

PVsyst - Simulation report

Grid-Connected System

Project: STE Immobilière CONTEMPORAINE

Variant: Nouvelle variante de simulation

No 3D scene defined, no shadings

System power: 6.32 kWp

Mégrine Erriadh - Tunisie



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PVsyst V7.1.4

VC0, Simulation date:
18/06/21 15:26
with v7.1.4

Project summary

Geographical Site

Mégrine Erriadh

Tunisie

Situation

Latitude 36.77 °N

Longitude 10.22 °E

Altitude 9 m

Time zone UTC+1

Project settings

Albedo 0.20

Meteo data

Mégrine Erriadh

Meteonorm 7.3 (1991-2000), Sat=36 % - Synthétique

System summary

Grid-Connected System

No 3D scene defined, no shadings

PV Field Orientation

Fixed plane

Tilt/Azimuth 30 / 0 °

Near Shadings

No Shadings

User's needs

Unlimited load (grid)

System information

PV Array

Nb. of modules 16 units

Pnom total 6.32 kWp

Inverters

Nb. of units 1 Unit

Pnom total 6.00 kWac

Pnom ratio 1.053

Results summary

Produced Energy 9.77 MWh/year Specific production 1547 kWh/kWp/year Perf. Ratio PR 79.84 %

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General parameters

Grid-Connected System

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PV Field Orientation

Orientation

Fixed plane
Tilt/Azimuth 30 / 0 °

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 IFRI-SOL
Model IF-M395-72

(Custom parameters definition)

Unit Nom. Power 395 Wp
Number of PV modules 16 units
Nominal (STC) 6.32 kWp
Modules 2 Strings x 8 In series

At operating cond. (50°C)

Pmpp 5.73 kWp
U mpp 287 V
I mpp 20 A

Total PV power

Nominal (STC) 6 kWp
Total 16 modules
Module area 32.5 m²

Inverter

Manufacturer ABB
Model UNO-DM-6.0-TL-PLUS

(Custom parameters definition)

Unit Nom. Power 6.00 kWac
Number of inverters 2 * MPPT 50% 1 units
Total power 6.0 kWac
Operating voltage 120-480 V
Pnom ratio (DC:AC) 1.05

Total inverter power

Total power 6 kWac
Nb. of inverters 1 Unit
Pnom ratio 1.05

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. 259 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 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	0.403	0.000



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Main results

System Production

Produced Energy

9.77 MWh/year

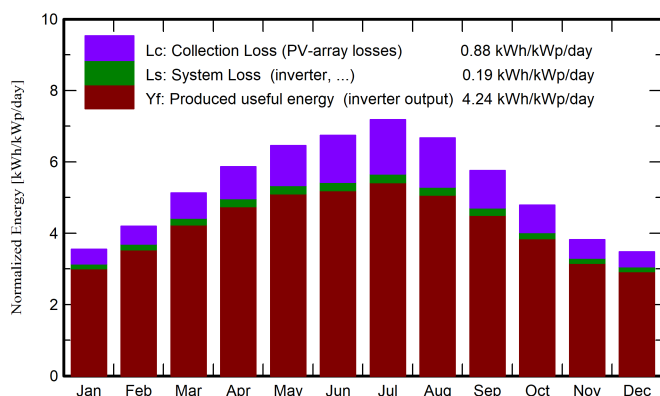
Specific production

1547 kWh/kWp/year

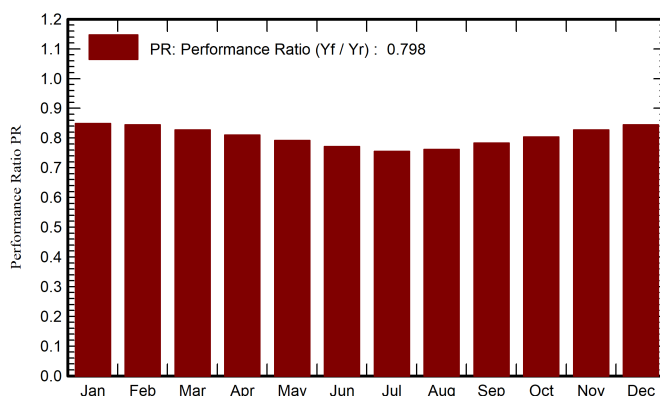
Performance Ratio PR

79.84 %

Normalized productions (per installed kWp)



Performance Ratio PR



Balances and main results

	GlobHor	DiffHor	T_Amb	GlobInc	GlobEff	EArray	E_Grid	PR
	kWh/m²	kWh/m²	°C	kWh/m²	kWh/m²	MWh	MWh	ratio
January	71.9	34.40	9.71	109.9	107.4	0.616	0.589	0.849
February	86.8	41.61	10.72	117.4	114.9	0.654	0.626	0.844
March	133.4	65.98	14.26	159.0	155.0	0.868	0.831	0.827
April	164.5	72.04	17.21	176.0	171.4	0.943	0.901	0.810
May	204.7	86.41	21.84	200.1	194.2	1.046	1.001	0.791
June	215.5	83.69	25.98	202.2	196.2	1.030	0.986	0.771
July	233.2	73.42	29.27	222.7	216.1	1.109	1.062	0.755
August	198.8	78.40	28.96	206.6	201.3	1.038	0.995	0.762
September	150.0	61.91	24.16	172.8	168.4	0.894	0.856	0.784
October	114.0	49.52	21.20	148.5	145.3	0.788	0.754	0.804
November	77.9	38.25	15.67	114.5	111.9	0.626	0.599	0.827
December	67.2	31.09	11.44	107.6	105.2	0.600	0.574	0.844
Year	1718.0	716.71	19.26	1937.3	1887.3	10.213	9.775	0.798

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

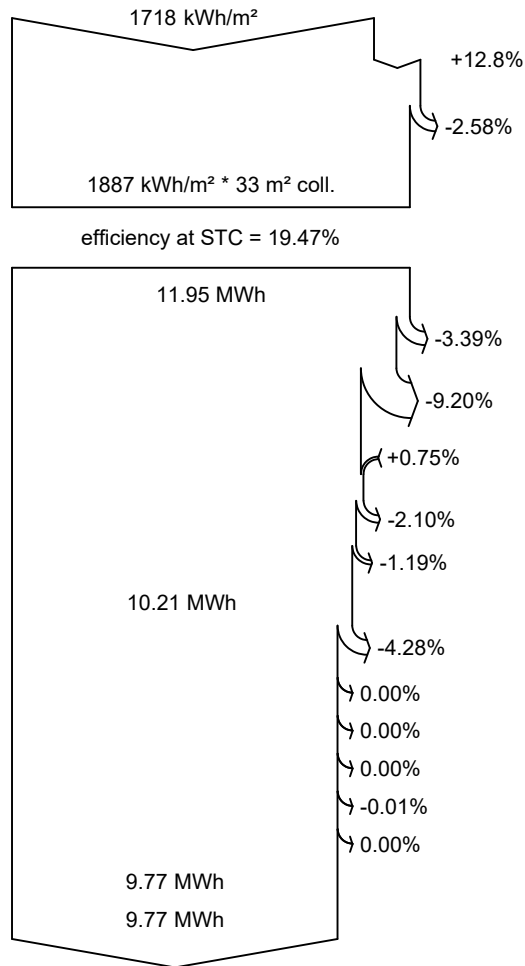
PR Performance Ratio



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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 effic.)

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

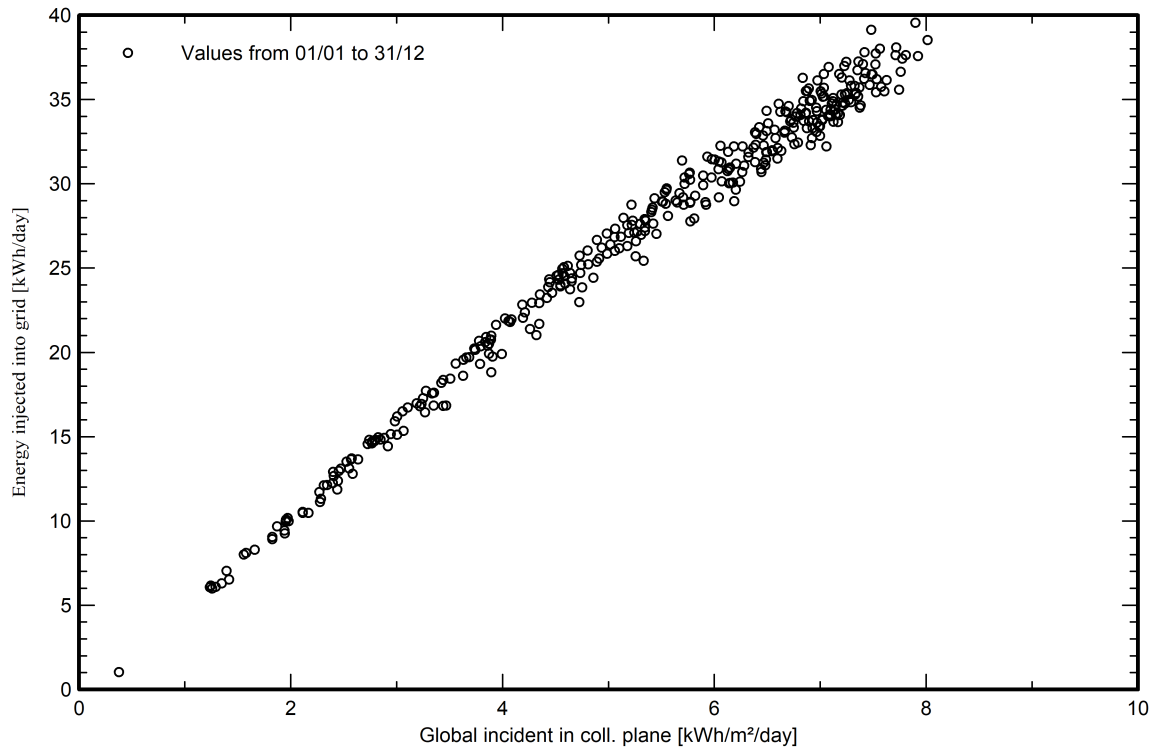


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Special graphs

Diagramme d'entrée/sortie journalier



Distribution de la puissance de sortie système

