Version 7.1.0

PVsyst - Simulation report

Grid-Connected System

Project: MPSRSolar_ENEL562FinalProject

Variant: New simulation variant

Building system

System power: 5.61 kWp

Beijing/Peking - China

Author

PVsyst V7.1.0
Simulation date:
01/12/20 14:16
with v7.1.0

Project summary

Geographical Site
Beijing/Peking
China

Situation

Latitude	39.93 °N
Longitude	116.28 °E
Altitude	55 m
Time zone	UTC+8

Project settings
Albedo 0.20

Meteo data
Beijing/Peking
MeteoNorm 7.2 station - Synthetic

System summary

Grid-Connected System

Building system

PV Field Orientation
Fixed plane
Tilt/Azimuth 40 / 20 °

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	19 units
Pnom total	5.61 kWp

Inverters

Nb. of units	19 units
Pnom total	5.51 kWac
Pnom ratio	1.017

Results summary

Produced Energy	7.74 MWh/year	Specific production	1382 kWh/kWp/year	Perf. Ratio PR	87.41 %

Table of contents

PVsyst V7.1.0
Simulation date:
01/12/20 14:16
with v7.1.0

General parameters

Grid-Connected System

Building system

PV Field Orientation

Orientation
Fixed plane
Tilt/Azimuth 40 / 20 °

Models used
Transposition Perez
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	CS6K - 295MS-AG 1500V
(Original PVsyst database)	
Unit Nom. Power	295 Wp
Number of PV modules	19 units
Nominal (STC)	5.61 kWp
Modules	19 Strings x 1 In series
At operating cond. (50°C)	
Pmpp	5.06 kWp
U mpp	29 V
I mpp	175 A

Inverter

Manufacturer	Generic
Model	IQ7PLUS-72-x-INT
(Original PVsyst database)	
Unit Nom. Power	0.290 kWac
Number of inverters	19 units
Total power	5.5 kWac
Operating voltage	16-48 V
Max. power (=>60°C)	0.300 kWac
Pnom ratio (DC:AC)	1.02

Total PV power

Nominal (STC)	6 kWp
Total	19 modules
Module area	31.2 m²
Cell area	27.9 m²

Total inverter power

Total power	5.5 kWac
Nb. of inverters	19 units
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. 2.8 mΩ
Loss Fraction 1.5 % at STC

Module Quality Loss
Loss Fraction -0.4 %

Module mismatch losses
Loss Fraction 2.0 % at MPP

Strings Mismatch loss
Loss Fraction 0.1 %

IAM loss factor
Incidence effect (IAM): User defined profile

10°	20°	30°	40°	50°	60°	70°	80°	90°
0.998	0.998	0.995	0.992	0.986	0.970	0.917	0.763	0.000

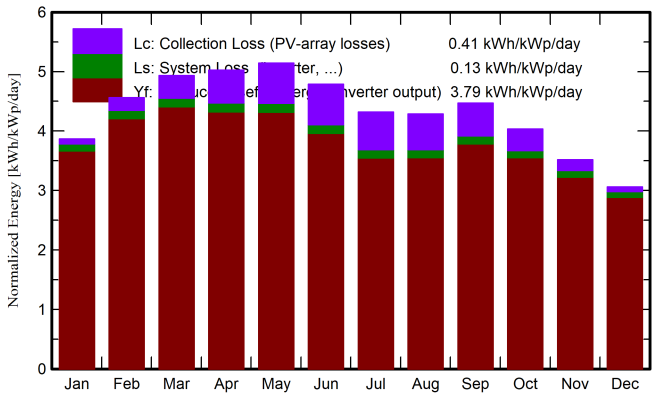
PVsyst V7.1.0
Simulation date:
01/12/20 14:16
with v7.1.0

Main results

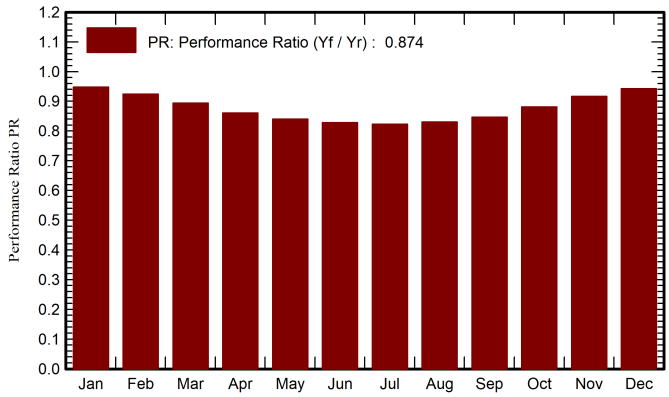
System Production

Produced Energy	7.74 MWh/year	Specific production	1382 kWh/kWp/year
		Performance Ratio PR	87.41 %

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	E_Grid MWh	PR ratio
January	69.2	31.20	-3.20	119.9	118.3	0.658	0.637	0.948
February	86.4	37.90	0.70	127.7	126.0	0.683	0.661	0.924
March	123.5	59.70	7.50	152.9	150.5	0.792	0.767	0.895
April	144.8	86.30	15.20	150.7	148.0	0.753	0.728	0.861
May	168.2	98.10	21.20	159.4	156.0	0.777	0.750	0.840
June	157.3	99.20	25.10	143.6	140.4	0.691	0.667	0.828
July	144.3	96.00	26.70	133.8	130.9	0.641	0.617	0.823
August	135.7	88.80	25.30	132.8	130.1	0.641	0.618	0.830
September	117.6	65.60	20.20	134.1	131.7	0.659	0.637	0.847
October	94.3	51.70	13.10	125.0	123.1	0.639	0.617	0.881
November	66.4	32.70	4.20	105.6	104.1	0.561	0.543	0.917
December	54.8	27.60	-1.80	94.8	93.5	0.519	0.501	0.943
Year	1362.5	774.80	12.91	1580.5	1552.6	8.013	7.744	0.874

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

PVsyst V7.1.0
Simulation date:
01/12/20 14:16
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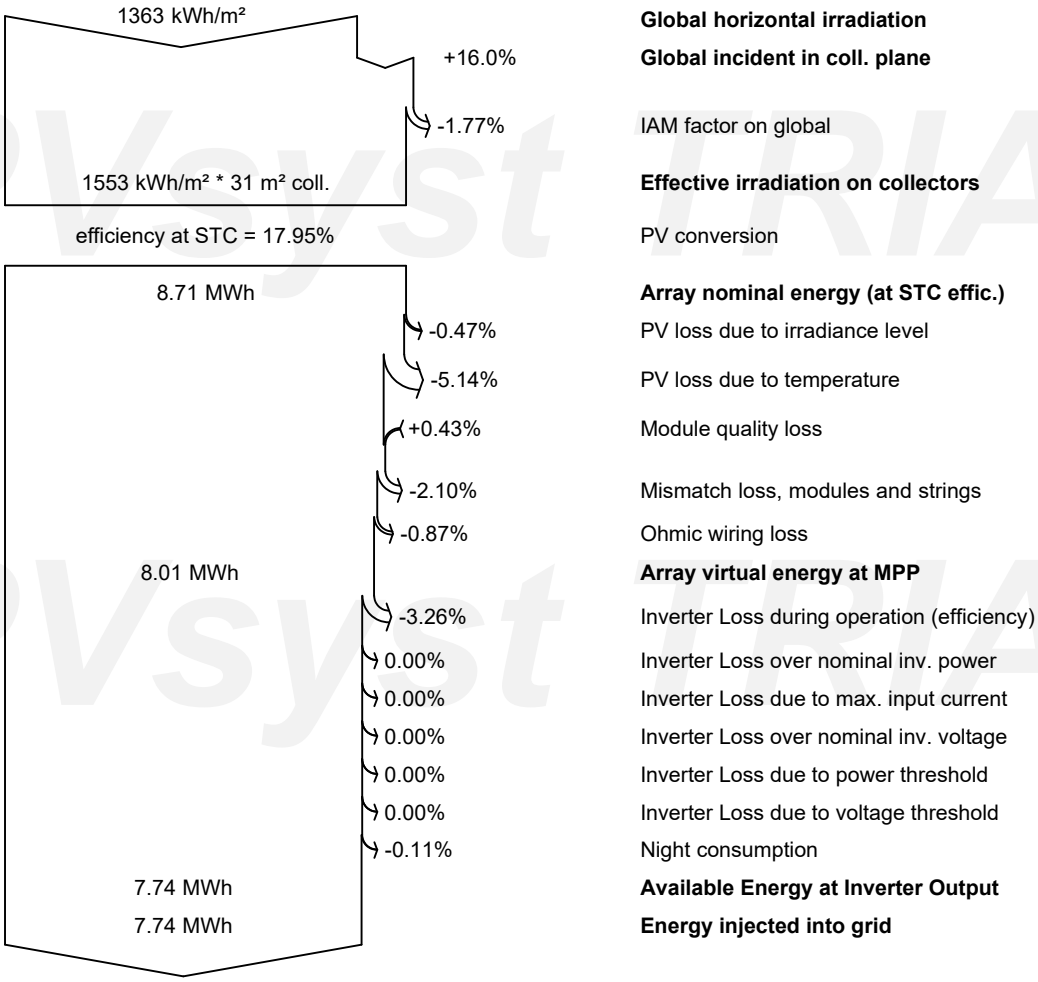
Loss diagram



Global horizontal irradiation
Global incident in coll. plane
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
Night consumption
Available Energy at Inverter Output
Energy injected into grid

PVsyst V7.1.0
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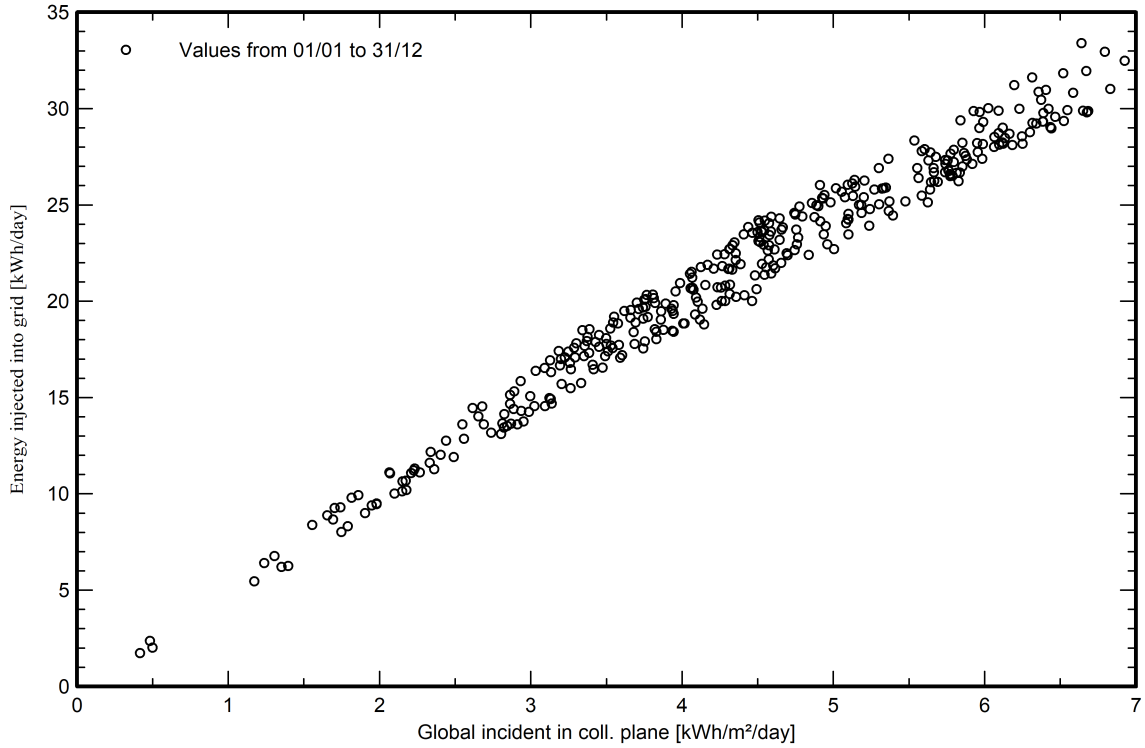
Special graphs

Daily Input/Output diagram



System Output Power Distribution