

# PVsyst - Simulation report

## Grid-Connected System

Project: 7.5kva Inverter solution

Variant: 7.5kva pvsyst

No 3D scene defined, no shadings

System power: 10.80 kWp

Orgone Technergy kd office - Nigeria

CEO Abubakar Attar



# Project: 7.5kva Inverter solution

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## PVsyst V7.4.7

VC0, Simulation date:  
28/08/25 16:42  
with V7.4.7

### Project summary

**Geographical Site**  
Orgone Technergy kd office  
Nigeria

**Situation**  
Latitude 10.49 °N  
Longitude 7.41 °E  
Altitude 0 m  
Time zone UTC+1

**Project settings**  
Albedo 0.20

**Weather data**  
Orgone Technergy kd office  
Meteonorm 8.1 (2010-2021), Sat=100% - Synthetic

### System summary

**Grid-Connected System**

**No 3D scene defined, no shadings**

**PV Field Orientation**

Fixed plane  
Tilt/Azimuth 10.5 / 0 °

**Near Shadings**

No Shadings

**User's needs**

Unlimited load (grid)

**System information**

**PV Array**

Nb. of modules 18 units  
Pnom total 10.80 kWp

**Inverters**

Nb. of units 1 unit  
Pnom total 8.20 kWac  
Pnom ratio 1.317

### Results summary

Produced Energy	19496.22 kWh/year	Specific production	1805 kWh/kWp/year	Perf. Ratio PR	82.83 %
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### General parameters

#### Grid-Connected System

No 3D scene defined, no shadings

#### PV Field Orientation

##### Orientation

Fixed plane

Tilt/Azimuth 10.5 / 0 °

##### Sheds configuration

No 3D scene defined

##### 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

Jinkosolar

Model

JKM-600N-66HL4M-BDV

(Original PVsyst database)

Unit Nom. Power

600 Wp

Number of PV modules

18 units

Nominal (STC)

10.80 kWp

Modules

2 string x 9 In series

#### At operating cond. (50°C)

Pmpp

10.02 kWp

U mpp

337 V

I mpp

30 A

#### Total PV power

Nominal (STC)

11 kWp

Total

18 modules

Module area

48.6 m²

#### Inverter

Manufacturer

Fronius USA

Model

Primo 8.2-1 / 220

(Original PVsyst database)

Unit Nom. Power

8.20 kWac

Number of inverters

2 \* MPPT 50% 1 unit

Total power

8.2 kWac

Operating voltage

80-800 V

Pnom ratio (DC:AC)

1.32

No power sharing between MPPTs

#### Total inverter power

Total power

8.2 kWac

Number of inverters

1 unit

Pnom ratio

1.32

### 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.

185 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



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### Main results

#### System Production

Produced Energy

19496.22 kWh/year

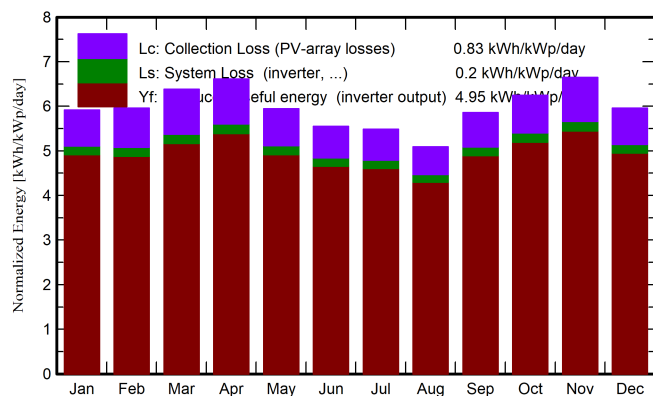
Specific production

1805 kWh/kWp/year

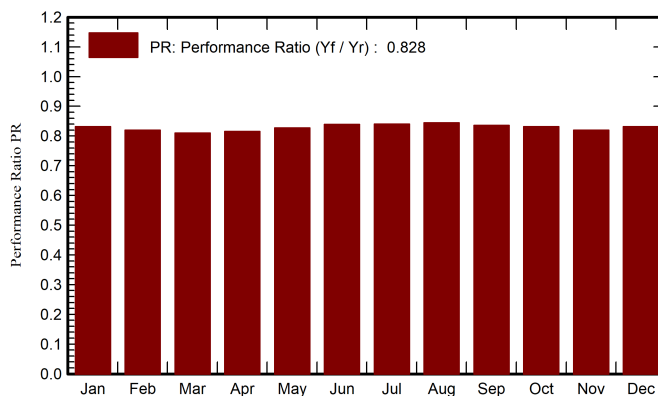
Perf. Ratio PR

82.83 %

Normalized productions (per installed kWp)



Performance Ratio PR



### Balances and main results

	GlobHor	DiffHor	T_Amb	GlobInc	GlobEff	EArray	E_Grid	PR
	kWh/m <sup>2</sup>	kWh/m <sup>2</sup>	°C	kWh/m <sup>2</sup>	kWh/m <sup>2</sup>	kWh	kWh	ratio
January	167.4	74.1	28.03	183.4	179.8	1712	1646	0.831
February	159.2	95.2	30.33	167.0	163.8	1537	1477	0.819
March	194.2	108.7	32.09	198.0	194.4	1801	1732	0.810
April	200.8	96.5	31.24	198.4	194.7	1817	1747	0.816
May	192.5	88.5	29.62	184.4	180.5	1714	1648	0.827
June	175.9	88.3	26.83	166.6	162.7	1571	1510	0.839
July	178.6	86.5	26.26	170.1	166.1	1607	1544	0.841
August	161.7	90.3	25.36	157.9	154.2	1498	1440	0.844
September	174.3	84.0	25.53	175.8	172.1	1649	1586	0.836
October	184.6	81.0	26.93	193.7	190.1	1810	1740	0.832
November	181.6	55.1	27.72	199.4	195.8	1835	1766	0.820
December	166.5	66.8	27.87	184.8	181.2	1724	1659	0.831
Year	2137.3	1015.1	28.14	2179.4	2135.4	20276	19496	0.828

#### 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

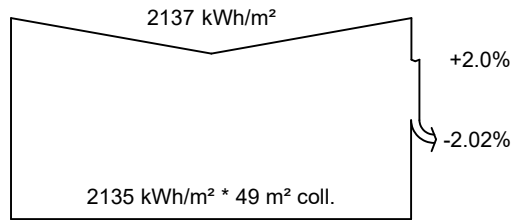
PR Performance Ratio



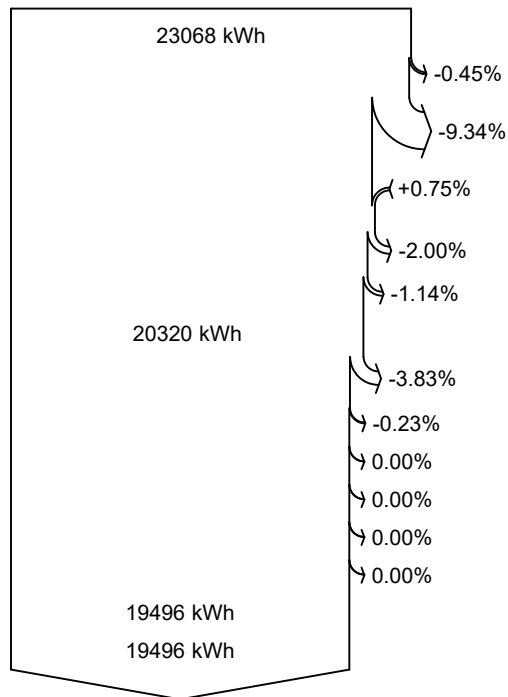
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**Loss diagram**



efficiency at STC = 22.24%



**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

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**

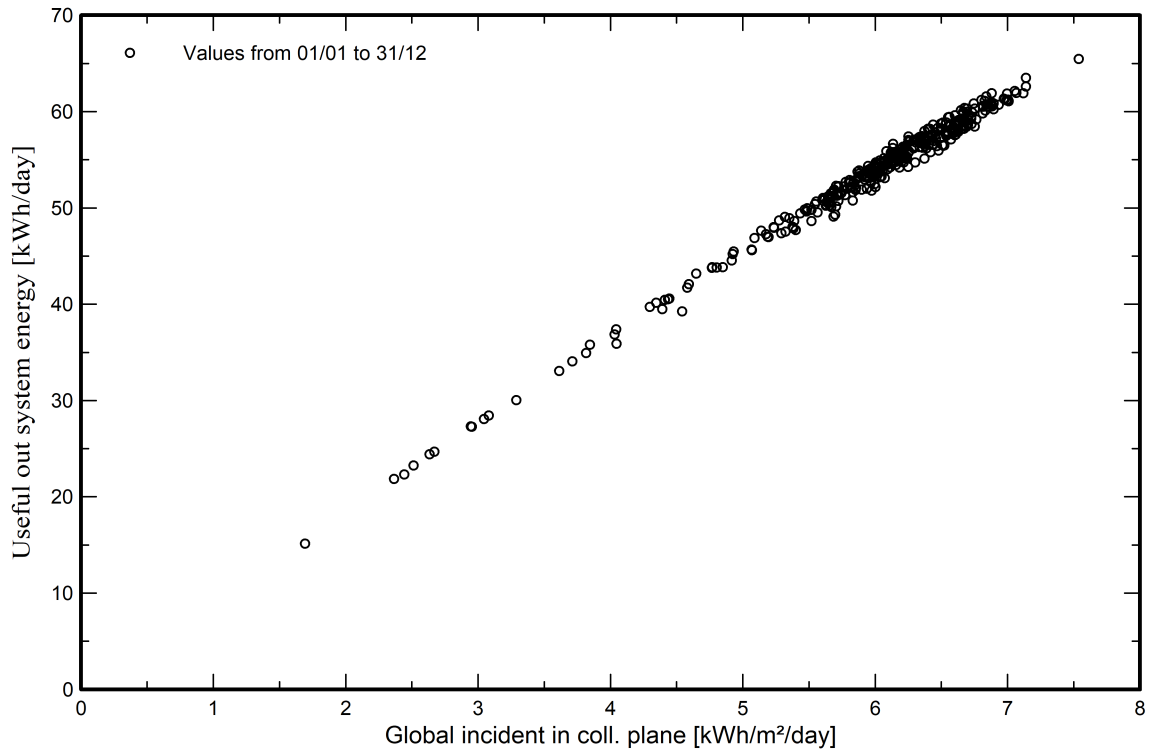


**PVsyst V7.4.7**

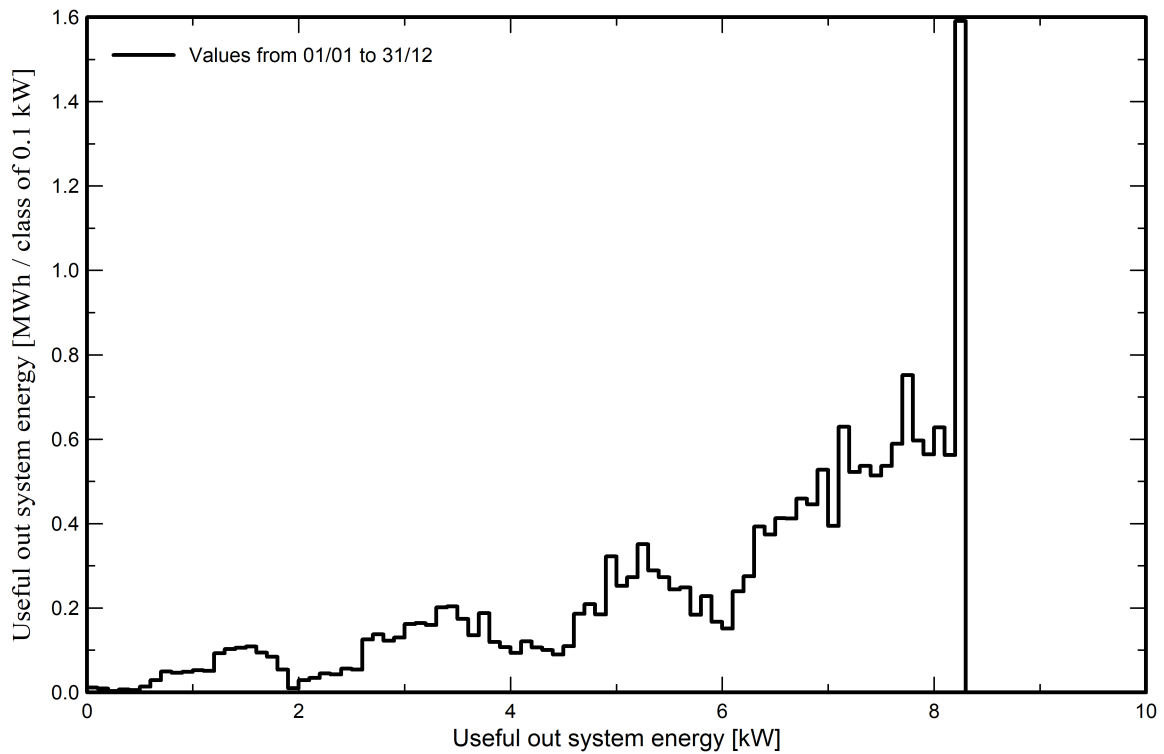
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**Predef. graphs**

**Daily Input/Output diagram**



**System Output Power Distribution**

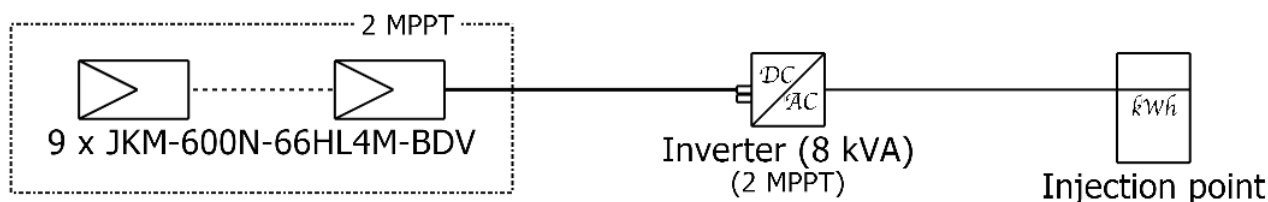




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# Single-line diagram



PV module	JKM-600N-66HL4M-BDV
Inverter	Primo 8.2-1 / 220
String	9 x JKM-600N-66HL4M-BDV

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