

PVSYST V6.81			01/01/20			Page 1/5		
Grid-Connected System: Simulation parameters								
Project :		Isfahan Uni						
Geographical Site		Isfahan University			Country		Iran	
Situation		Latitude		32.62° N		Longitude		51.66° E
Time defined as		Legal Time		Time zone UT+3.5		Altitude		1596 m
		Albedo		0.20				
Meteo data:		Isfahan University		Meteonorm 7.2 (1985-2002), Sat=100% - Synthetic				
Simulation variant :		New simulation variant						
		Simulation date		01/01/20 23h05				
Simulation parameters		System type		Tables on a building				
Collector Plane Orientation		Tilt		32°		Azimuth		0°
Sheds configuration		Nb. of sheds		4				
		Sheds spacing		4.81 m		Collector width		3.29 m
Shading limit angle		Limit profile angle		40.9°		Ground cov. Ratio (GCR)		68.4 %
Models used		Transposition		Perez		Diffuse		Perez, Meteonorm
Horizon		Free Horizon						
Near Shadings		Linear shadings						
User's needs :		Unlimited load (grid)						
PV Array Characteristics								
PV module		Si-mono		Model		SSF-PM72		
Custom parameters definition		Manufacturer		Solar Sanat Firoozeh				
Number of PV modules		In series		18 modules		In parallel		6 strings
Total number of PV modules		Nb. modules		108		Unit Nom. Power		370 Wp
Array global power		Nominal (STC)		40.0 kWp		At operating cond.		37.1 kWp (50°C)
Array operating characteristics (50°C)		U mpp		689 V		I mpp		54 A
Total area		Module area		210 m²				
Inverter		Model		Powador 48.0 TL3 Park M				
Original PVsyst database		Manufacturer		Kaco new energy				
Characteristics		Operating Voltage		200-800 V		Unit Nom. Power		40.0 kWac
Inverter pack		Nb. of inverters		3 * MPPT 33 %		Total Power		40 kWac
						Pnom ratio		1.00
PV Array loss factors								
Thermal Loss factor		Uc (const)		20.0 W/m²K		Uv (wind)		0.0 W/m²K / m/s
Wiring Ohmic Loss		Global array res.		209 mOhm		Loss Fraction		1.5 % at STC
Module Quality Loss						Loss Fraction		-0.8 %
Module Mismatch Losses						Loss Fraction		1.0 % at MPP
Strings Mismatch loss						Loss Fraction		0.10 %
Incidence effect, ASHRAE parametrization		IAM =		1 - bo (1/cos i - 1)		bo Param.		0.05

Grid-Connected System: Near shading definition

Project : Isfahan Uni

Simulation variant : New simulation variant

Main system parameters

System type

Tables on a building

Near Shadings

PV Field Orientation

PV modules

PV Array

Inverter

User's needs

Linear shadings

tilt

32°

azimuth

0°

Model

SSF-PM72

Pnom

370 Wp

Nb. of modules

108

Pnom total

40.0 kWp

Model

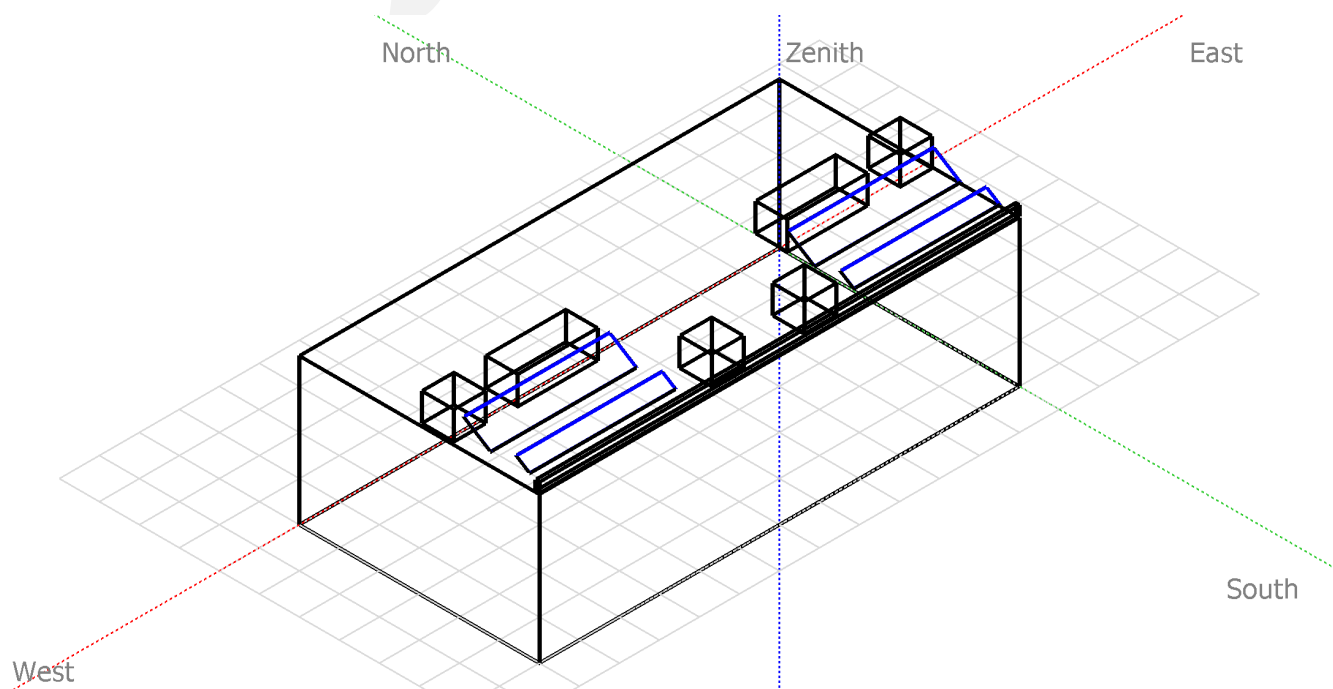
Powador 48.0 TL3 Park M

Pnom

40.0 kW ac

Unlimited load (grid)

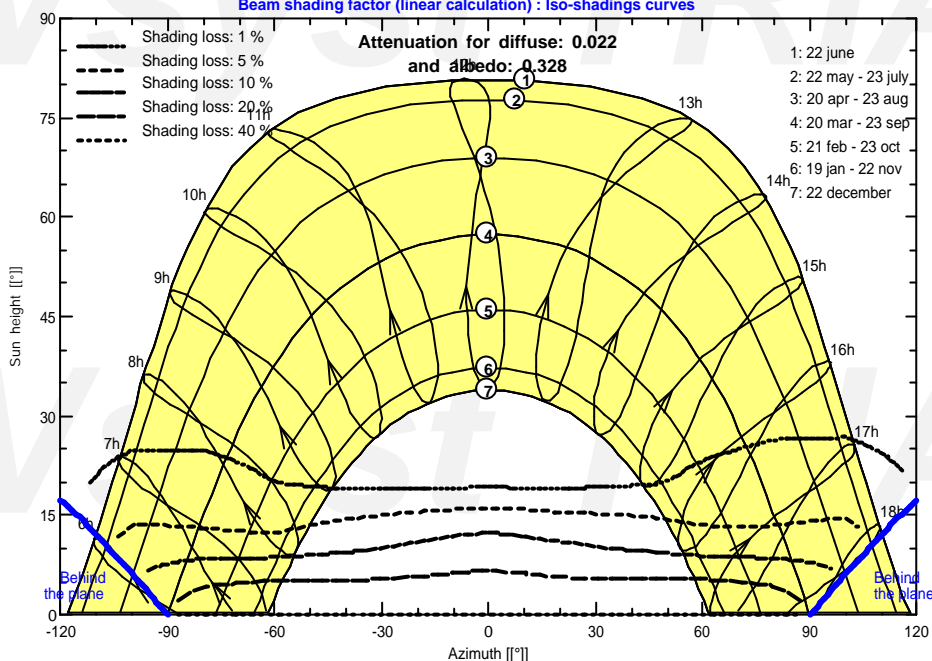
Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram

Isfahan Uni

Beam shading factor (linear calculation) : Iso-shadings curves



Grid-Connected System: Main results

Project : Isfahan Uni
Simulation variant : New simulation variant

Main system parameters

System type

Tables on a building

Near Shadings

Linear shadings

PV Field Orientation

tilt

32°

azimuth

0°

PV modules

Model

SSF-PM72

Pnom

370 Wp

PV Array

Nb. of modules

108

Pnom total

40.0 kWp

Inverter

Model

Powador 48.0 TL3 Park M

Pnom

40.0 kW ac

User's needs

Unlimited load (grid)

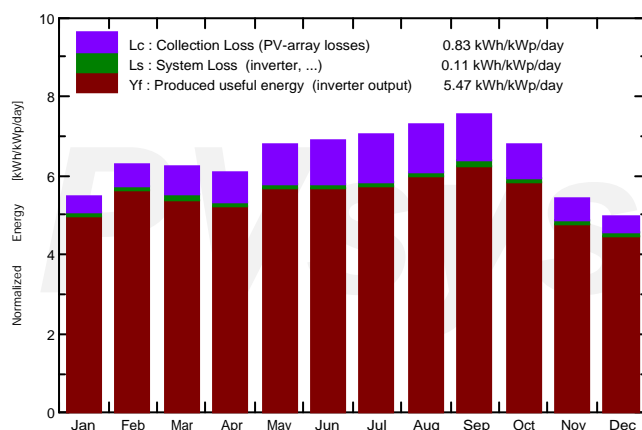
Main simulation results

System Production

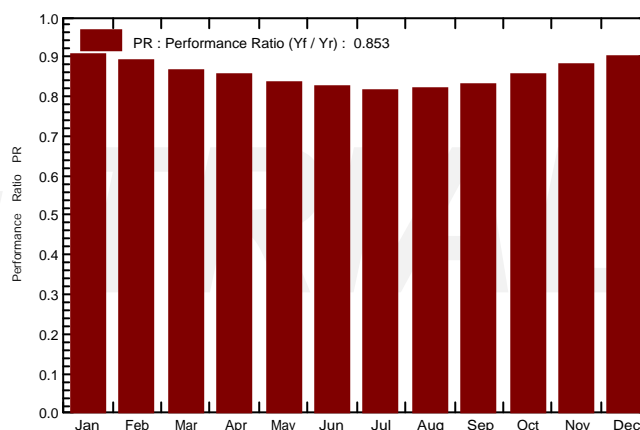
Produced Energy 79.76 MWh/year
Performance Ratio PR 85.34 %

Specific prod. 1996 kWh/kWp/year

Normalized productions (per installed kWp): Nominal power 40.0 kWp



Performance Ratio PR



New simulation variant

Balances and main results

	GlobHor kWh/m ²	DiffHor kWh/m ²	T_Amb °C	GlobInc kWh/m ²	GlobEff kWh/m ²	EArray MWh	E_Grid MWh	PR
January	106.6	27.03	1.77	169.7	164.0	6.285	6.159	0.908
February	126.0	31.61	5.57	176.6	170.9	6.420	6.292	0.891
March	162.9	49.59	11.22	192.9	185.9	6.826	6.692	0.868
April	178.0	62.27	16.11	183.0	175.3	6.373	6.251	0.855
May	224.1	63.21	21.92	210.7	201.7	7.188	7.048	0.837
June	233.1	61.16	26.77	207.3	198.1	6.954	6.821	0.824
July	240.1	61.29	30.00	218.3	208.9	7.241	7.102	0.814
August	226.1	55.81	28.24	226.3	217.4	7.548	7.405	0.819
September	198.0	39.43	23.30	226.2	218.1	7.648	7.501	0.830
October	156.4	32.23	17.33	210.9	204.3	7.342	7.200	0.854
November	107.2	30.27	8.75	162.9	157.2	5.852	5.738	0.881
December	94.5	27.54	3.75	154.1	148.6	5.666	5.552	0.901
Year	2052.8	541.42	16.29	2338.9	2250.4	81.342	79.760	0.853

Legends:

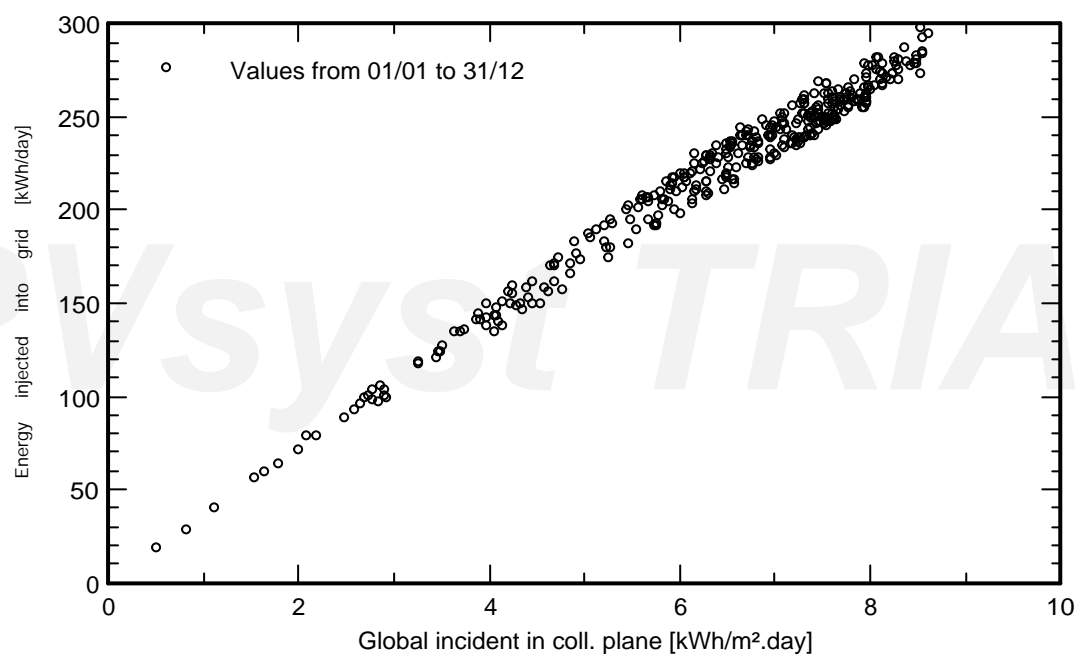
GlobHor	Horizontal global irradiation	GlobEff	Effective Global, corr. for IAM and shadings
DiffHor	Horizontal diffuse irradiation	EArray	Effective energy at the output of the array
T_Amb	Ambient Temperature	E_Grid	Energy injected into grid
GlobInc	Global incident in coll. plane	PR	Performance Ratio

Grid-Connected System: Special graphs

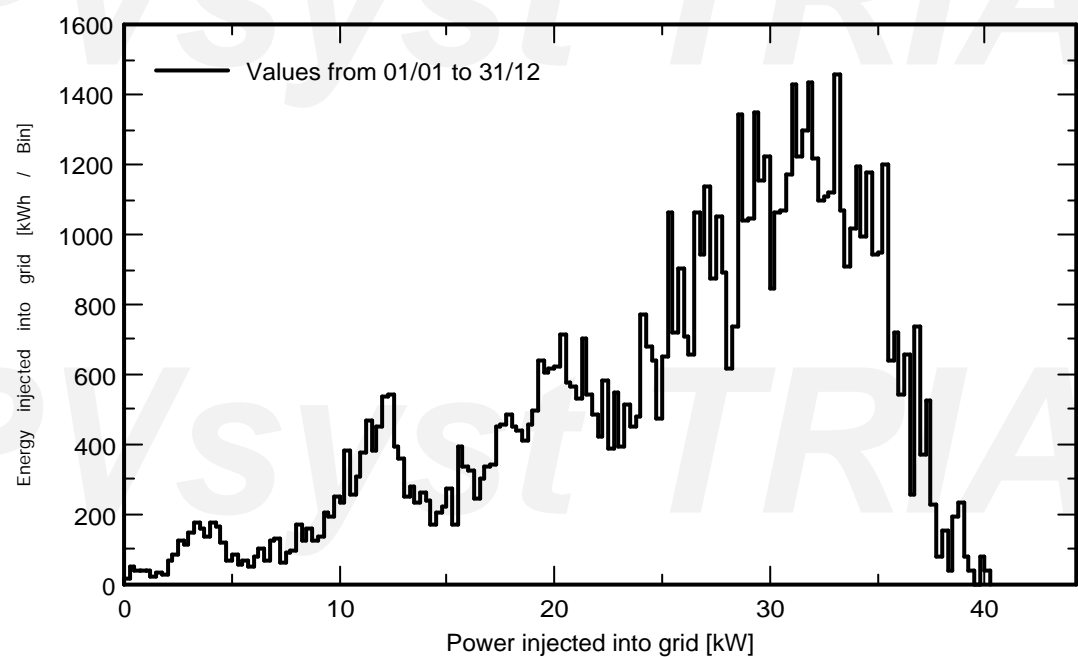
Project : Isfahan Uni
Simulation variant : New simulation variant

Main system parameters	System type	Tables on a building			
Near Shadings	Linear shadings				
PV Field Orientation	tilt	32°	azimuth	0°	
PV modules	Model	SSF-PM72	Pnom	370 Wp	
PV Array	Nb. of modules	108	Pnom total	40.0 kWp	
Inverter	Model	Powador 48.0 TL3 Park M	Pnom	40.0 kW ac	
User's needs	Unlimited load (grid)				

Daily Input/Output diagram



System Output Power Distribution



Grid-Connected System: Loss diagram

Project : Isfahan Uni

Simulation variant : New simulation variant

Main system parameters

System type

Tables on a building

Near Shadings

PV Field Orientation

PV modules

PV Array

Inverter

User's needs

Linear shadings

tilt

32°

azimuth 0°

Model SSF-PM72

Pnom 370 Wp

Nb. of modules 108

Pnom total **40.0 kWp**

Model Powador 48.0 TL3 Park M

Pnom 40.0 kW ac

Unlimited load (grid)

Loss diagram over the whole year

