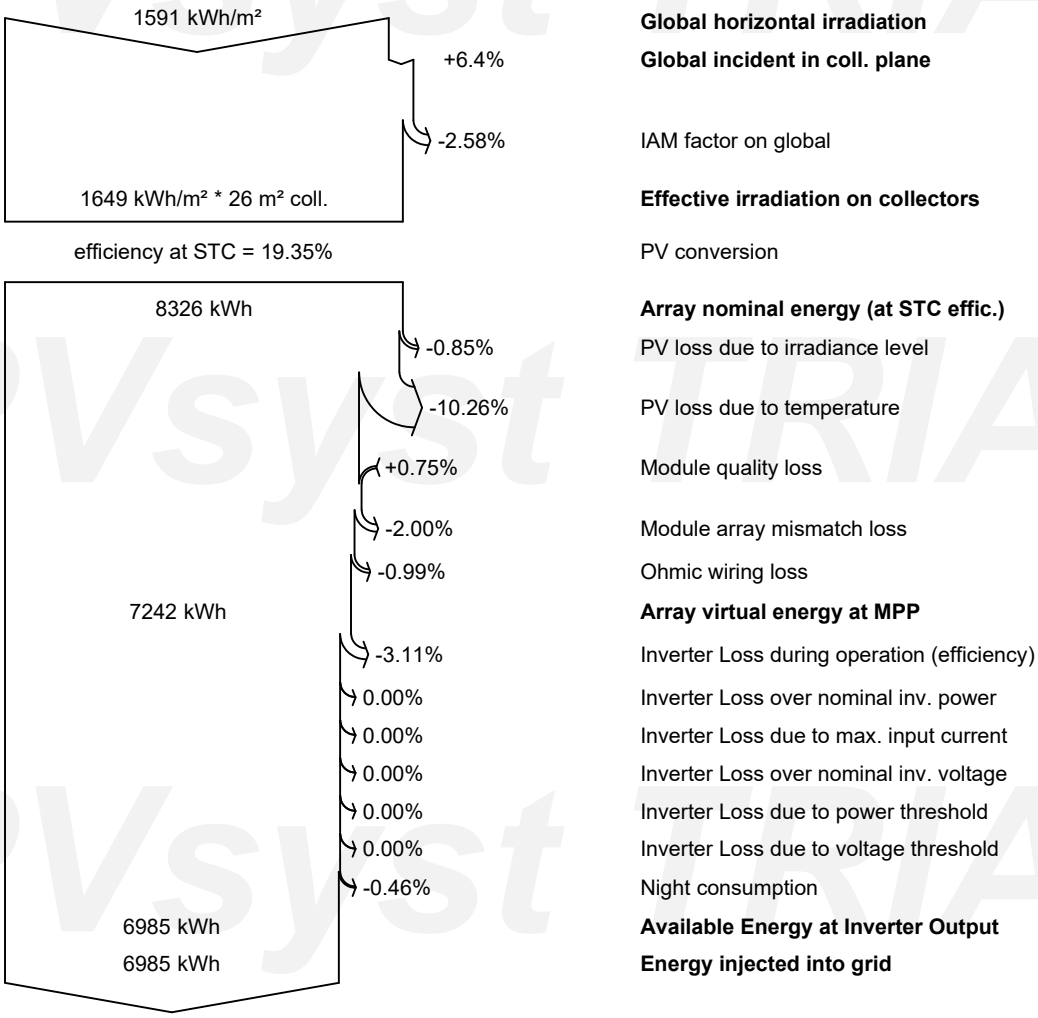
Loss diagram



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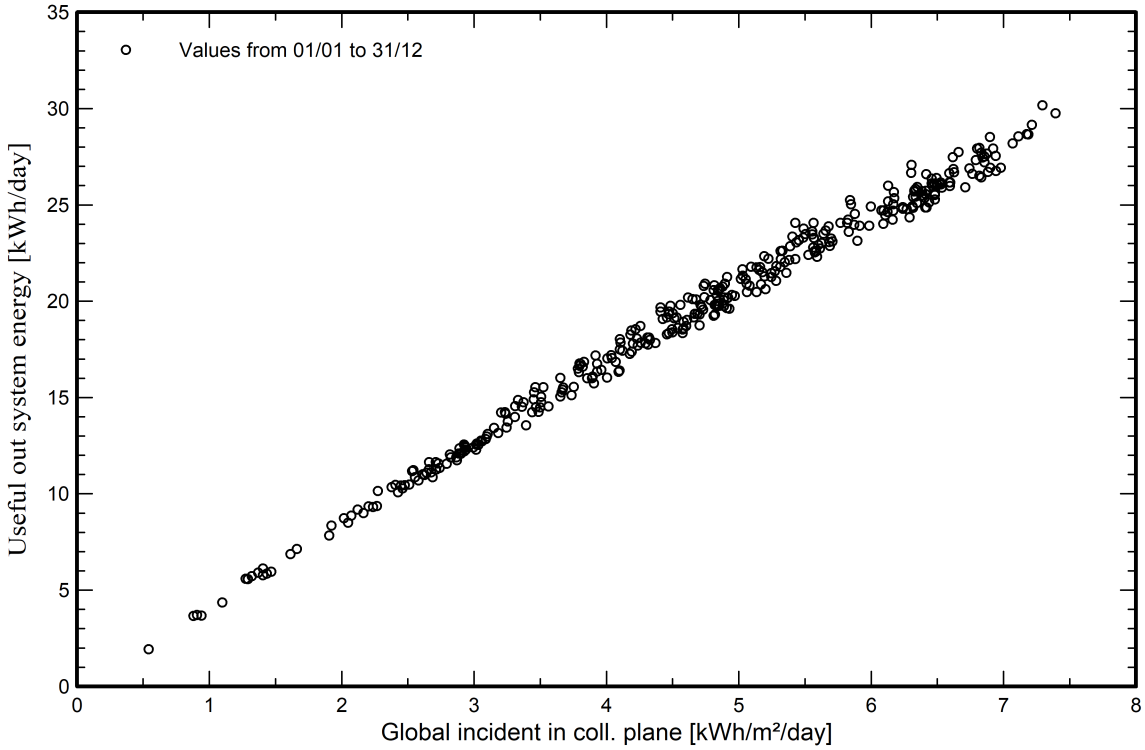
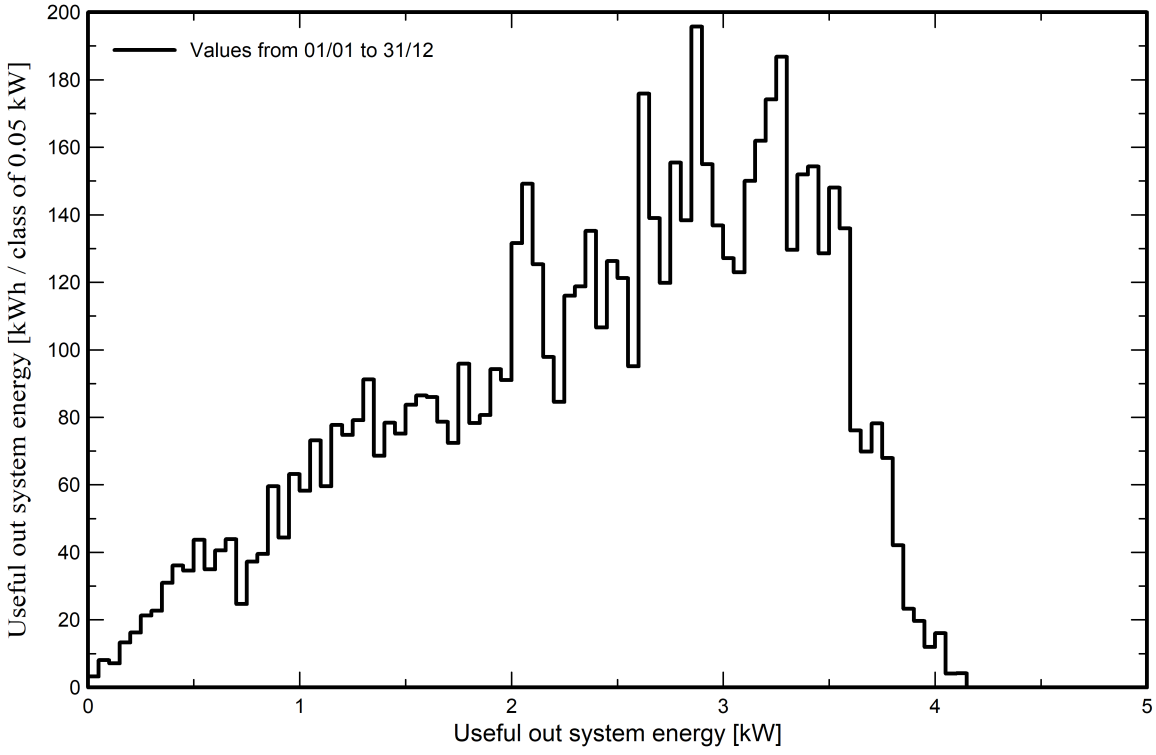
Predef. graphs

Daily Input/Output diagram



System Output Power Distribution



Single-line diagram

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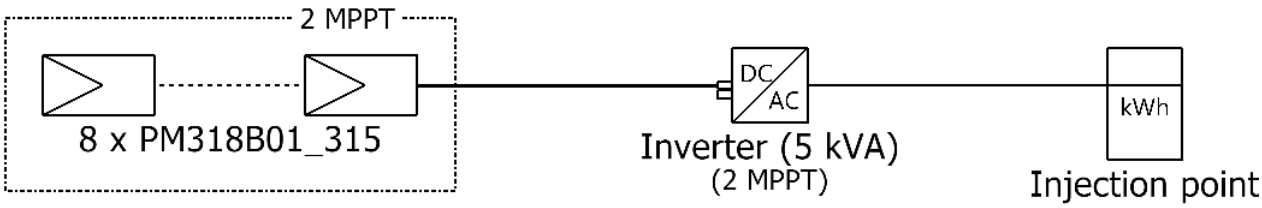

PV module	PM318B01_315
Inverter	SUN2000-4.95KTL-JPL1
String	8 x PM318B01_315

	5 KW ON grid	
	VC0 : New simulation variant	23/08/23