Version 7.4.0

PVsyst - Simulation report

Grid-Connected System

Project: 5KW SOLAR MODEL

Variant: New simulation variant

No 3D scene defined, no shadings

System power: 5.04 kWp

IIT KANPUR - HALL 7 - India

Author

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18/08/23 22:14
with v7.4.0

Project summary

Geographical Site
IIT KANPUR - HALL 7
India

Situation

Latitude	26.51 °N
Longitude	80.23 °E
Altitude	128 m
Time zone	UTC+5.5

Project settings
Albedo 0.20

Meteo data
IIT KANPUR - HALL 7
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 24 / 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	6985.82 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	24 / 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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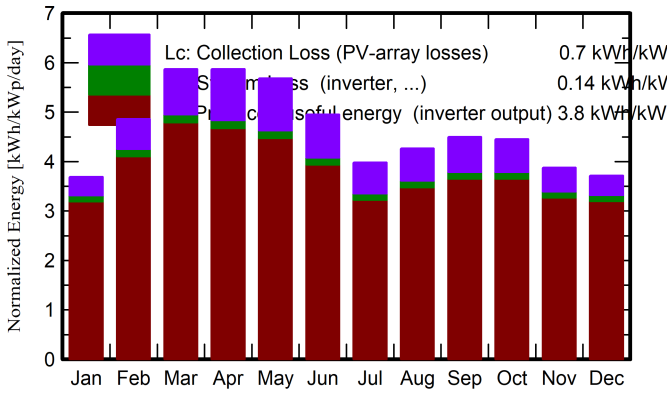
Main results

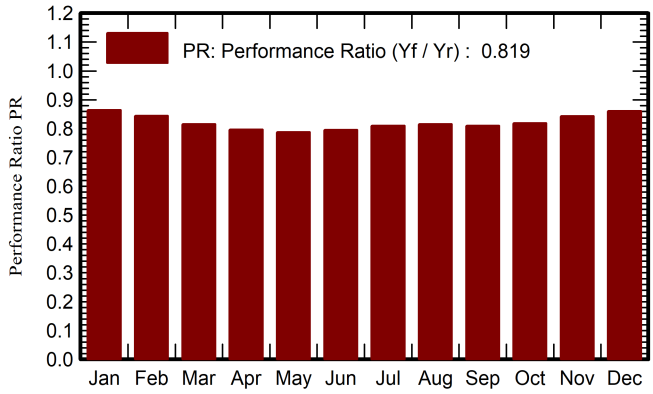
System Production

Produced Energy	6985.82 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	E_Grid kWh	PR ratio
January	92.2	51.7	14.11	114.4	111.6	517.8	498.0	0.864
February	113.8	58.2	18.43	136.1	133.0	599.5	578.5	0.844
March	163.6	75.0	24.23	182.0	177.8	773.3	747.7	0.815
April	173.4	90.8	29.84	176.1	171.8	730.8	706.6	0.796
May	184.7	102.2	32.74	176.0	171.2	723.3	699.0	0.788
June	159.7	98.0	32.23	148.4	144.0	616.3	594.6	0.795
July	131.6	90.9	29.99	123.4	119.6	523.5	503.6	0.810
August	136.1	93.0	29.45	132.3	128.4	564.0	543.3	0.815
September	128.9	75.7	28.47	135.0	131.4	572.0	551.3	0.810
October	121.8	72.2	26.25	138.0	134.8	591.1	569.8	0.819
November	95.7	58.5	20.54	116.3	113.4	513.1	494.2	0.843
December	89.6	51.3	15.71	115.1	112.1	518.6	499.2	0.861
Year	1591.2	917.3	25.19	1693.1	1649.2	7243.5	6985.8	0.819

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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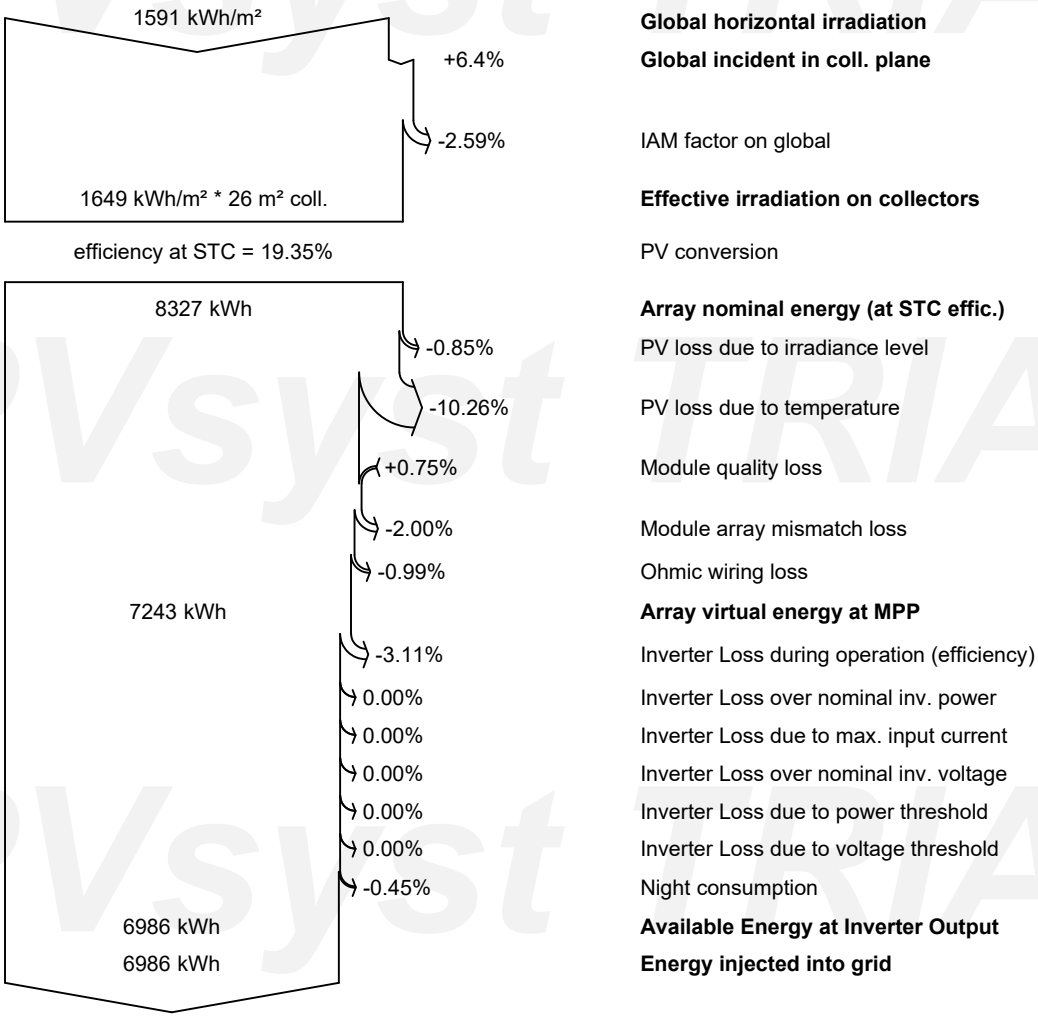
Loss diagram



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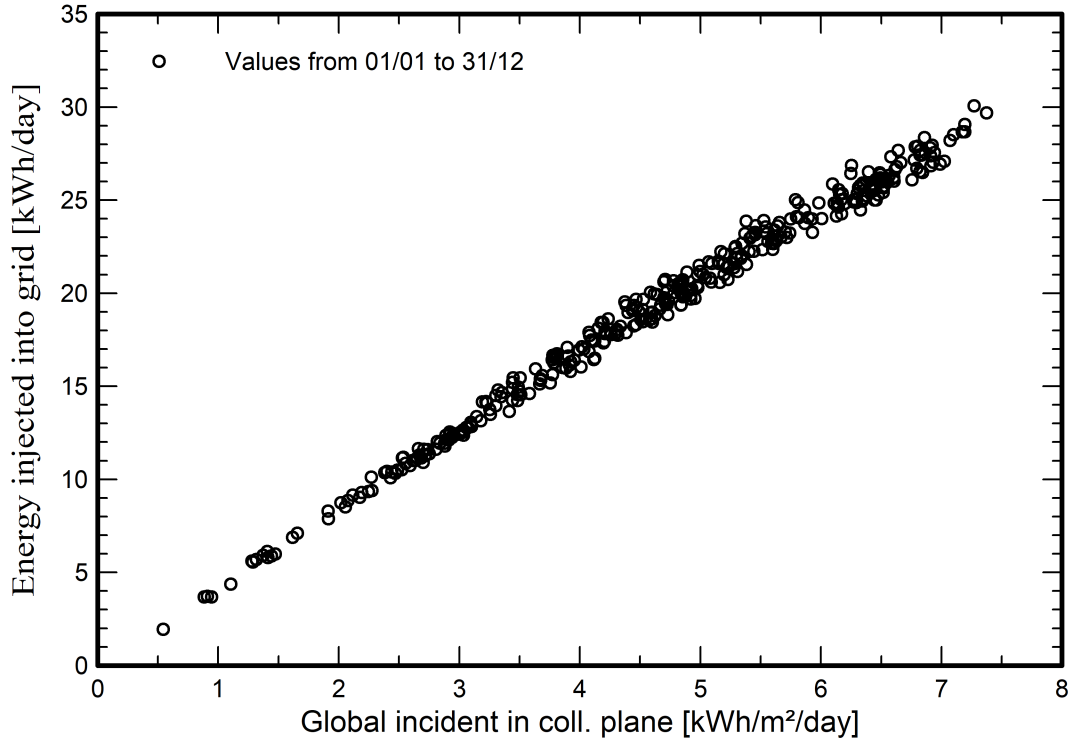
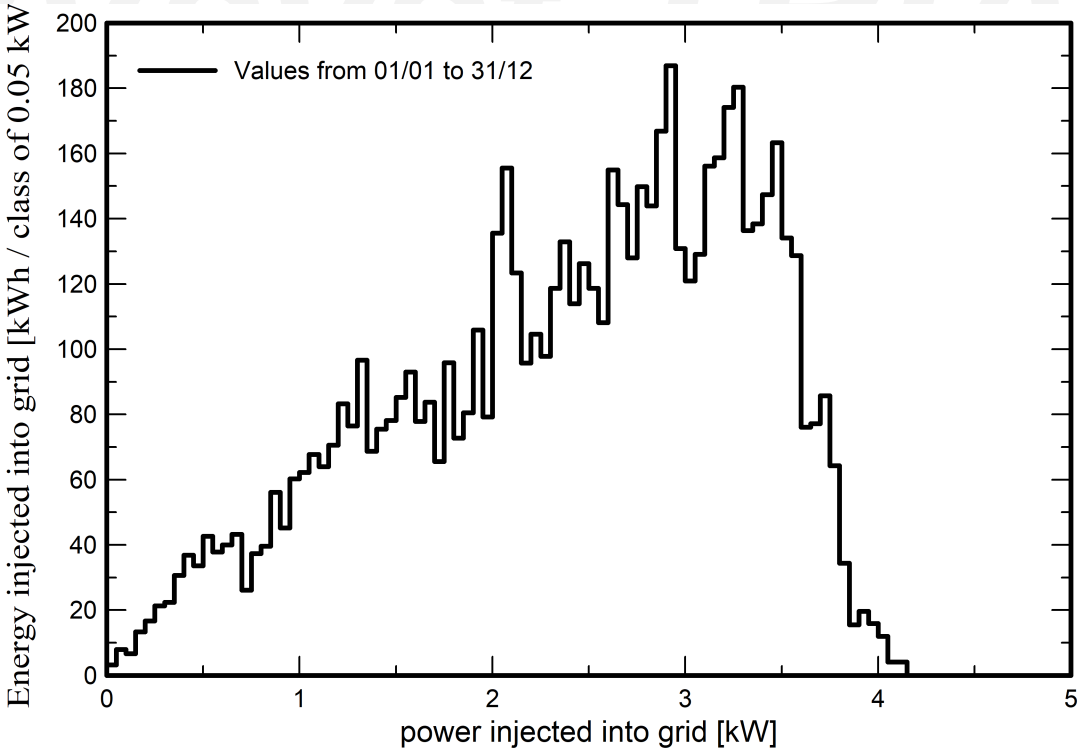
Predef. graphs

Daily Input/Output diagram



System Output Power Distribution



Single-line diagram

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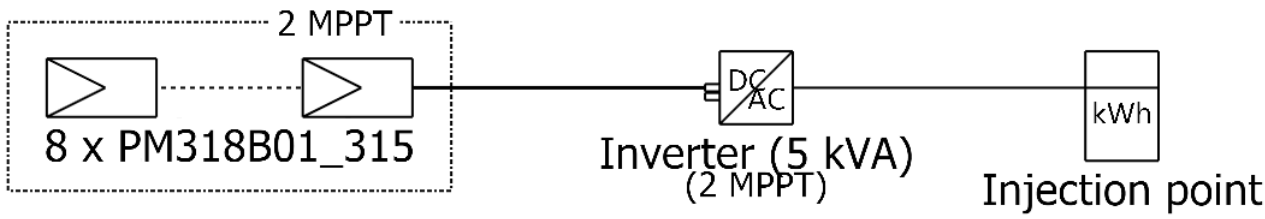

PV module	PM318B01_315
Inverter	SUN2000-4.95KTL-JPL1
String	8 x PM318B01_315

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