

PVsyst - Simulation report

Grid-Connected System

Project: Abdanan 3MW PV PLANT

Variant: New simulation variant

No 3D scene defined, no shadings

System power: 3002 kWp

Sīāh Gel - Iran



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PVsyst V7.3.1

VC0, Simulation date:
09/06/26 14:26
with v7.3.1

Project summary

Geographical Site

Stāh Gel

Iran

Situation

Latitude 32.72 °N

Longitude 47.83 °E

Altitude 395 m

Time zone UTC+3.5

Project settings

Albedo 0.20

Meteo data

Stāh Gel

Meteonorm 8.1 (1985-2002), Sat=100% - Synthetic

System summary

Grid-Connected System

No 3D scene defined, no shadings

PV Field Orientation

Fixed plane

Tilt/Azimuth 33 / 0 °

Near Shadings

No Shadings

User's needs

Unlimited load (grid)

System information

PV Array

Nb. of modules

5004 units

Pnom total

3002 kWp

Inverters

Nb. of units

10 units

Pnom total

2500 kWac

Pnom ratio

1.201

Results summary

Produced Energy 5298476 kWh/year Specific production 1765 kWh/kWp/year Perf. Ratio PR 83.19 %

Table of contents

Project and results summary	2
General parameters, PV Array Characteristics, System losses	3
Main results	4
Loss diagram	5
Predef. graphs	6
Single-line diagram	7



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General parameters

Grid-Connected System

No 3D scene defined, no shadings

PV Field Orientation

Orientation

Fixed plane

Tilt/Azimuth 33 / 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-78HL4-BDV

(Original PVsyst database)

Unit Nom. Power

600 Wp

Number of PV modules

5004 units

Nominal (STC)

3002 kWp

Modules

417 Strings x 12 In series

At operating cond. (50°C)

Pmpp

2779 kWp

U mpp

505 V

I mpp

5508 A

Total PV power

Nominal (STC)

3002 kWp

Total

5004 modules

Module area

13988 m²

Inverter

Manufacturer

SMA

Model

Sunny Central 250

(Original PVsyst database)

Unit Nom. Power

250 kWac

Number of inverters

10 units

Total power

2500 kWac

Operating voltage

450-820 V

Pnom ratio (DC:AC)

1.20

Total inverter power

Total power

2500 kWac

Number of inverters

10 units

Pnom ratio

1.20

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.

1.5 mΩ

Loss Fraction

1.5 % at STC

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

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 5298476 kWh/year

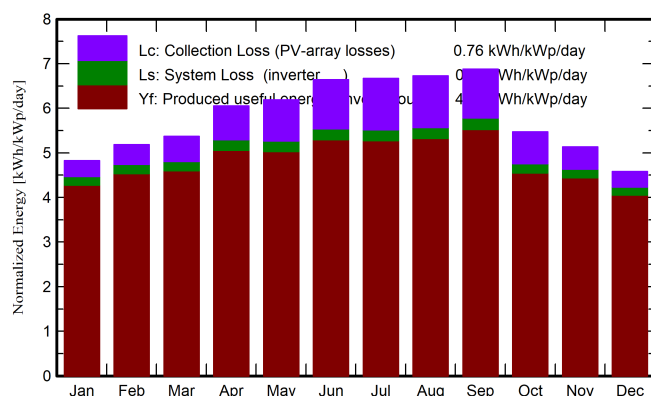
Specific production

1765 kWh/kWp/year

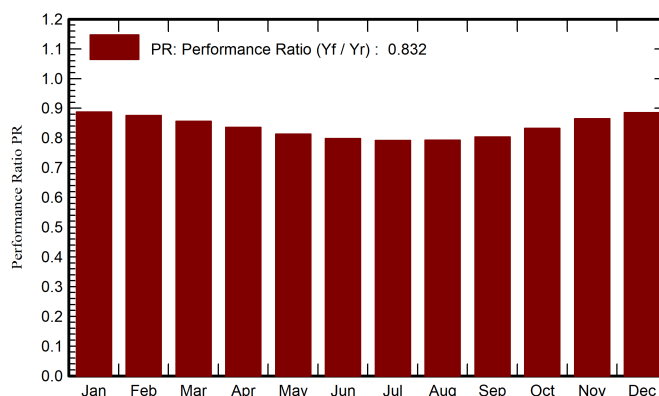
Performance Ratio PR

83.19 %

Normalized productions (per installed kWp)



Performance Ratio PR



Balances and main results

	GlobHor	DiffHor	T_Amb	GlobInc	GlobEff	EArray	E_Grid	PR
	kWh/m ²	kWh/m ²	°C	kWh/m ²	kWh/m ²	kWh	kWh	ratio
January	97.1	35.87	10.29	149.6	147.7	416528	398782	0.888
February	108.7	49.75	12.88	145.1	143.1	399340	381696	0.876
March	143.5	71.72	17.94	166.5	163.5	447822	428289	0.857
April	174.2	81.60	22.99	181.6	178.2	477304	456047	0.836
May	203.0	93.48	30.16	191.9	187.6	490534	468762	0.814
June	220.6	90.03	34.40	199.2	194.5	499464	477246	0.798
July	224.5	90.00	36.98	206.8	202.3	513944	491525	0.792
August	207.5	83.11	36.35	208.5	204.4	518934	496098	0.792
September	180.0	56.07	31.32	206.4	202.9	521070	498146	0.804
October	133.2	57.72	25.57	169.6	167.1	443399	424075	0.833
November	102.5	37.57	16.76	154.0	152.0	418212	400177	0.865
December	88.8	34.53	11.68	142.1	140.3	394597	377633	0.885
Year	1883.6	781.45	24.01	2121.3	2083.5	5541148	5298476	0.832

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

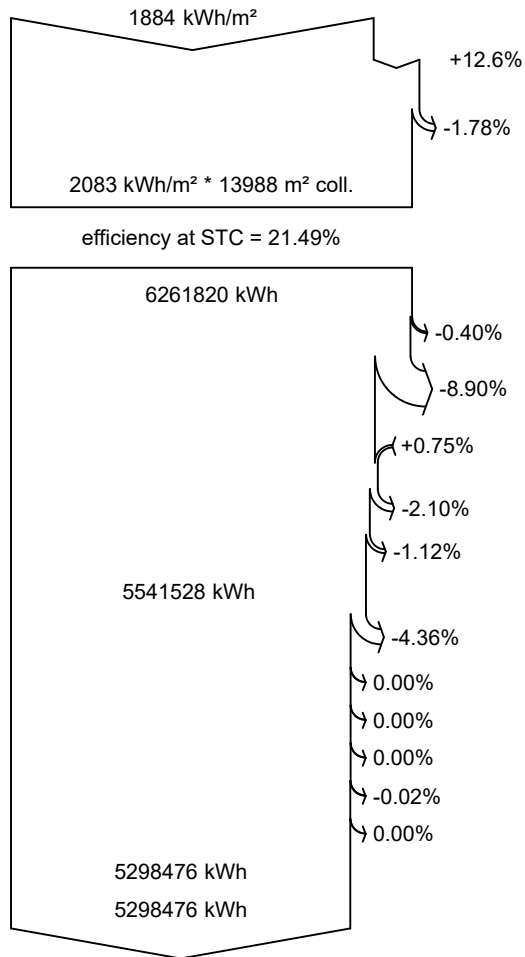
PR Performance Ratio



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Loss diagram



Global horizontal irradiation

Global incident in coll. plane

IAM factor on global

Effective irradiation on collectors

PV conversion

Array nominal energy (at STC eff.)

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

Available Energy at Inverter Output

Energy injected into grid



Project: Abdanan 3MW PV PLANT

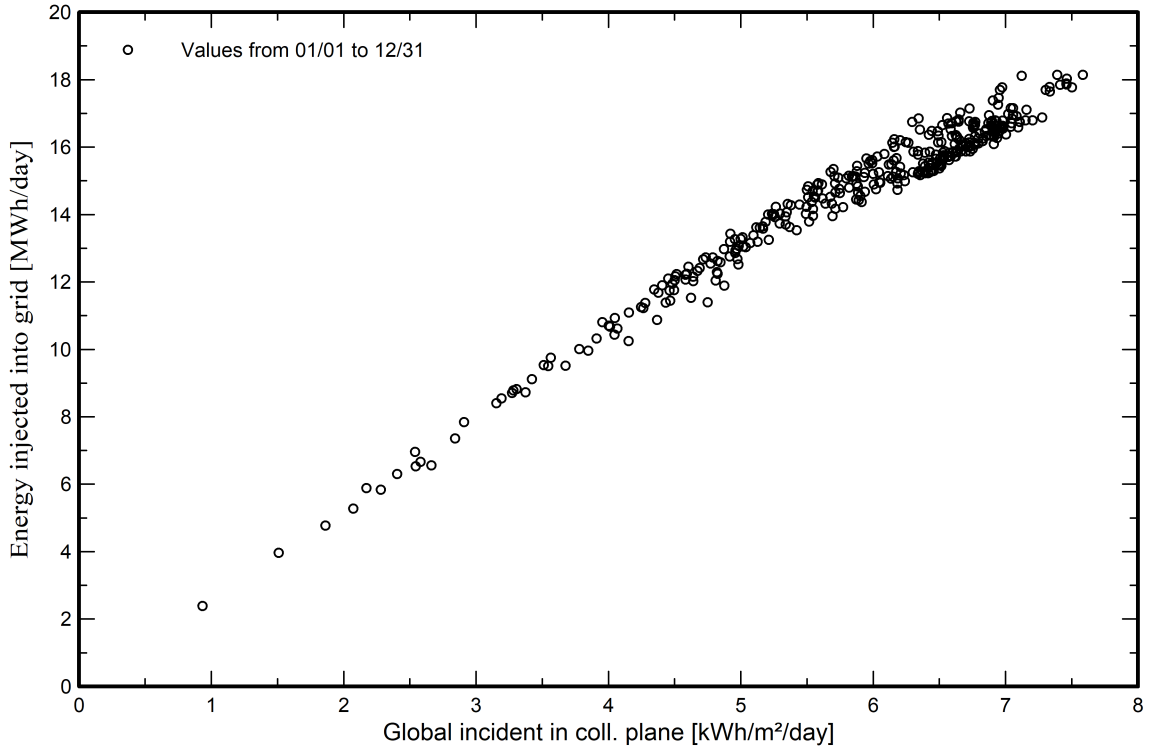
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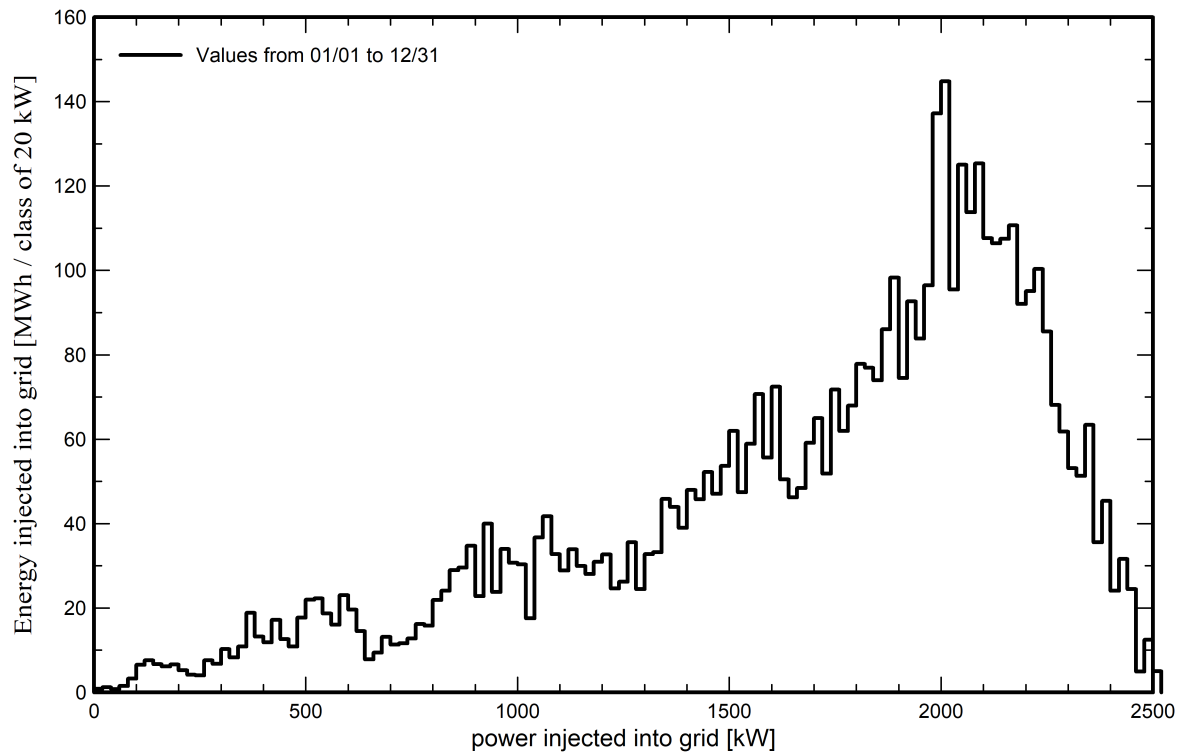
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Predef. graphs

Daily Input/Output diagram



System Output Power Distribution

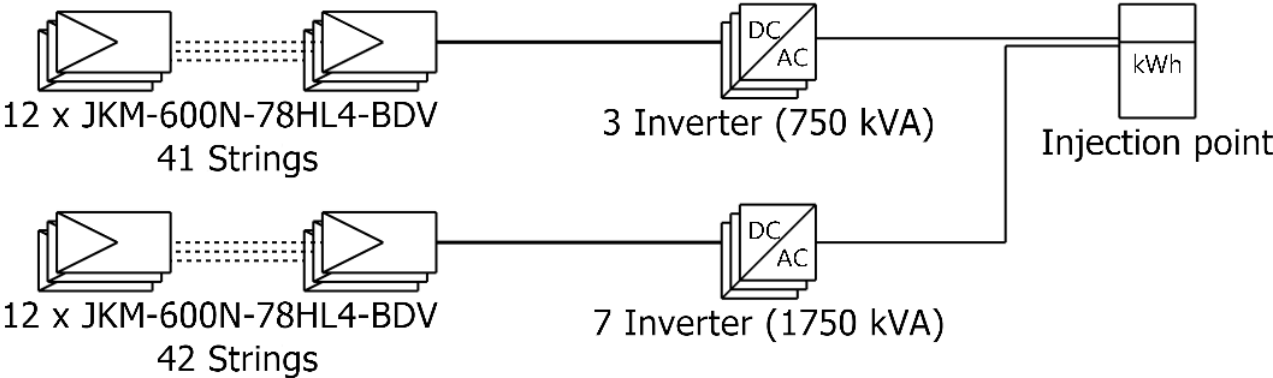




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Single-line diagram



PV module	JKM-600N-78HL4-BDV
Inverter	Sunny Central 250
String	12 x JKM-600N-78HL4-BDV

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