

# PVsyst - Simulation report

## Grid-Connected System

Project: Abhijit\_House\_Project

Variant: New simulation variant

Tables on a building

System power: 2960 Wp

Abhijit\_House\_Model - India



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PVsyst V8.0.7

VC0, Simulation date:

02/03/25 21:18

with V8.0.7

## Project summary

Geographical Site  
Abhijit\_House\_Model  
India

Situation  
Latitude 20.70 °N  
Longitude 76.55 °E  
Altitude 298 m  
Time zone UTC+5.5

Project settings  
Albedo 0.20

Weather data  
Abhijit\_House\_Model  
Meteonorm 8.2 (2001-2020), Sat=100% - Synthetic

## System summary

Grid-Connected System

Orientation #1  
Fixed plane  
Tilt/Azimuth 20 / 0 °

System information

PV Array  
Nb. of modules 8 units  
Pnom total 2960 Wp

Tables on a building

Near Shadings  
Linear shadings : Fast (table)

Inverters  
Nb. of units 1 unit  
Pnom total 2900 W  
Pnom ratio 1.021

User's needs  
Unlimited load (grid)

## Results summary

Produced Energy 4645.9 kWh/year Specific production 1570 kWh/kWp/year Perf. Ratio PR 80.82 %

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## General parameters

### Grid-Connected System

#### Orientation #1

Fixed plane

Tilt/Azimuth 20 / 0 °

### Tables on a building

#### Sheds configuration

Nb. of sheds 1 Unit

Single table

Shading limit angle

Limit profile angle °

#### Sizes

Sheds spacing 0.00 m

Collector width 3.93 m

Average GCR %

Top inactive band 0.02 m

Bottom inactive band 0.02 m

#### 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 Somera VSM.72.370.05

(Original PVsyst database)

Unit Nom. Power 370 Wp

Number of PV modules 8 units

Nominal (STC) 2960 Wp

Modules 1 strings x 8 In series

At operating cond. (50°C)

Pmpp 2698 Wp

U mpp 286 V

I mpp 9.4 A

#### Total PV power

Nominal (STC) 2.96 kWp

Total 8 modules

Module area 15.5 m²

### Inverter

Manufacturer Generic

Model ZCS 1PH 3000TL-V1

(Original PVsyst database)

Unit Nom. Power 2.90 kWac

Number of inverters 1 unit

Total power 2.9 kWac

Operating voltage 100-550 V

Pnom ratio (DC:AC) 1.02

#### Total inverter power

Total power 2.9 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

### Module mismatch losses

Loss Fraction 2.0 % at MPP

### IAM loss factor

Incidence effect (IAM): Fresnel smooth glass, n = 1.526

### DC wiring losses

Global array res.

507 mΩ

Loss Fraction

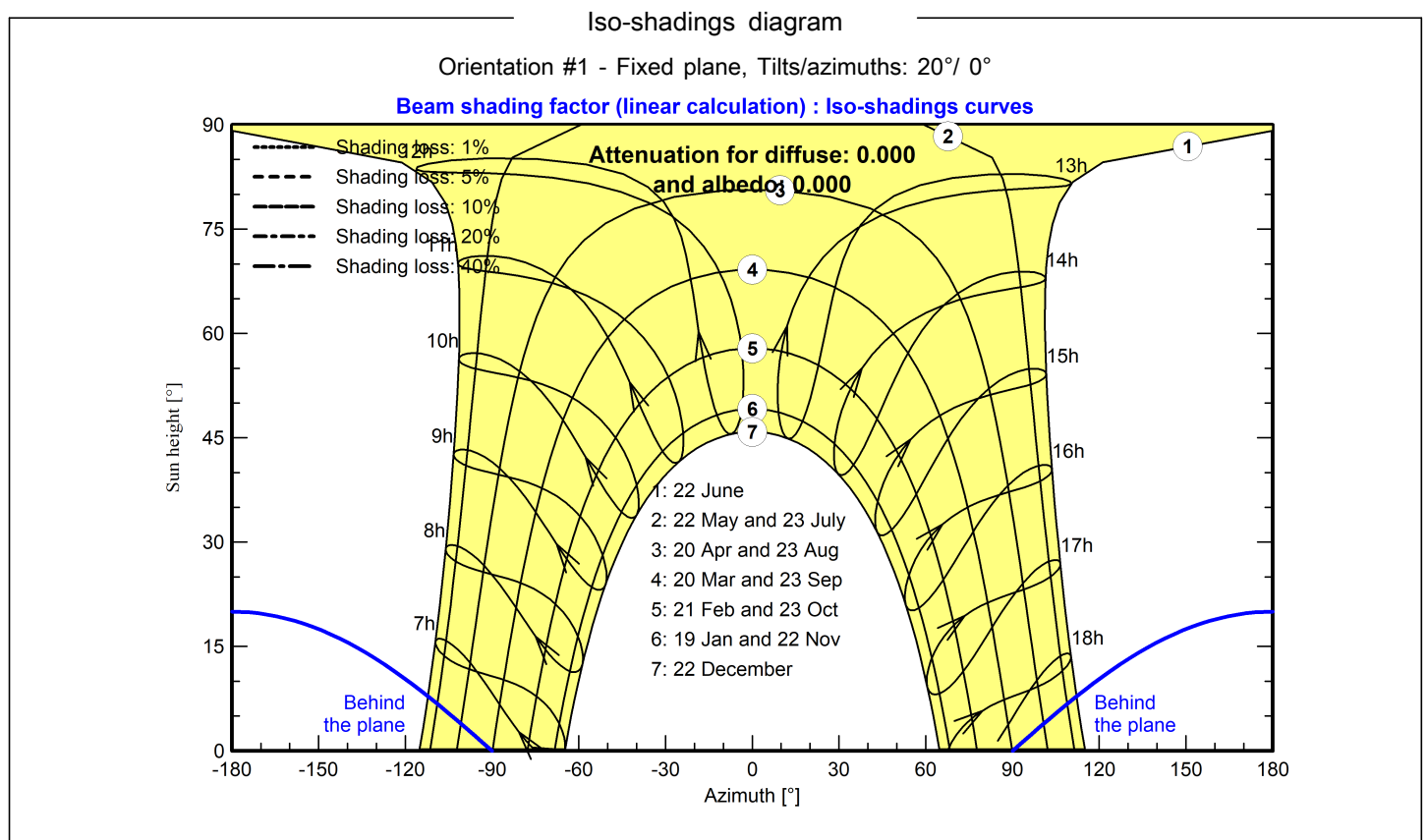
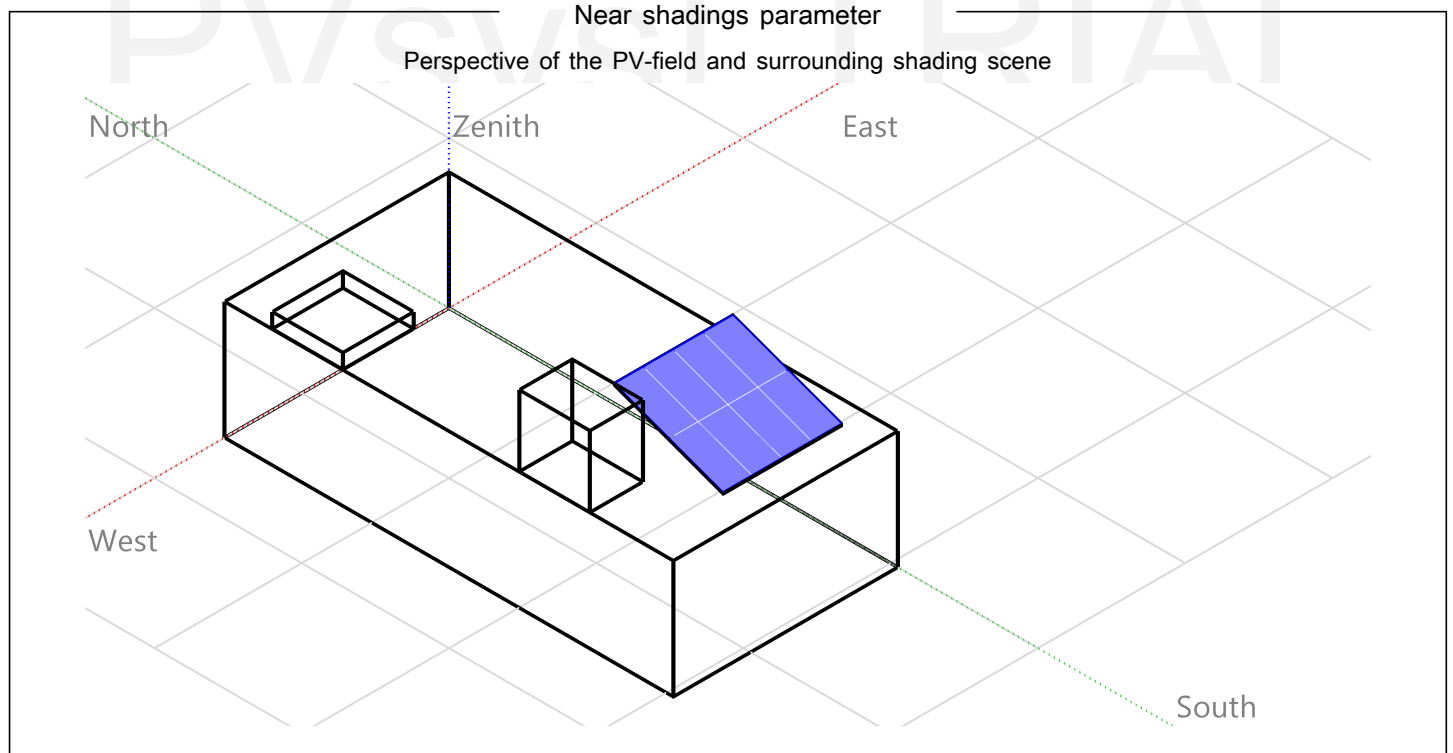
1.5 % at STC

### Module Quality Loss

Loss Fraction

-0.8 %

0°	30°	50°	60°	70°	75°	80°	85°	90°
1.000	0.998	0.981	0.948	0.862	0.776	0.636	0.402	0.000





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## Main results

### System Production

Produced Energy 4645.9 kWh/year

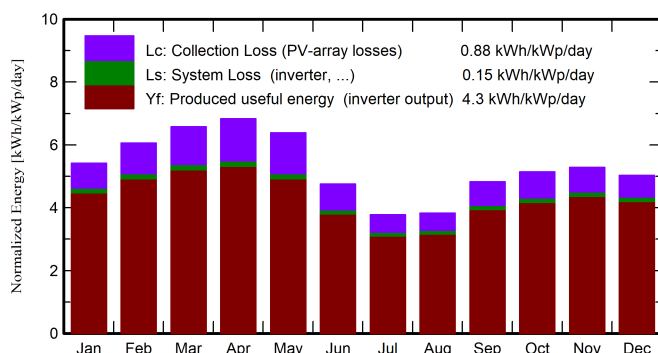
Specific production

1570 kWh/kWp/year

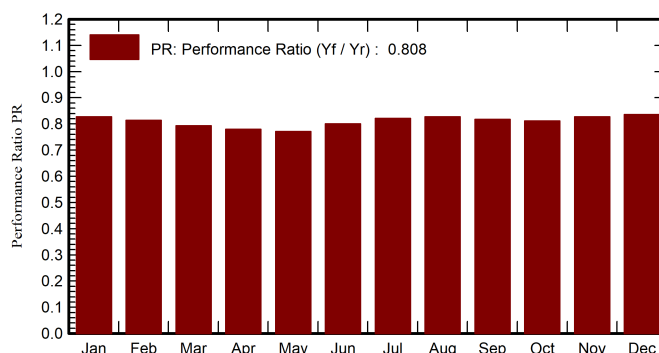
Perf. Ratio PR

80.82 %

Normalized productions (per installed kWp)



Performance Ratio PR



## Balances and main results

	GlobHor kWh/m <sup>2</sup>	DiffHor kWh/m <sup>2</sup>	T_Amb °C	GlobInc kWh/m <sup>2</sup>	GlobEff kWh/m <sup>2</sup>	EArray kWh	E_Grid kWh	PR ratio
January	135.4	46.34	21.75	168.0	164.5	425.3	411.6	0.828
February	145.1	57.20	25.47	169.6	165.8	421.8	408.6	0.814
March	188.2	71.98	29.60	203.9	199.2	493.9	478.7	0.793
April	204.4	75.48	32.62	205.0	200.0	488.4	472.7	0.779
May	210.3	85.13	36.05	197.9	192.3	466.9	451.8	0.771
June	154.7	85.92	31.63	142.7	138.1	350.4	338.3	0.801
July	125.0	82.50	28.41	117.3	113.3	296.0	285.1	0.821
August	122.1	86.26	27.27	118.9	115.0	301.7	290.9	0.827
September	140.5	75.71	27.39	144.8	140.6	362.7	350.6	0.818
October	143.4	68.40	27.23	159.5	155.7	396.1	383.2	0.812
November	131.0	55.76	24.28	158.5	154.9	400.6	388.0	0.827
December	124.3	52.00	21.77	156.1	152.4	398.9	386.3	0.836
Year	1824.3	842.67	27.80	1942.1	1891.8	4802.8	4645.9	0.808

### 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

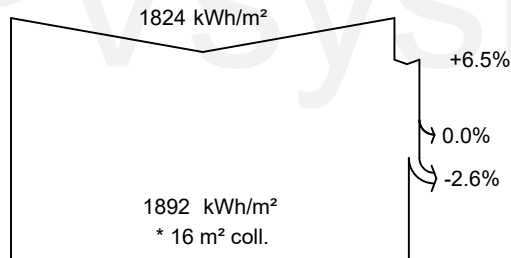
PR Performance Ratio



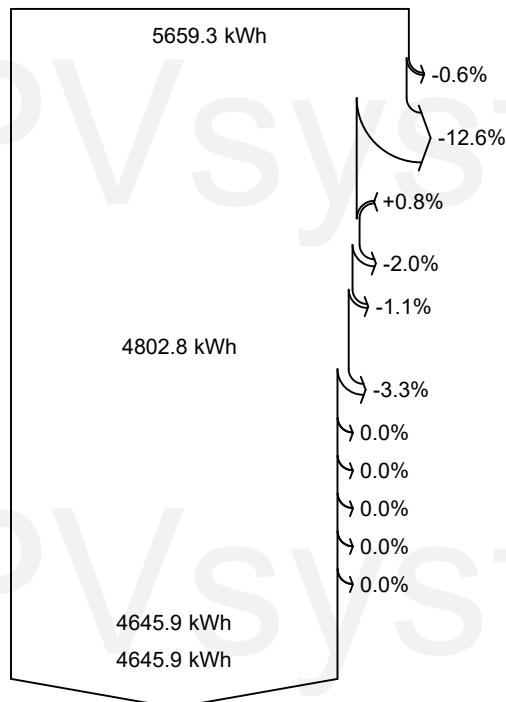
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### Loss diagram



efficiency at STC = 19.27%



**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

Module array mismatch loss

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**

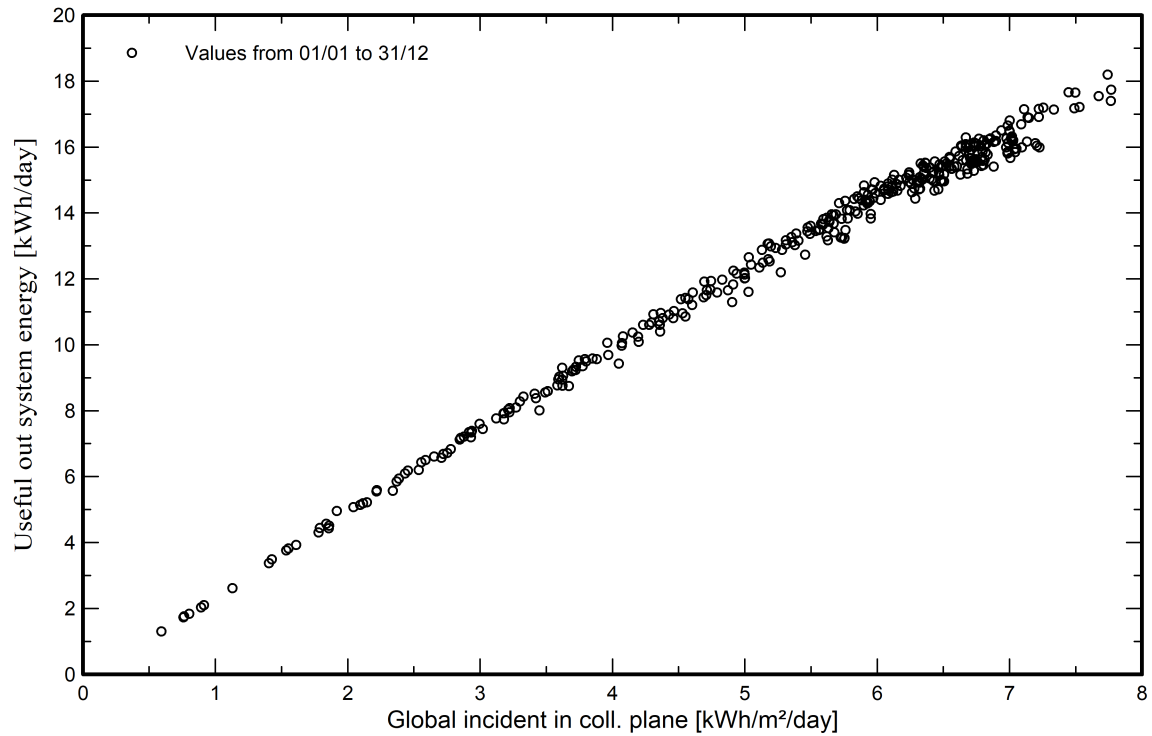


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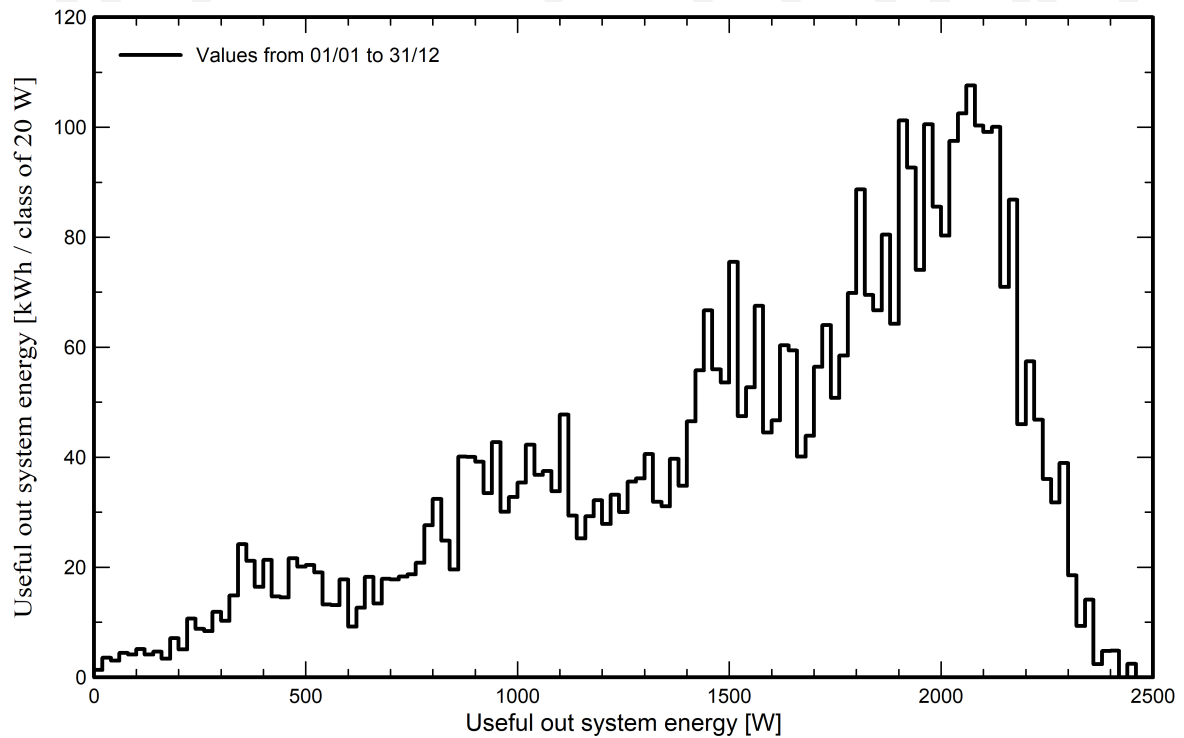
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Predef. graphs

Daily Input/Output diagram



System Output Power Distribution

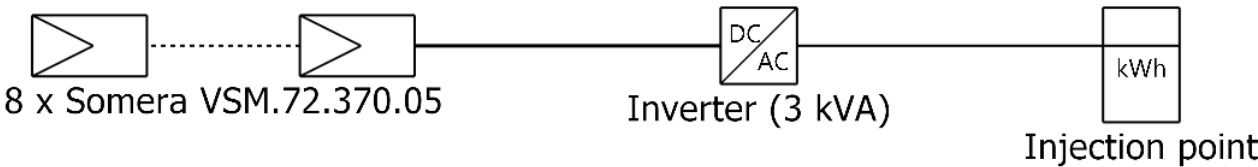




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# Single-line diagram



PV module	Somera VSM.72.370.05
Inverter	ZCS 1PH 3000TL-V1
String	8 x Somera VSM.72.370.05

Abhijit\_House\_Project

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