Version 7.2.4

PVsyst - Simulation report

Grid-Connected System

Project: on grid final project

Variant: variant 1

No 3D scene defined, no shadings

System power: 22.68 kWp

6 of october - Egypt

Author

PVsyst V7.2.4
VC0, Simulation date:
26/08/21 02:28
with v7.2.4

Project summary

Geographical Site
6 of october
Egypt

Situation

Latitude	29.98 °N
Longitude	30.95 °E
Altitude	182 m
Time zone	UTC+2

Project settings

Albedo	0.20

Meteo data
project on grid
Meteonorm 8.0 (1996-2015), Sat=13% - Synthetic

System summary

Grid-Connected System

No 3D scene defined, no shadings

PV Field Orientation
Fixed plane
Tilt/Azimuth 29 / 0 °

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	42 units
Pnom total	22.68 kWp

Inverters

Nb. of units	1 Unit
Pnom total	23.00 kWac
Pnom ratio	0.986

Results summary

Produced Energy	40.52 MWh/year	Specific production	1787 kWh/kWp/year	Perf. Ratio PR	86.66 %

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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	29 / 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	Jinkosolar
Model	JKM540M-7RL4-V
(Custom parameters definition)	
Unit Nom. Power	540 Wp
Number of PV modules	42 units
Nominal (STC)	22.68 kWp
Modules	3 Strings x 14 In series
At operating cond. (50°C)	
Pmpp	21.65 kWp
U mpp	558 V
I mpp	39 A

Inverter

Manufacturer	Huawei Technologies
Model	SUN2000-23KTL
(Original PVsyst database)	
Unit Nom. Power	23.0 kWac
Number of inverters	3 * MPPT 33% 1 units
Total power	23.0 kWac
Operating voltage	200-950 V
Pnom ratio (DC:AC)	0.99

Total PV power

Nominal (STC)	23 kWp
Total	42 modules
Module area	115 m²

Total inverter power

Total power	23 kWac
Nb. of inverters	1 Unit
Pnom ratio	0.99

Array losses

Array Soiling Losses
Loss Fraction 3.0 %

Thermal Loss factor
Module temperature according to irradiance
Uc (const) 29.0 W/m²K
Uv (wind) 0.0 W/m²K/m/s

DC wiring losses
Global array res. 238 mΩ
Loss Fraction 1.5 % at STC

Serie Diode Loss
Voltage drop 0.7 V
Loss Fraction 0.1 % at STC

LID - Light Induced Degradation
Loss Fraction 2.0 %

Module Quality Loss
Loss Fraction -0.8 %

Module mismatch losses
Loss Fraction 2.0 % at MPP

Strings Mismatch loss
Loss Fraction 0.1 %

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

AC wiring losses

Inv. output line up to injection point
Inverter voltage 400 Vac tri
Loss Fraction 0.00 % at STC

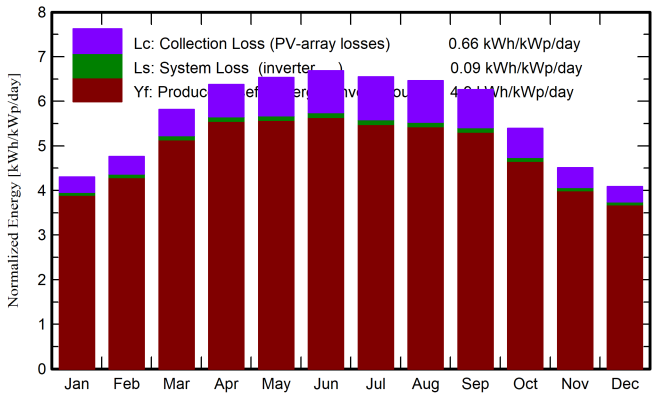
Inverter: SUN2000-23KTL
Wire section (1 Inv.) Copper 1 x 3 x 6 mm²
Wires length 0 m

Main results

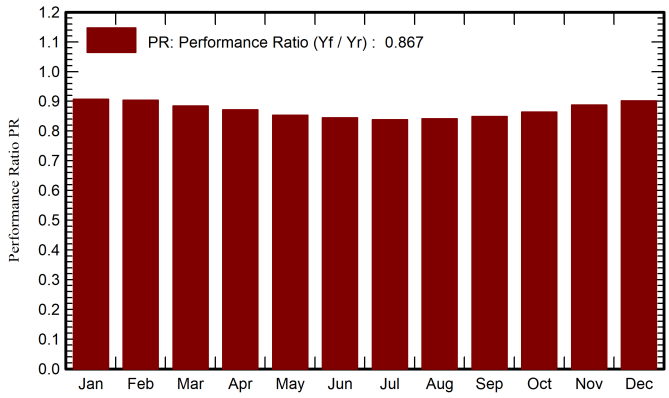
System Production

Produced Energy	40.52 MWh/year	Specific production	1787 kWh/kWp/year
		Performance Ratio PR	86.66 %

Normalized productions (per installed kWp)



Performance Ratio PR



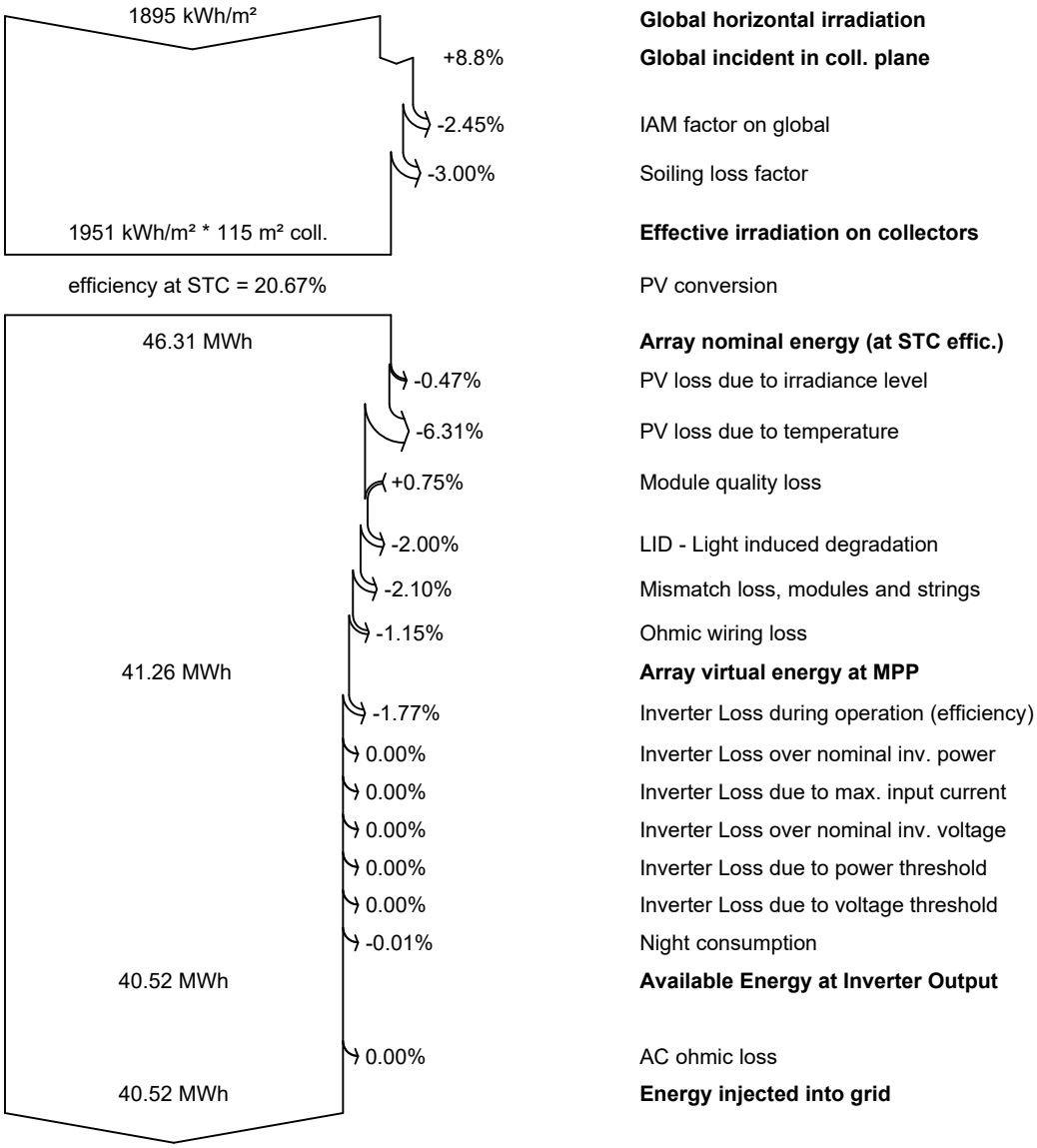
Balances and main results

	GlobHor kWh/m²	DiffHor kWh/m²	T_Amb °C	GlobInc kWh/m²	GlobEff kWh/m²	EArray MWh	E_Grid MWh	PR ratio
January	95.2	45.72	13.99	133.4	126.4	2.790	2.745	0.907
February	107.3	58.17	15.65	133.2	126.5	2.776	2.730	0.903
March	157.4	71.82	18.75	180.3	171.1	3.680	3.616	0.884
April	185.5	84.03	21.80	191.4	181.1	3.849	3.781	0.871
May	213.4	90.77	26.00	202.7	191.3	3.996	3.923	0.853
June	220.9	84.47	28.26	200.5	188.8	3.913	3.840	0.844
July	220.2	78.28	29.77	203.0	191.1	3.933	3.859	0.838
August	201.1	80.07	29.89	200.3	189.2	3.894	3.822	0.841
September	169.5	61.48	27.65	187.8	177.9	3.683	3.615	0.849
October	136.2	56.99	24.68	167.1	158.7	3.336	3.276	0.864
November	100.3	46.83	19.87	135.4	128.5	2.771	2.724	0.887
December	88.2	40.54	15.90	126.8	120.3	2.637	2.593	0.902
Year	1895.2	799.16	22.72	2061.8	1950.9	41.259	40.525	0.867

Legends

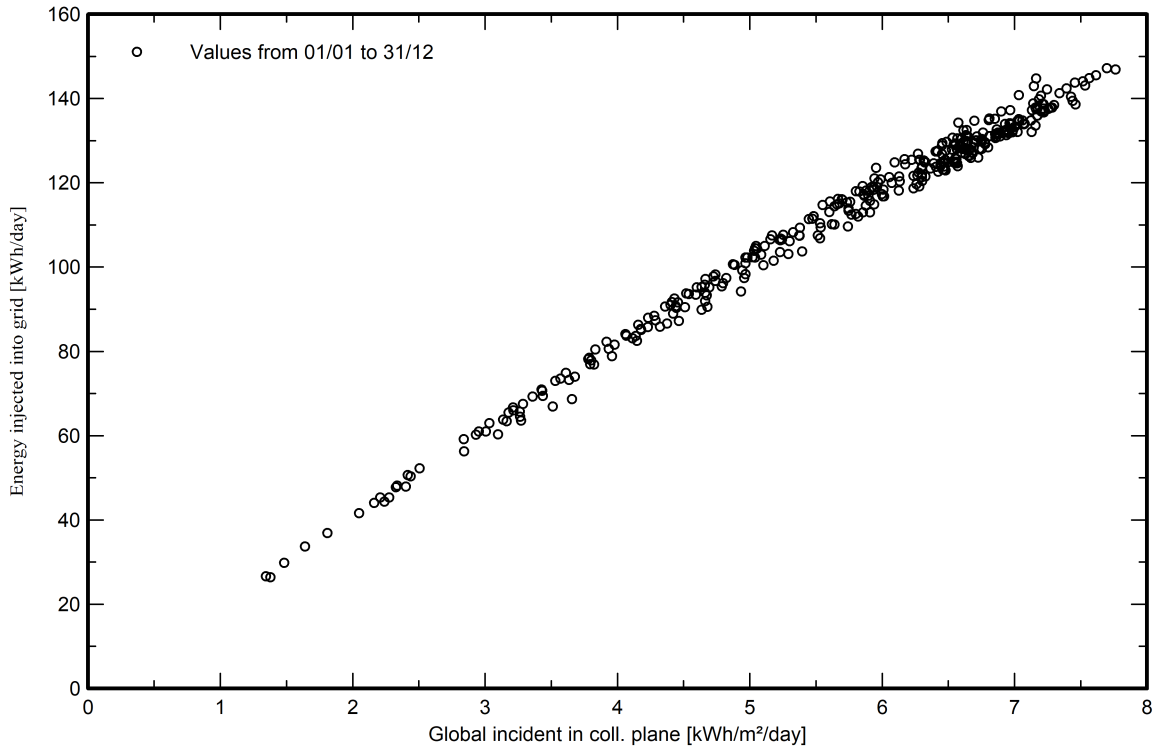
GlobHor	Global horizontal irradiation
DiffHor	Horizontal diffuse irradiation
T_Amb	Ambient Temperature
GlobInc	Global incident in coll. plane
GlobEff	Effective Global, corr. for IAM and shadings
EArray	Effective energy at the output of the array
E_Grid	Energy injected into grid
PR	Performance Ratio

Loss diagram



Special graphs

Daily Input/Output diagram



System Output Power Distribution