Grid-Connected System: Simulation parameters

Project : **4kW Grid Tied Solar Plant - Krishna Nagar**

Geographical Site	**Indira Gandhi/Delhi**		Country	**India**
Situation	Latitude	26.42° N	Longitude	80.39° E
Time defined as	Legal Time	Time zone UT+5.5	Altitude	0 m
	Albedo	0.20		
Meteo data:	**Indira Gandhi/Delhi**	Meteonorm 7.2 (2001-2010), Sat=100% - Synthetic		

Simulation variant : **New simulation variant**

Simulation date 06/07/25 17h40

Simulation parameters	System type	**No 3D scene defined, no shadings**		
Collector Plane Orientation	Tilt	15°	Azimuth	0°
Models used	Transposition	Perez	Diffuse	Perez, Meteonorm
Horizon	Free Horizon			
Near Shadings	No Shadings			
User's needs :	Unlimited load (grid)			

PV Array Characteristics

PV module	Si-mono	Model	**LR4-72 HBD 450 M G2 Bifacial**	
Original PVsyst database		Manufacturer	Longi Solar	
Number of PV modules		In series	8 modules	In parallel 1 strings
Total number of PV modules		Nb. modules	8	Unit Nom. Power 450 Wp
Array global power		Nominal (STC)	**3600 Wp**	At operating cond. 3285 Wp (50°C)
Array operating characteristics (50°C)		U mpp	299 V	I mpp 11 A
Total area		Module area	**17.4 m²**	Cell area 15.9 m²

Inverter		Model	**EHC-S55MP3B-PNJ**	
Custom parameters definition		Manufacturer	Tabuchi Electric	
Characteristics		Operating Voltage	80-450 V	Unit Nom. Power 5.50 kWac
Inverter pack		Nb. of inverters	1 units	Total Power 5.5 kWac
				Pnom ratio 0.65

PV Array loss factors

Array Soiling Losses			Loss Fraction	2.0 %
Thermal Loss factor	Uc (const)	20.0 W/m²K	Uv (wind)	0.0 W/m²K / m/s
Wiring Ohmic Loss	Global array res.	300 mOhm	Loss Fraction	1.0 % at STC
Module Quality Loss			Loss Fraction	-0.4 %
Module Mismatch Losses			Loss Fraction	2.0 % at MPP
Strings Mismatch loss			Loss Fraction	0.10 %

Incidence effect (IAM): User defined profile

0°	25°	45°	60°	65°	70°	75°	80°	90°
1.000	1.000	0.995	0.962	0.936	0.903	0.851	0.754	0.000

System loss factors

Wiring Ohmic Loss	Wires: 2x2.5 mm²	8 m	Loss Fraction	1.0 % at STC

Grid-Connected System: Main results

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Simulation variant : **New simulation variant**

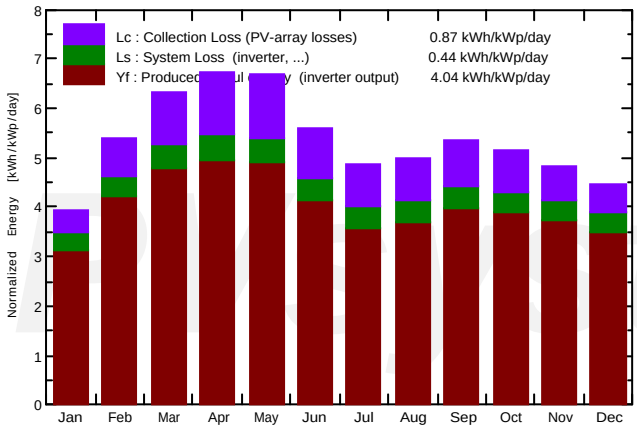
Main system parameters	System type	**No 3D scene defined, no shadings**		
PV Field Orientation	tilt	15°	azimuth	0°
PV modules	Model	LR4-72 HBD 450 M G2 Bifacial		450 Wp
PV Array	Nb. of modules	8	Pnom total	**3600 Wp**
Inverter	Model	EHC-S55MP3B-PNJ	Pnom	5.50 kW ac
User's needs	Unlimited load (grid)			

Main simulation results

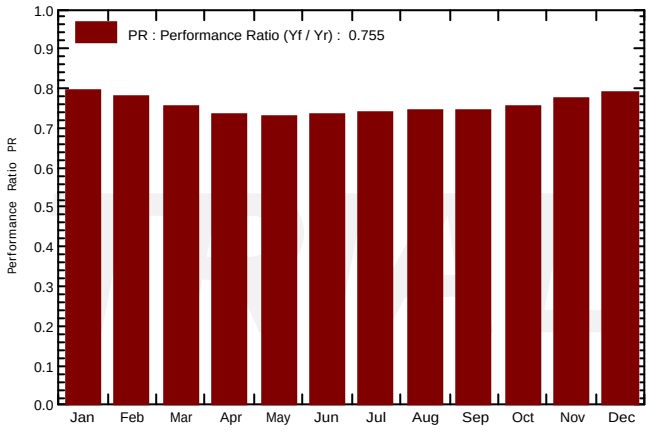
System Production **Produced Energy** **5.31 MWh/year** Specific prod. 1476 kWh/kWp/year

Performance Ratio PR 75.51 %

Normalized productions (per installed kWp): Nominal power 3600 Wp



Performance Ratio PR



New simulation variant

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
January	102.3	52.7	14.52	122.1	116.8	0.388	0.349	0.793
February	130.1	50.7	18.71	151.3	145.2	0.468	0.424	0.779
March	178.5	66.7	24.43	195.9	188.1	0.587	0.533	0.756
April	195.3	80.0	29.95	201.6	193.4	0.590	0.535	0.737
May	210.8	90.5	32.33	207.6	198.8	0.604	0.547	0.732
June	174.1	98.0	31.49	168.1	160.4	0.496	0.446	0.737
July	155.4	90.6	30.06	150.7	143.8	0.448	0.401	0.739
August	154.3	100.8	29.55	154.1	147.0	0.462	0.415	0.747
September	151.3	68.8	28.44	160.9	154.1	0.479	0.432	0.746
October	142.4	68.5	26.16	159.8	153.2	0.482	0.435	0.757
November	119.3	48.2	20.60	144.4	138.4	0.446	0.403	0.776
December	110.0	46.1	16.41	137.8	131.9	0.435	0.392	0.791
Year	1823.9	861.6	25.25	1954.3	1870.9	5.886	5.312	0.755

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	T amb.	E_Grid	Energy injected into grid
GlobInc	Global incident in coll. plane	PR	Performance Ratio

Grid-Connected System: Special graphs

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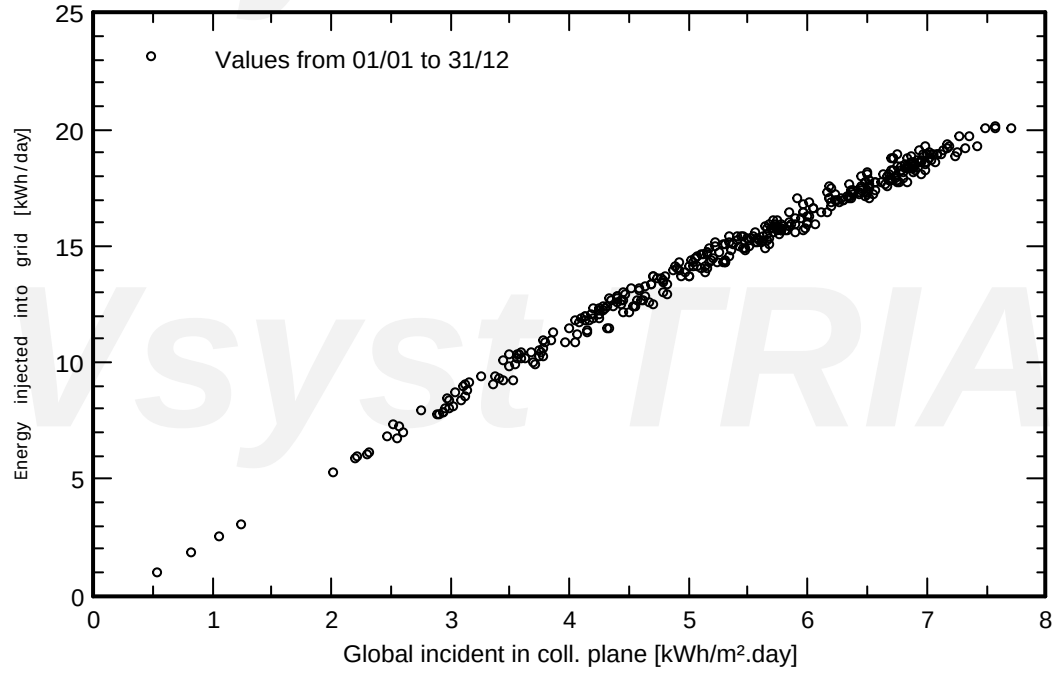
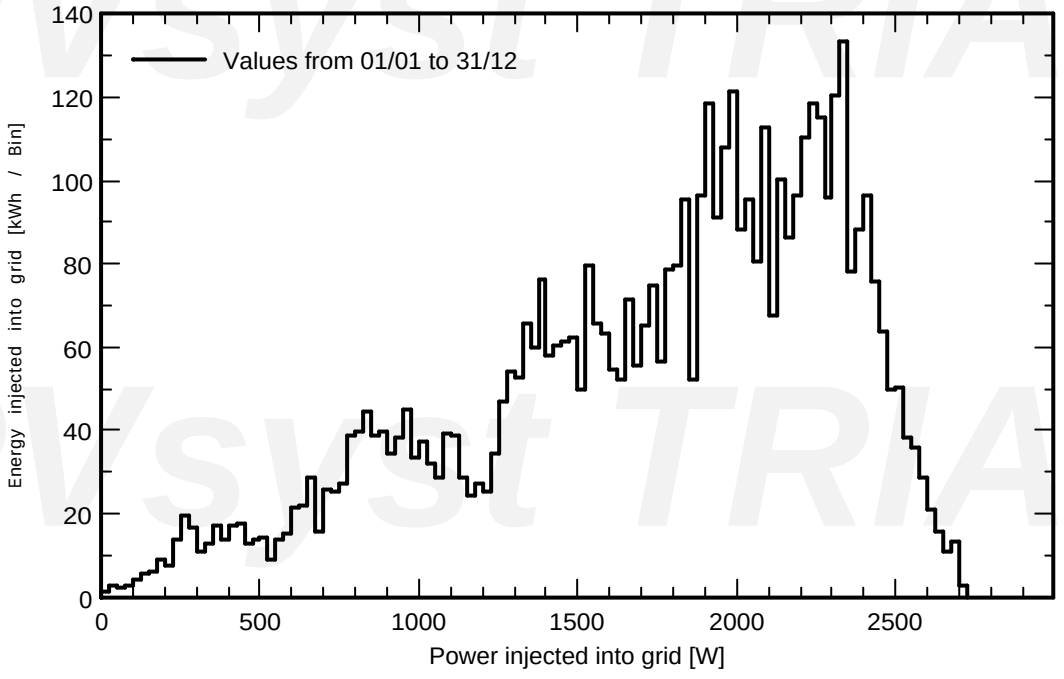
Daily Input/Output diagram



System Output Power Distribution



Grid-Connected System: Loss diagram

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Loss diagram over the whole year