Version 7.4.6

PVsyst - Simulation report

Grid-Connected System

Project: Grid_Connected_Yousef_Khaled

Variant: New simulation variant

No 3D scene defined, no shadings

System power: 61.6 kWp

Al Marj - Egypt

Author

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Project summary

Geographical Site
Al Marj
Egypt

Situation

Latitude	30.16 °N
Longitude	31.33 °E
Altitude	33 m
Time zone	UTC+2

Project settings

Albedo	0.20

Weather data
Al Marj
Meteonorm 8.1 (1991-2010) - Synthetic

System summary

Grid-Connected System

No 3D scene defined, no shadings

PV Field Orientation
Fixed plane
Tilt/Azimuth 28 / -3 °

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	114 units
Pnom total	61.6 kWp

Inverters

Nb. of units	1.5 units
Pnom total	60.0 kWac
Pnom ratio	1.026

Results summary

Produced Energy	107727 kWh/year	Specific production	1750 kWh/kWp/year	Perf. Ratio PR	85.13 %

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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 28 / -3 °		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	JKM-540M-72HL4-TV
(Original PVsyst database)	
Unit Nom. Power	540 Wp
Number of PV modules	114 units
Nominal (STC)	61.6 kWp
Modules	6 string x 19 In series
At operating cond. (50°C)	
Pmpp	56.2 kWp
U mpp	709 V
I mpp	79 A

Inverter

Manufacturer	Huawei Technologies
Model	SUN2000-40KTL-M3-480V
(Original PVsyst database)	
Unit Nom. Power	40.0 kWac
Number of inverters	6 * MPPT 25% 1.5 units
Total power	60.0 kWac
Operating voltage	200-1000 V
Max. power (=>40°C)	44.0 kWac
Pnom ratio (DC:AC)	1.03
No power sharing between MPPTs	

Total PV power

Nominal (STC)	62 kWp
Total	114 modules
Module area	294 m²

Total inverter power

Total power	60 kWac
Nb. of inverters	2 units
	0.5 unused
Pnom ratio	1.03

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. 148 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
Incidence effect (IAM): Fresnel, AR coating, n(glass)=1.526, n(AR)=1.290

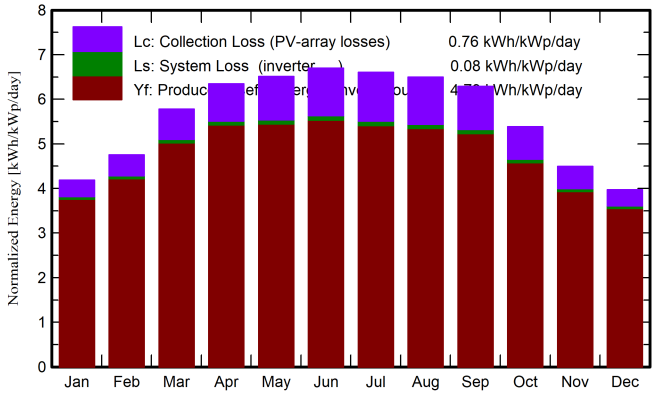
0°	30°	50°	60°	70°	75°	80°	85°	90°
1.000	0.999	0.987	0.962	0.892	0.816	0.681	0.440	0.000

Main results

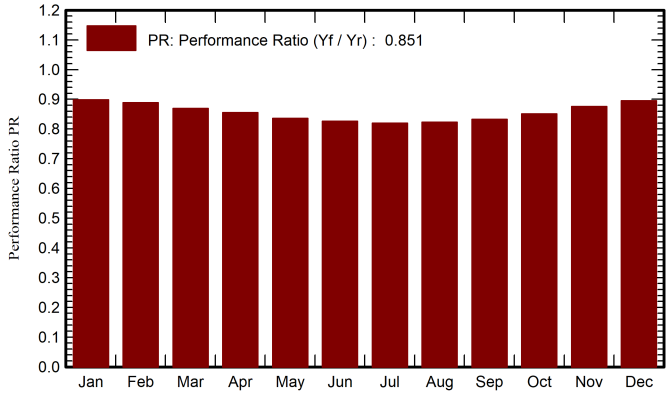
System Production

Produced Energy	107727 kWh/year	Specific production	1750 kWh/kWp/year
		Perf. Ratio PR	85.13 %

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	93.8	46.79	14.21	129.9	127.5	7295	7185	0.899
February	106.7	54.69	15.80	133.1	130.9	7396	7283	0.889
March	157.6	75.95	18.83	179.3	176.3	9751	9596	0.869
April	184.4	86.77	21.82	190.4	186.6	10190	10026	0.855
May	211.6	93.94	26.07	202.0	197.6	10577	10396	0.836
June	219.8	86.38	28.46	201.0	196.1	10408	10225	0.826
July	219.9	82.67	29.96	204.8	199.9	10519	10330	0.820
August	201.5	84.56	30.04	201.6	197.2	10394	10211	0.823
September	170.6	71.73	27.76	188.6	184.9	9841	9672	0.833
October	136.7	61.91	24.67	167.0	164.1	8891	8744	0.851
November	99.7	44.74	19.85	135.0	132.9	7392	7274	0.875
December	87.4	43.11	16.04	123.1	121.2	6891	6785	0.895
Year	1889.5	833.24	22.83	2055.6	2015.3	109544	107727	0.851

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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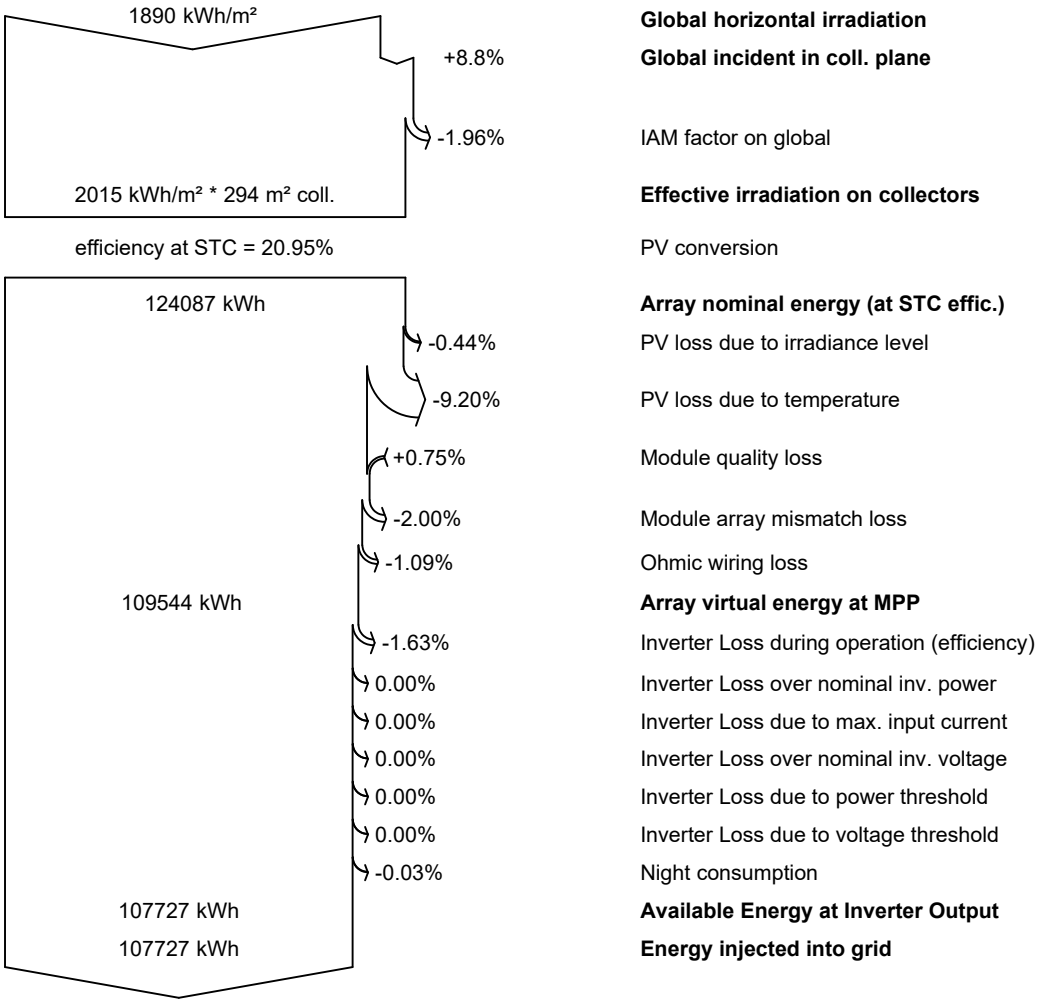
Loss diagram



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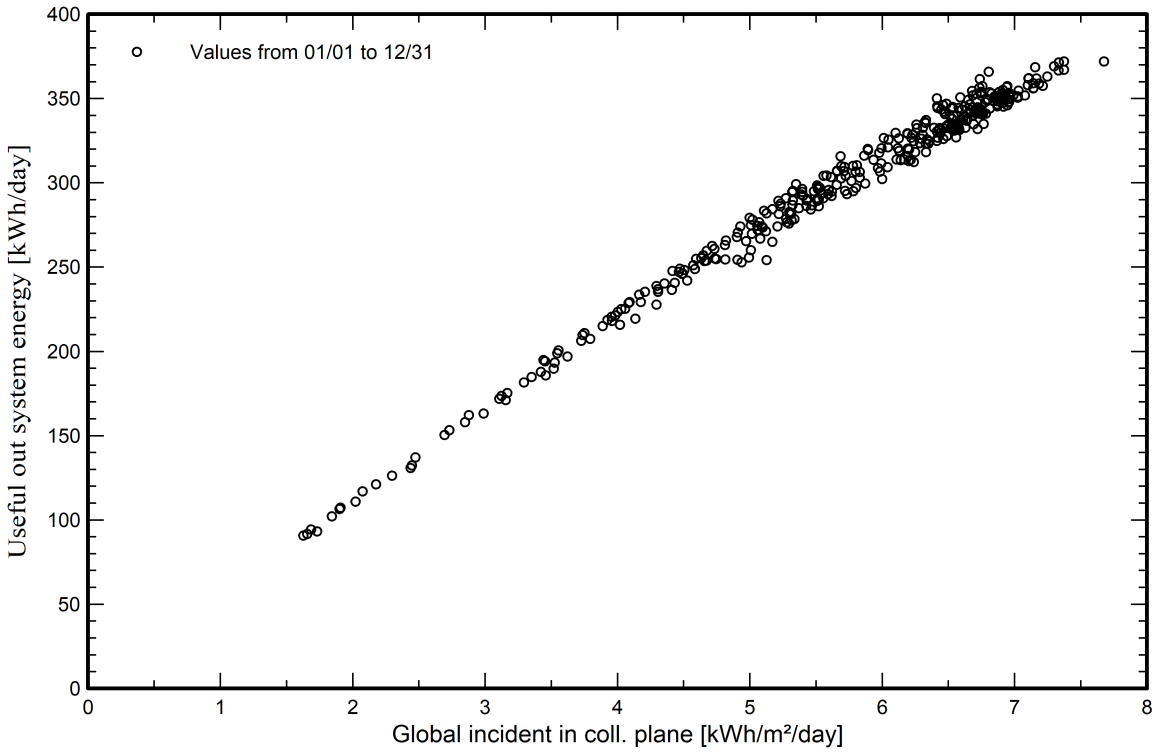
Predef. graphs

Daily Input/Output diagram



System Output Power Distribution