

PVsyst - Simulation report

Grid-Connected System

Project: SUNGJIN NICE

Variant: New simulation variant

No 3D scene defined, no shadings

System power: 986 kWp

20.888050249667153, 106.35437139638657i - Vietnam

Author

CÔNG TY TNHH XUÂN SƠN HẢI DƯƠNG (Viet Nam)



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PVsyst V8.0.14

VCO, Simulation date:
05/08/25 11:59
with V8.0.14

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Project summary

Geographical Site

20.888050249667153, 106.35437139638657i
Vietnam

Situation

Latitude 20.89 °(N)
Longitude 106.35 °(E)
Altitude 9 m
Time zone UTC+7

Project settings

Albedo 0.20

Weather data

20.888050249667153, 106.35437139638657i
Meteonorm 8.2 (1991-2000), Sat=100% - Synthetic

System summary

Grid-Connected System

No 3D scene defined, no shadings

Orientation #1

Fixed plane

Tilt/Azimuth 15 / 135 °

Orientation #2

Fixed plane

Tilt/Azimuth 15 / -45 °

Near Shadings

no Shadings

System information

PV Array

Nb. of modules 1590 units
Pnom total 986 kWp

Inverters

Nb. of units 5.1 units
Total power 771 kWac
Pnom ratio 1.28

User's needs

Unlimited load (grid)

Results summary

Produced Energy 989.82 MWh/year Specific production 1004 kWh/kWp/year Perf. Ratio PR 83.30 %

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General parameters

Grid-Connected System

Orientation #1

Fixed plane

Tilt/Azimuth 15 / 135 °

Horizon

Free Horizon

No 3D scene defined, no shadings

Orientation #2

Fixed plane

Tilt/Azimuth 15 / -45 °

Near Shadings

no Shadings

Models used

Transposition Perez
Diffuse Perez, Meteonorm
Circumsolar separate

User's needs

Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer JA Solar
Model JAM66-D45-620-LB
(Original PVsyst database)
Unit Nom. Power 620 Wp
Number of PV modules 1590 units
Nominal (STC) 986 kWp
Modules 106 string x 15 In series
At operating cond. (50°C)
Pmpp 915 kWp
U mpp 559 V
I mpp 1636 A

Total PV power

Nominal (STC) 986 kWp
Total 1590 modules
Module area 4295 m²

Inverter

Manufacturer Huawei Technologies
Model SUN2000-150K-MG0-380V
(Original PVsyst database)
Unit Nom. Power 150 kWac
Number of inverters 36 * MPPT 14% 5.1 units
Total power 771 kWac
Operating voltage 200-1000 V
Max. power (=>30°C) 165 kWac
Pnom ratio (DC:AC) 1.28
No power sharing between MPPTs

Total inverter power

Total power 771 kWac
Nb. of inverters 6 units
0.9 unused
Pnom ratio 1.28

Array losses

Array Soiling Losses

Loss Fraction 1.6 %

Thermal Loss factor

Module temperature according to irradiance
Uc (const) 17.0 W/m²K
Uv (wind) 0.0 W/m²K/m/s

DC wiring losses

Global array res. 5.6 mΩ
Loss Fraction 1.50 % at STC

Module Quality Loss

Loss Fraction -0.75 %

Module mismatch losses

Loss Fraction 2.00 % at MPP

Strings Mismatch loss

Loss Fraction 0.10 %

IAM loss factor

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

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

System losses

Unavailability of the system

Time fraction 1.0 %
3.7 days,
3 periods



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Main results

System Production

Produced Energy

989.82 MWh/year

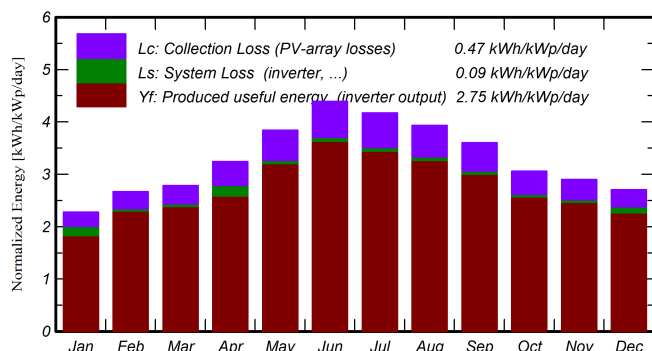
Specific production

1004 kWh/kWp/year

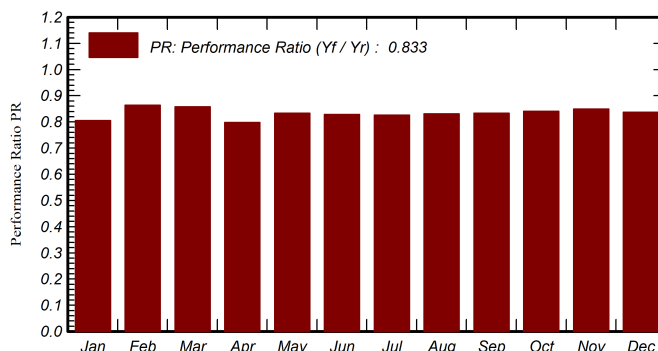
Perf. Ratio PR

83.30 %

Normalized productions (per installed kWp)



Performance Ratio PR



Balances and main results

	GlobHor kWh/m ²	DiffHor kWh/m ²	T_Amb °C	GlobInc kWh/m ²	GlobEff kWh/m ²	EArray MWh	E_Grid MWh	PR ratio
January	68.3	52.04	16.02	70.7	66.7	61.5	56.1	0.805
February	72.1	52.30	17.62	74.7	70.9	64.8	63.6	0.863
March	86.1	71.49	20.58	86.4	81.9	74.5	73.1	0.858
April	98.5	76.70	24.23	97.4	92.5	82.6	76.6	0.798
May	121.3	87.88	27.91	119.2	113.5	99.9	98.0	0.834
June	136.9	90.52	29.37	131.7	125.4	109.7	107.6	0.828
July	132.8	86.89	29.39	129.3	123.0	107.4	105.3	0.826
August	124.2	84.37	28.47	121.9	116.1	101.9	99.9	0.831
September	107.3	71.97	27.04	108.2	102.9	90.7	88.9	0.834
October	92.6	68.77	25.31	94.8	90.1	80.1	78.6	0.840
November	82.5	53.12	21.61	87.1	82.7	74.4	72.9	0.849
December	78.1	54.23	17.77	84.0	79.6	72.9	69.3	0.837
Year	1200.6	850.28	23.81	1205.4	1145.3	1020.5	989.8	0.833

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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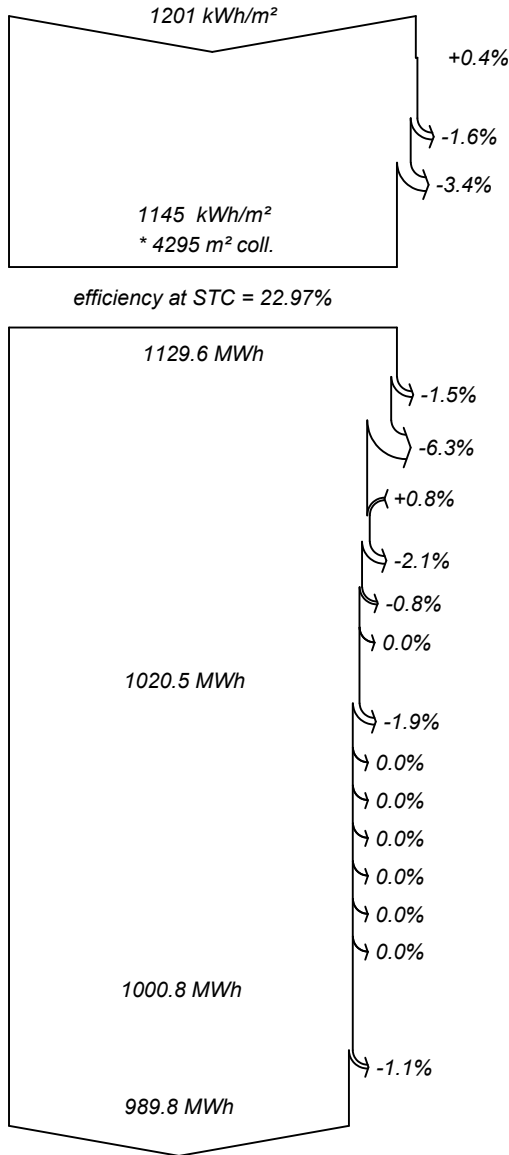
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Loss diagram



Global horizontal irradiation

Global incident in coll. plane

Soiling loss factor

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

Mixed orientation mismatch 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

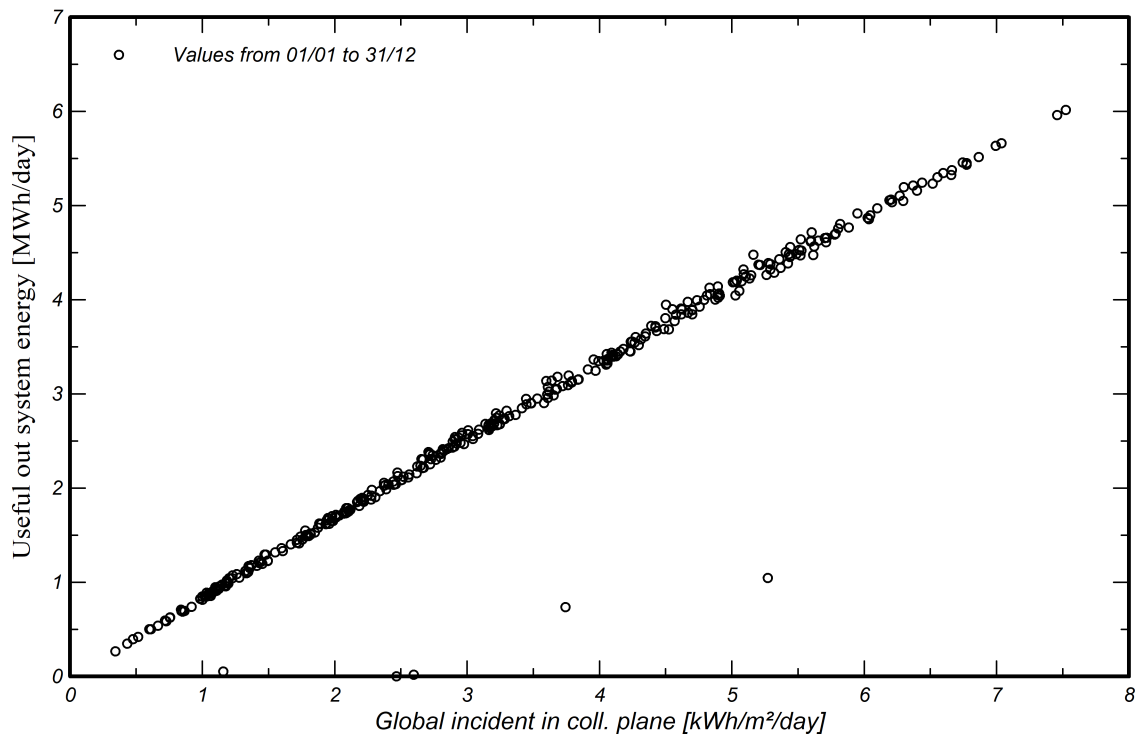
System unavailability

Energy injected into grid



Predef. graphs

Daily Input/Output diagram



System Output Power Distribution

