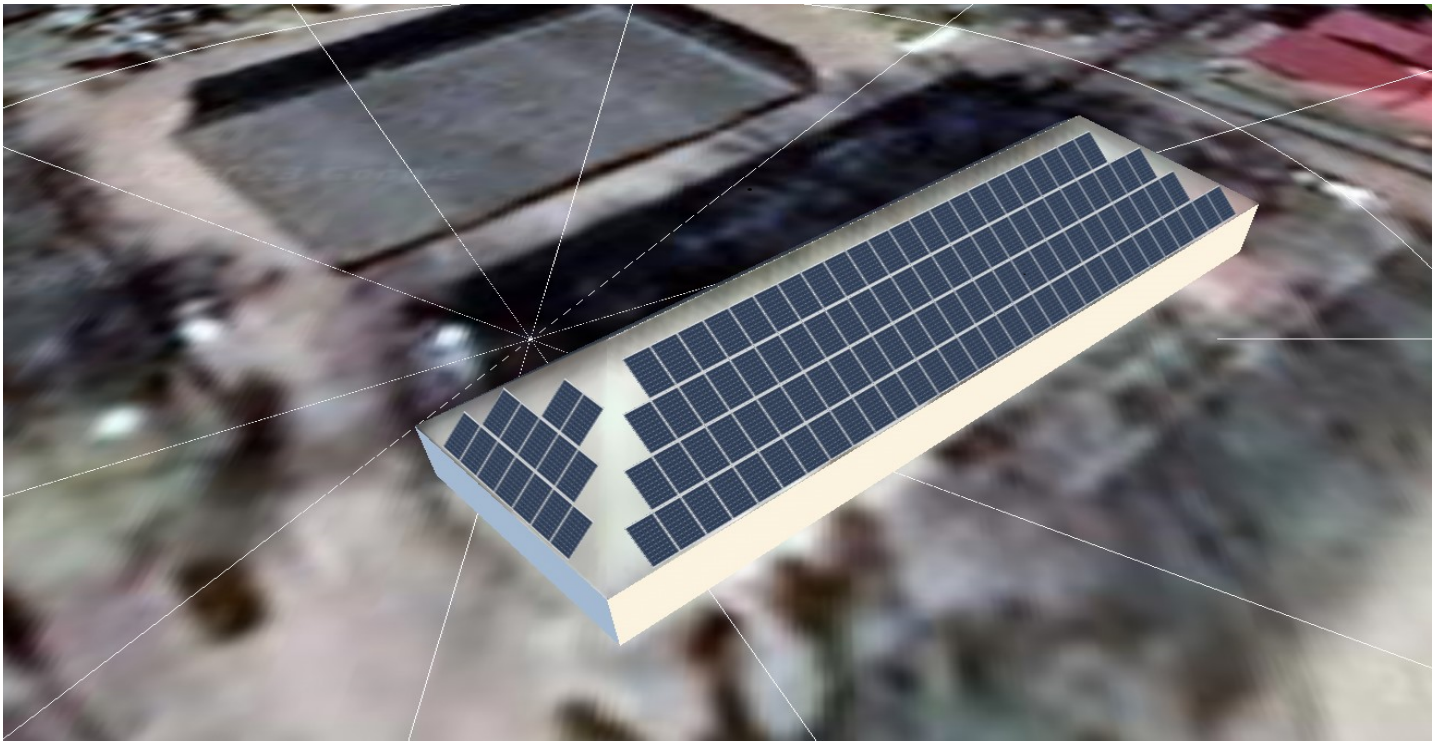
PVsyst - Simulation report

Grid-Connected System

Project: CEPV_Soroca_50kW

System power: 50.4 kWp

Soroca - Republic Of Moldova



Author

PVsyst V7.2.5
VC0, Simulation date:
11/07/23 14:36
with v7.2.5

Project summary

Geographical Site
Soroca
Republic Of Moldova

Situation

Latitude	48.15 °N
Longitude	28.28 °E
Altitude	244 m
Time zone	UTC+2

Project settings
Albedo 0.20

Meteo data
Soroca
Meteonorm 8.0 (1991-2014), Sat=100% - Synthetic

System summary

Grid-Connected System

Tables on a building

PV Field Orientation

Fixed planes	2 orientations
Tilts/azimuths	30 / -50 ° 30 / 40 °

Near Shadings
Linear shadings

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	84 units
Pnom total	50.4 kWp

Inverters

Nb. of units	1 Unit
Pnom total	50.0 kWac
Pnom ratio	1.008

Results summary

Produced Energy	61.80 MWh/year	Specific production	1226 kWh/kWp/year	Perf. Ratio PR	87.30 %

Table of contents

General parameters

Grid-Connected System

Tables on a building

PV Field Orientation

Orientation	
Fixed planes	2 orientations
Tilts/azimuths	30 / -50 ° 30 / 40 °

Sheds configuration	
Nb. of sheds	7 units
Averages of diff. arrays	
Sizes	
Sheds spacing	2.52 m
Collector width	5.55 m
Ground Cov. Ratio (GCR)	220.2 %
Shading limit angle	
Limit profile angle	129.5 °

Models used	
Transposition	Perez
Diffuse	Perez, Meteonorm
Circumsolar	separate

Horizon
Free Horizon

Near Shadings
Linear shadings

User's needs
Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer	Generic
Model	Yangtze Solar
(Custom parameters definition)	
Unit Nom. Power	600 Wp
Number of PV modules	84 units
Nominal (STC)	50.4 kWp
Modules	4 Strings x 21 In series
At operating cond. (50°C)	
Pmpp	45.3 kWp
U mpp	644 V
I mpp	70 A

Inverter

Manufacturer	Goodwe
Model	INVT_50kW
(Custom parameters definition)	
Unit Nom. Power	50.0 kWac
Number of inverters	4 * MPPT 25% 1 unit
Total power	50.0 kWac
Operating voltage	250-1000 V
Max. power (=>30°C)	55.0 kWac
Pnom ratio (DC:AC)	1.01

Total PV power

Nominal (STC)	50 kWp
Total	84 modules
Module area	240 m²
Cell area	139 m²

Total inverter power

Total power	50 kWac
Nb. of inverters	1 Unit
Pnom ratio	1.01

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.	154 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 %

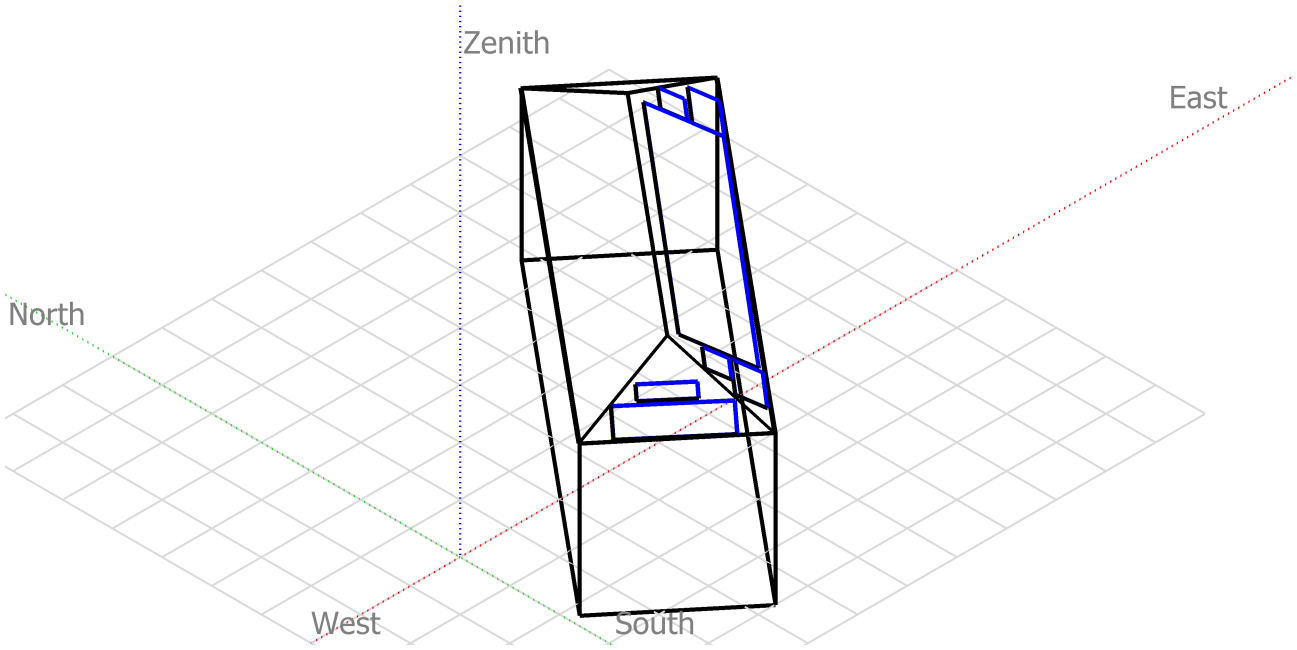
IAM loss factor

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

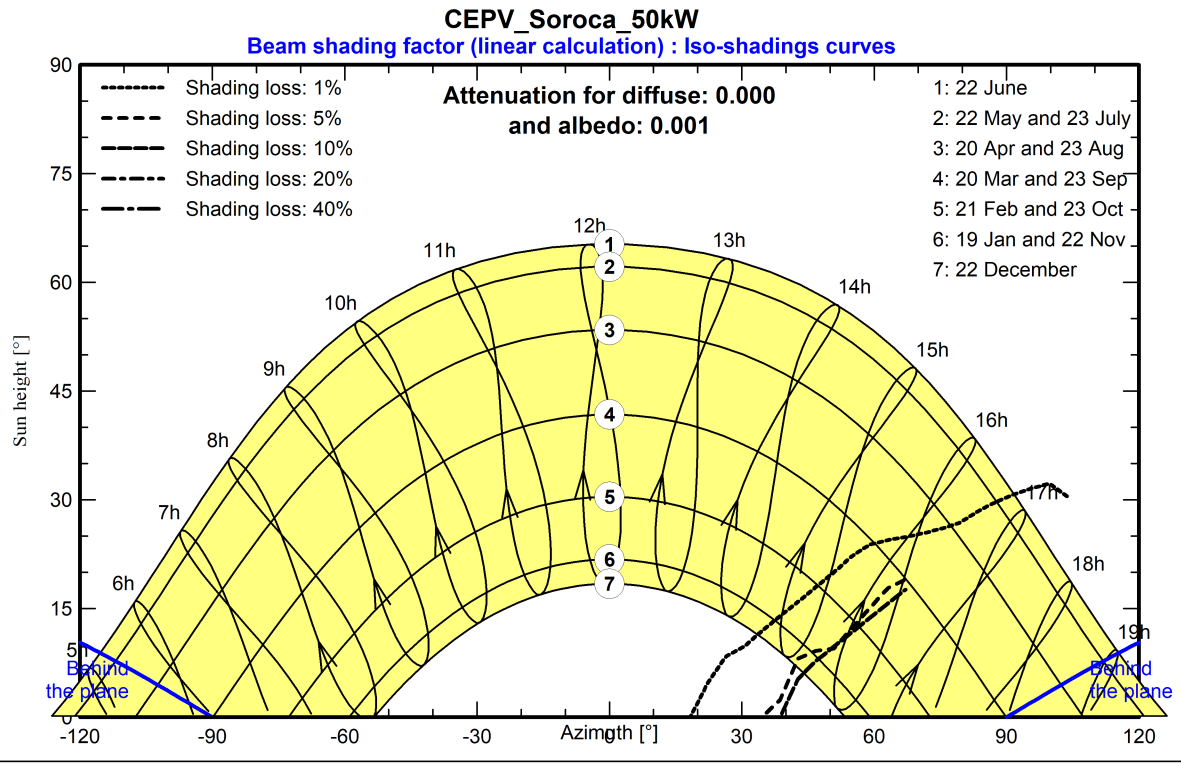
0°	30°	50°	60°	70°	75°	80°	85°	90°
1.000	0.999	0.987	0.962	0.892	0.816	0.681	0.440	0.000

Near shadings parameter

Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram

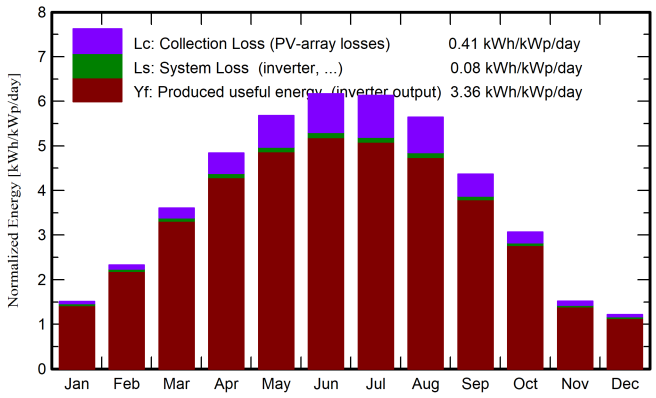


Main results

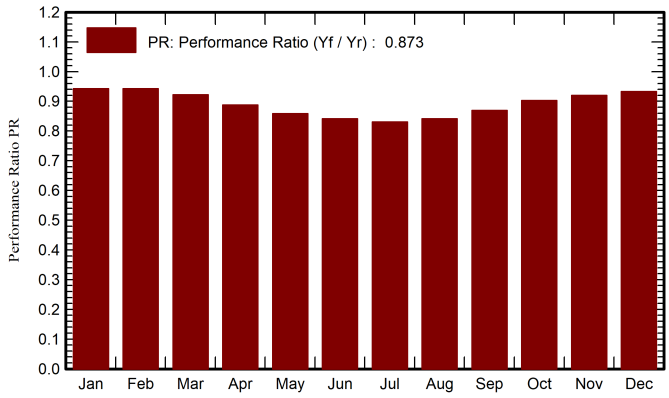
System Production

Produced Energy	61.80 MWh/year	Specific production	1226 kWh/kWp/year
		Performance Ratio PR	87.30 %

Normalized productions (per installed kWp)



Performance Ratio PR



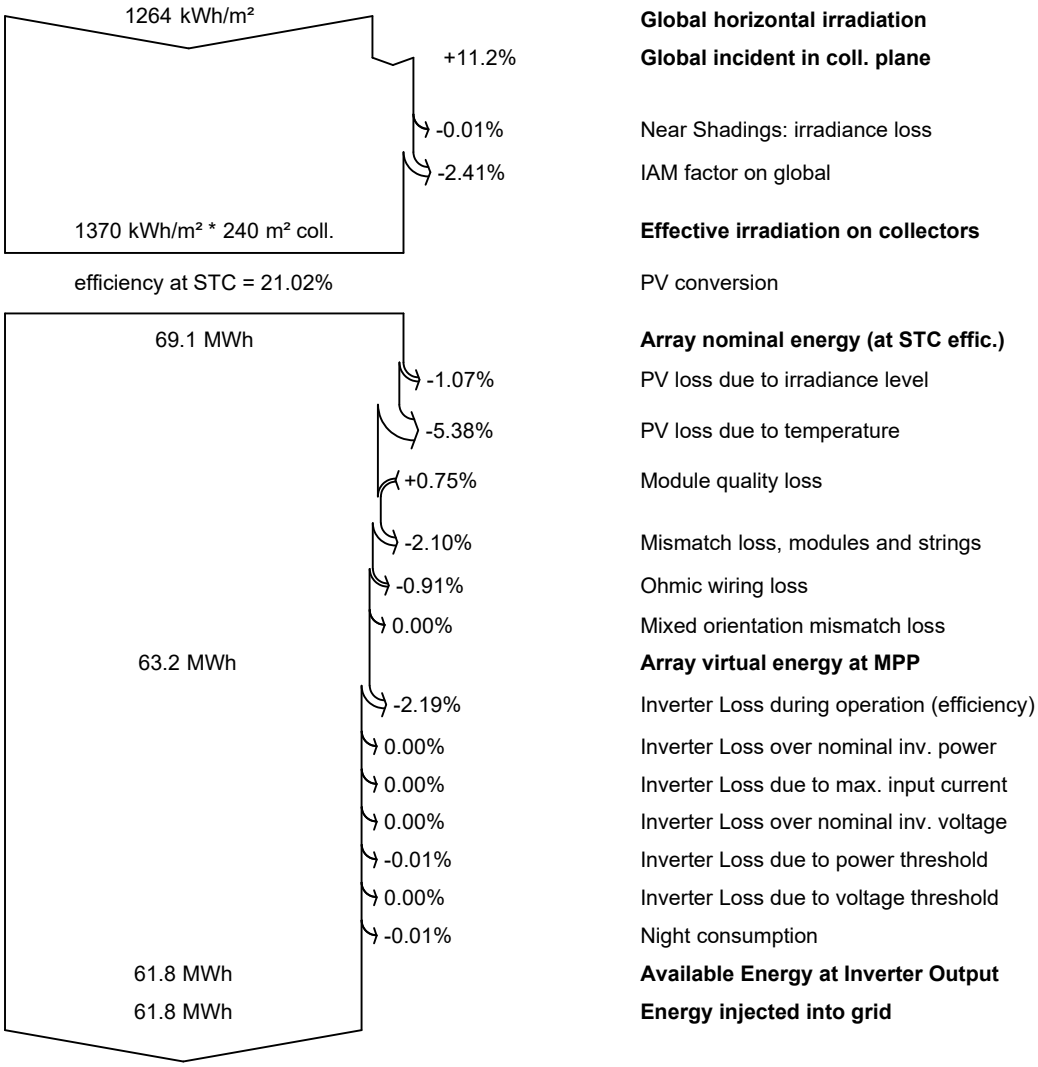
Balances and main results

	GlobHor kWh/m²	DiffHor kWh/m²	T_Amb °C	GlobInc kWh/m²	GlobEff kWh/m²	EArray MWh	E_Grid MWh	PR ratio
January	31.2	18.27	-2.34	46.9	45.5	2.291	2.229	0.943
February	47.6	25.70	-1.18	65.1	63.4	3.170	3.095	0.943
March	95.2	53.32	4.08	111.7	109.1	5.302	5.190	0.922
April	132.4	63.08	10.46	145.2	141.8	6.637	6.496	0.888
May	174.1	80.29	16.44	176.0	171.8	7.777	7.614	0.858
June	187.1	77.45	19.58	185.1	180.8	8.021	7.846	0.841
July	190.4	71.73	21.89	190.1	185.7	8.129	7.952	0.830
August	162.1	71.96	21.06	175.0	171.2	7.580	7.421	0.842
September	113.0	51.67	15.13	131.1	128.0	5.869	5.745	0.870
October	72.8	37.11	9.26	95.2	92.7	4.424	4.329	0.903
November	33.1	21.90	4.82	45.4	44.0	2.165	2.107	0.920
December	24.5	15.61	-0.38	37.8	36.4	1.831	1.775	0.933
Year	1263.5	588.08	9.96	1404.5	1370.5	63.196	61.799	0.873

Legends

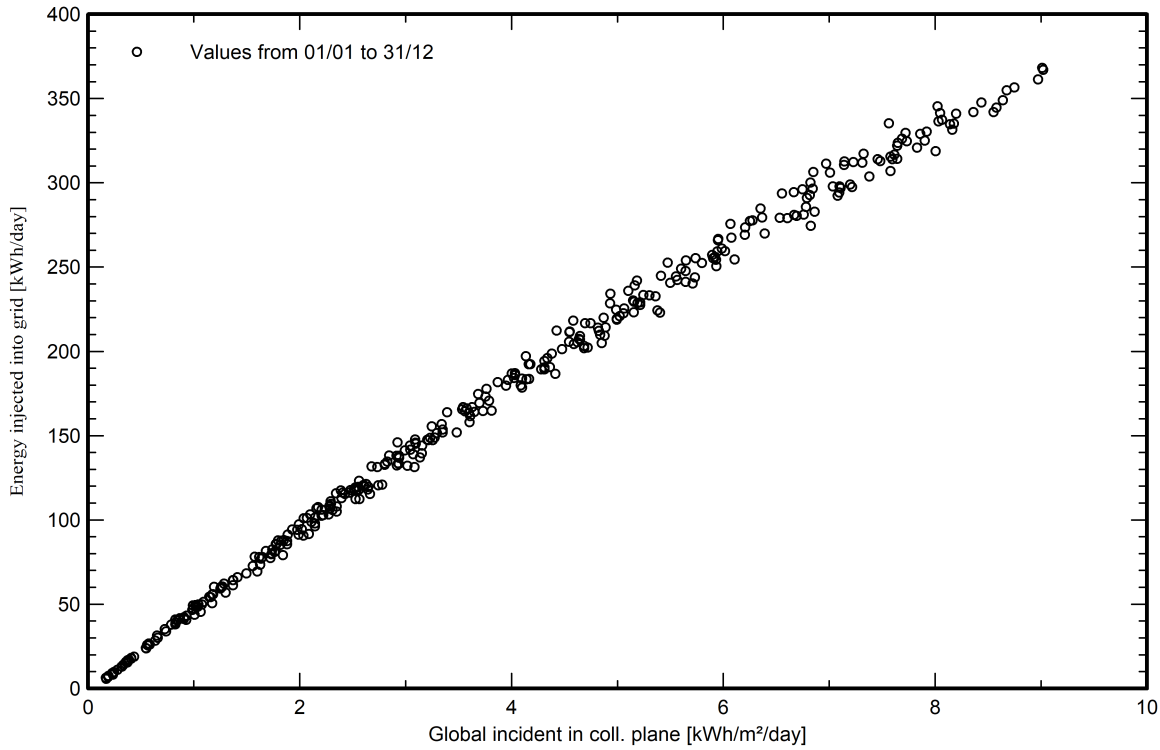
GlobHor	Global horizontal irradiation
DiffHor	Horizontal diffuse irradiation
T_Amb	Ambient Temperature
GlobInc	Global incident in coll. plane
GlobEff	Effective Global, corr. for IAM and shadings
EArray	Effective energy at the output of the array
E_Grid	Energy injected into grid
PR	Performance Ratio

Loss diagram



Special graphs

Daily Input/Output diagram



System Output Power Distribution