

PVsyst - Simulation report

Standalone system

Project: tiny deep forest

Variant: Nouvelle variante de simulation

Standalone with back-up generator

System power: 1860 Wp

Chante-Cigale - France



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PVsyst V8.0.6

VC1, Simulation date:

30/01/25 13:04

with V8.0.6

Project summary

Geographical Site

Chante-Cigale
France

Situation

Latitude 44.59 °N
Longitude -1.08 °W
Altitude 23 m
Time zone UTC+1

Project settings

Albedo 0.20

Weather data

Chante-Cigale

Meteonorm 8.2 (2001-2020), Sat=33 % - Synthétique

System summary

Standalone system

Orientation #1

Fixed plane

Tilt/Azimuth 30 / 0 °

Standalone with back-up generator

User's needs

Daily household consumers

Constant over the year

Average 1.9 kWh/Day

System information

PV Array

Nb. of modules

Pnom total

6 units

1860 Wp

Battery pack

Technology

Nb. of units

Voltage

Capacity

Lead-acid, vented, vehicle starting

4 units

24 V

438 Ah

Results summary

Useful energy from solar	686.93 kWh/year	Specific production	369 kWh/kWp/year	Perf. Ratio PR	23.18 %
Missing Energy	0.00 kWh/year	Available solar energy	2500.40 kWh/year	Solar Fraction SF	100.00 %
Excess (unused)	1772.59 kWh/year				

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General parameters

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User's needs

Daily household consumers

Constant over the year

Average 1.9 kWh/Day

Standalone with back-up generator

Sheds configuration

No 3D scene defined

Models used

Transposition

Perez

Diffuse Perez, Meteonorm

Circumsolar separate

PV Array Characteristics

PV module

Manufacturer

Generic

Model AE 310M6-60 (1500)

(Original PVsyst database)

Unit Nom. Power 310 Wp

Number of PV modules 6 units

Nominal (STC) 1860 Wp

Modules 6 string x 1 In series

At operating cond. (50°C)

Pmpp 1686 Wp

U mpp 30 V

I mpp 56 A

Battery

Manufacturer

Generic

Model 3Q14 - Starting

Technology Lead-acid, vented, vehicle starting

Nb. of units 2 in parallel x 2 in series

Discharging min. SOC 20.0 %

Stored energy 8.4 kWh

Battery Pack Characteristics

Voltage 24 V

Nominal Capacity 438 Ah (C10)

Temperature Fixed 20 °C

Total PV power

Nominal (STC) 1.86 kWp

Total 6 modules

Module area 9.8 m²

Cell area 8.8 m²

Controller

Universal controller

Technology

MPPT converter

Temp coeff. -5.0 mV/°C/Elem.

Converter

Maxi and EURO efficiencies 97.0 / 95.0 %

Battery Management control

Threshold commands as SOC calculation

Charging SOC = 0.92 / 0.75

approx. 27.4 / 25.1 V

Discharging SOC = 0.20 / 0.45

approx. 23.6 / 24.4 V

Back-Up Genset Command SOC = 0.25/0.45

approx. 23.9 / 24.7 V

Back-up genset

Manufacturer

Generic

Model 3 kW

Nominal power 3.0 kW

Array losses

Thermal Loss factor

Module temperature according to irradiance

Uc (const) 20.0 W/m²K

Uv (wind) 0.0 W/m²K/m/s

Module Quality Loss

Loss Fraction -0.4 %

DC wiring losses

Global array res.

9.1 mΩ

Loss Fraction

1.5 % at STC

Module mismatch losses

Loss Fraction

0.0 % at MPP

Serie Diode Loss

Voltage drop

0.7 V

Loss Fraction

2.1 % at STC

Strings Mismatch loss

Loss Fraction

0.1 %



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Array losses

IAM loss factor

Incidence effect (IAM): Fresnel, AR coating, $n(\text{glass})=1.526$, $n(\text{AR})=1.290$

0°	30°	50°	60°	70°	75°	80°	85°	90°
1.000	0.999	0.987	0.963	0.892	0.814	0.679	0.438	0.000



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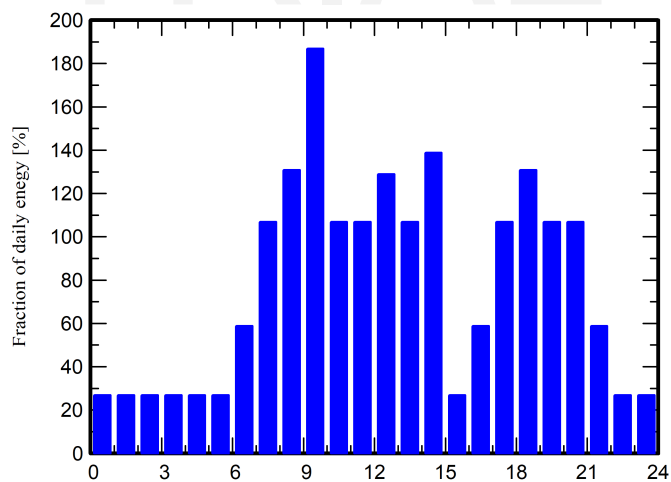
Detailed User's needs

Daily household consumers, Constant over the year, average = 1.9 kWh/day

Annual values

	Nb.	Power	Use	Energy
		W	Hour/day	Wh/day
Lampes (LED ou fluo)	8	6/lamp	7.0	336
TV / PC / Mobile	1	80/app	5.0	400
hotte	1	70/app	1.0	70
Frigo / Congélateur	1		24	500
lampe à uv	1		12	384
pompe à eau	1	48 tot	1.0	48
amplificateur 4G	1	5 tot	24.0	120
Consomm. de veille			24.0	24
Total daily energy				1882

Hourly distribution





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Main results

System Production

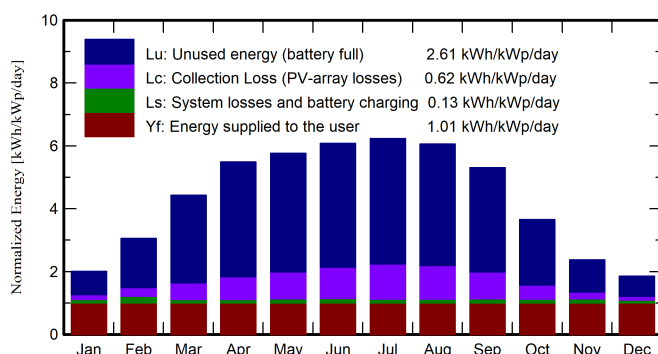
Useful energy from solar	686.93 kWh/year
Available solar energy	2500.40 kWh/year
Excess (unused)	1772.59 kWh/year
Back-Up energy from generator	
Back-Up energy	0.00 kWh/year
Fuel Consumption	0 liter/year

Perf. Ratio PR	23.18 %
Solar Fraction SF	100.00 %

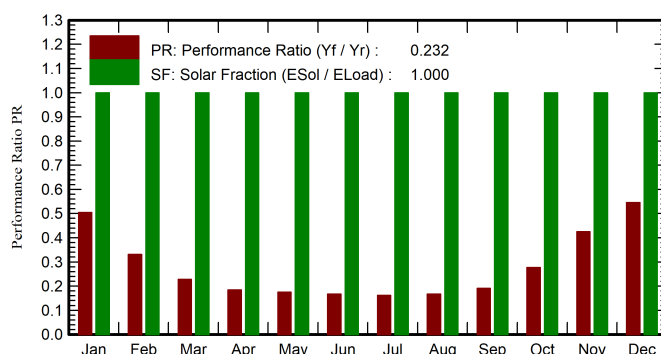
Battery aging (State of Wear)

Cycles SOW	88.7 %
Static SOW	80.0 %

Normalized productions (per installed kWp)



Performance Ratio PR



Balances and main results

	GlobHor kWh/m ²	GlobEff kWh/m ²	E_Avail kWh	EUnused kWh	E_BkUp kWh	E_User kWh	E_Load kWh	SolFrac ratio
January	38.0	61.0	102.6	42.4	0.00	58.3	58.3	1.000
February	60.4	83.9	141.5	81.1	0.00	52.7	52.7	1.000
March	107.2	134.5	221.5	160.2	0.00	58.3	58.3	1.000
April	148.0	160.7	263.0	203.2	0.00	56.5	56.5	1.000
May	177.2	174.4	279.0	217.0	0.00	58.3	58.3	1.000
June	187.3	178.0	279.5	219.0	0.00	56.5	56.5	1.000
July	194.6	188.7	291.1	229.7	0.00	58.3	58.3	1.000
August	173.1	183.8	284.6	223.0	0.00	58.3	58.3	1.000
September	129.8	155.7	244.9	184.7	0.00	56.5	56.5	1.000
October	82.8	110.9	181.3	119.2	0.00	58.3	58.3	1.000
November	45.8	70.0	116.0	56.7	0.00	56.5	56.5	1.000
December	35.2	56.3	95.4	36.4	0.00	58.3	58.3	1.000
Year	1379.6	1558.2	2500.4	1772.6	0.00	686.9	686.9	1.000

Legends

GlobHor	Global horizontal irradiation
GlobEff	Effective Global, corr. for IAM and shadings
E_Avail	Available Solar Energy
EUnused	Unused energy (battery full)
E_Miss	Missing energy

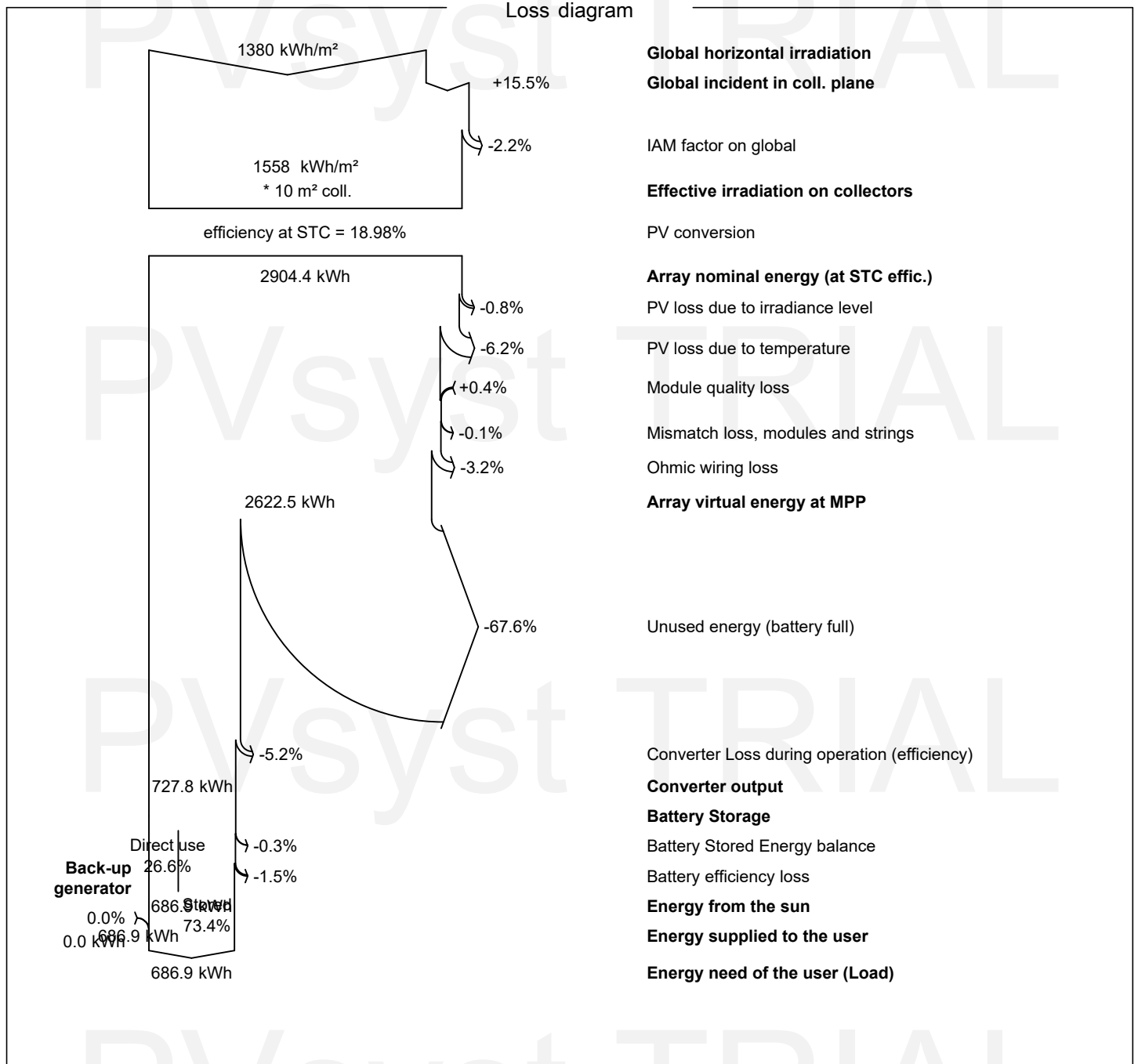
E_User	Energy supplied to the user
E_Load	Energy need of the user (Load)
SolFrac	Solar fraction (EUsed / ELoad)



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Loss diagram



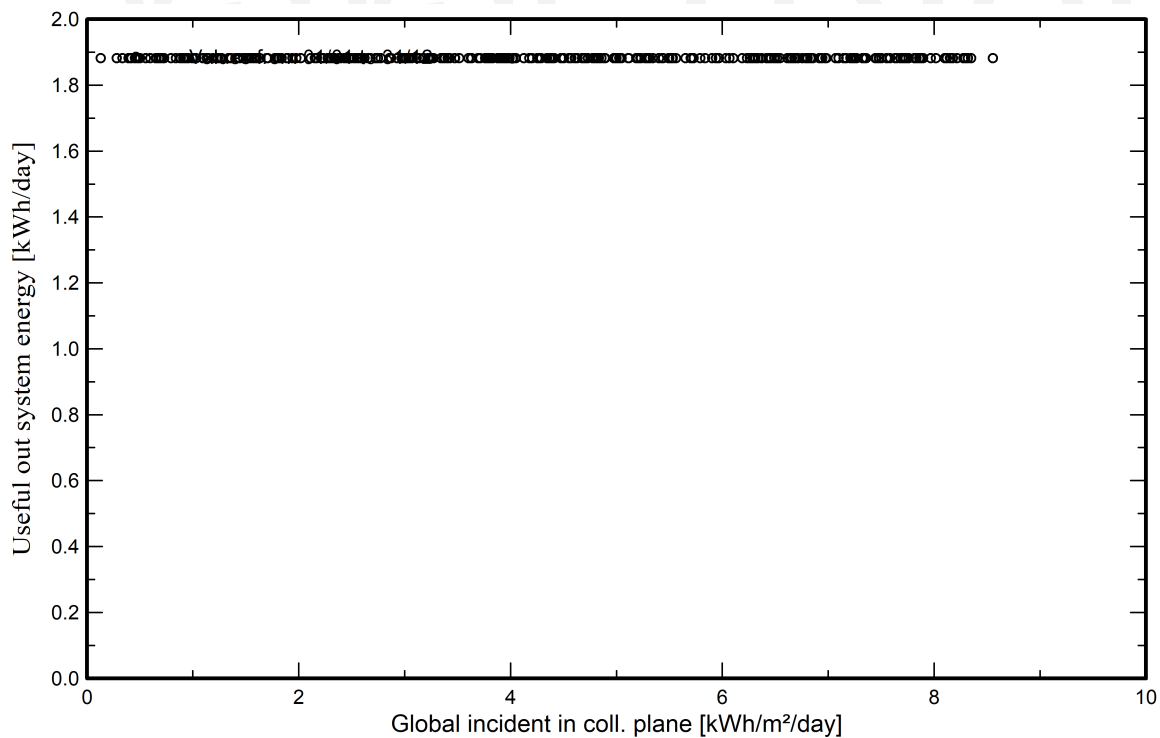


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Predef. graphs

Diagramme d'entrée/sortie journalier





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Cost of the system

Installation costs

Item	Quantity units	Cost EUR	Total EUR
		Total	0.00
		Depreciable asset	0.00

Operating costs

Item	Total
	EUR/year
Total (OPEX)	0.00

System summary

Total installation cost	0.00 EUR
Operating costs	0.00 EUR/year
Excess energy (battery full)	1773 kWh/year
Used solar energy	656 kWh/year
Used energy cost	0.0000 EUR/kWh