Version 7.4.6

PVsyst - Simulation report

Grid-Connected System

Project: Saha Farm

Variant: 04

No 3D scene defined, no shadings

System power: 400 kWp

Ban Nong Bua Thong - Thailand

Author

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Project summary

Geographical Site
Ban Nong Bua Thong
Thailand

Situation

Latitude	15.53 °N
Longitude	101.13 °E
Altitude	58 m
Time zone	UTC+7

Project settings
Albedo 0.20

Weather data
Ban Nong Bua Thong
Meteonorm 8.1 (1996-2015), Sat=100% - Synthetic

System summary

Grid-Connected System

No 3D scene defined, no shadings

PV Field Orientation

Fixed planes	2 orientations
Tilts/azimuths	20 / -5 ° 20 / 175 °

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	576 units
Pnom total	400 kWp

Inverters

Nb. of units	7 units
Pnom total	350 kWac
Pnom ratio	1.144

Results summary

Produced Energy	498775 kWh/year	Specific production	1246 kWh/kWp/year	Perf. Ratio PR	74.98 %

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General parameters

Grid-Connected System — **No 3D scene defined, no shadings**

PV Field Orientation

Orientation		Sheds configuration	Models used	
Fixed planes	2 orientations	No 3D scene defined	Transposition	Perez
Tilts/azimuths	20 / -5 ° 20 / 175 °		Diffuse	Perez, Meteonorm
			Circumsolar	separate

Horizon
Free Horizon

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer	Generic
Model	CS7N-695TB-AG 1500V
(Original PVsyst database)	
Unit Nom. Power	695 Wp
Number of PV modules	576 units
Nominal (STC)	400 kWp
Modules	36 string x 16 In series
At operating cond. (50°C)	
Pmpp	371 kWp
U mpp	585 V
I mpp	634 A

Inverter

Manufacturer	Generic
Model	SUN2000-50KTL-M3-400V
(Original PVsyst database)	
Unit Nom. Power	50.0 kWac
Number of inverters	7 units
Total power	350 kWac
Operating voltage	200-1000 V
Max. power (=>35°C)	55.0 kWac
Pnom ratio (DC:AC)	1.14
Power sharing within this inverter	

Total PV power

Nominal (STC)	400 kWp
Total	576 modules
Module area	1789 m²

Total inverter power

Total power	350 kWac
Max. power	385 kWac
Number of inverters	7 units
Pnom ratio	1.14

Array losses

Array Soiling Losses
Loss Fraction 6.9 %

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. 15 mΩ
Loss Fraction 1.5 % at STC

LID - Light Induced Degradation
Loss Fraction 3.0 %

Module Quality Loss
Loss Fraction 2.0 %

Module mismatch losses
Loss Fraction 2.0 % at MPP

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

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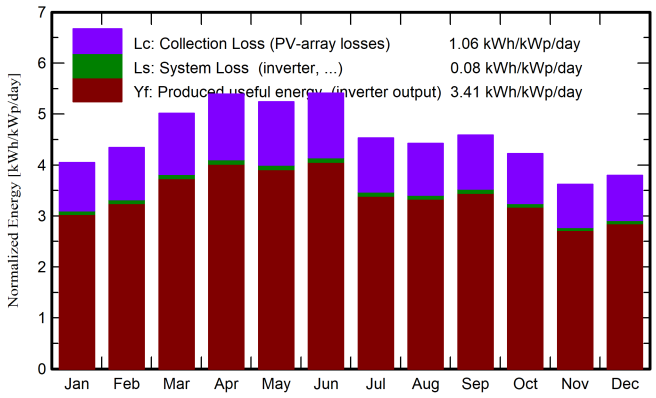
Main results

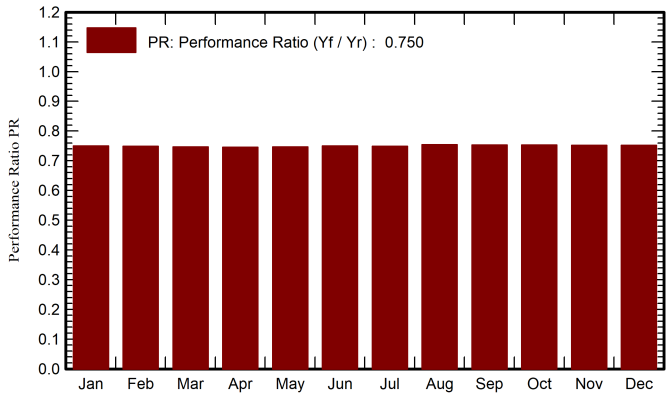
System Production

Produced Energy	498775 kWh/year	Specific production	1246 kWh/kWp/year
		Perf. Ratio PR	74.98 %

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 kWh	E_Grid kWh	PR ratio
January	130.2	60.14	25.50	125.5	112.9	38499	37679	0.750
February	126.1	71.13	27.66	121.5	109.9	37239	36441	0.749
March	161.3	91.31	29.68	155.4	141.0	47446	46423	0.746
April	167.8	90.79	30.16	161.6	147.2	49360	48271	0.746
May	168.9	85.21	29.72	162.5	147.6	49650	48561	0.746
June	168.7	82.29	28.90	162.4	147.6	49839	48749	0.750
July	146.2	76.11	28.80	140.5	127.5	43096	42143	0.749
August	142.6	85.23	28.37	137.2	124.6	42345	41429	0.754
September	143.0	74.73	27.66	137.6	124.7	42387	41470	0.753
October	135.9	80.26	28.09	130.9	118.5	40334	39471	0.753
November	112.9	64.34	26.54	108.7	97.8	33409	32694	0.752
December	122.1	61.77	25.50	117.7	105.7	36206	35445	0.752
Year	1726.0	923.31	28.05	1661.6	1505.0	509809	498775	0.750

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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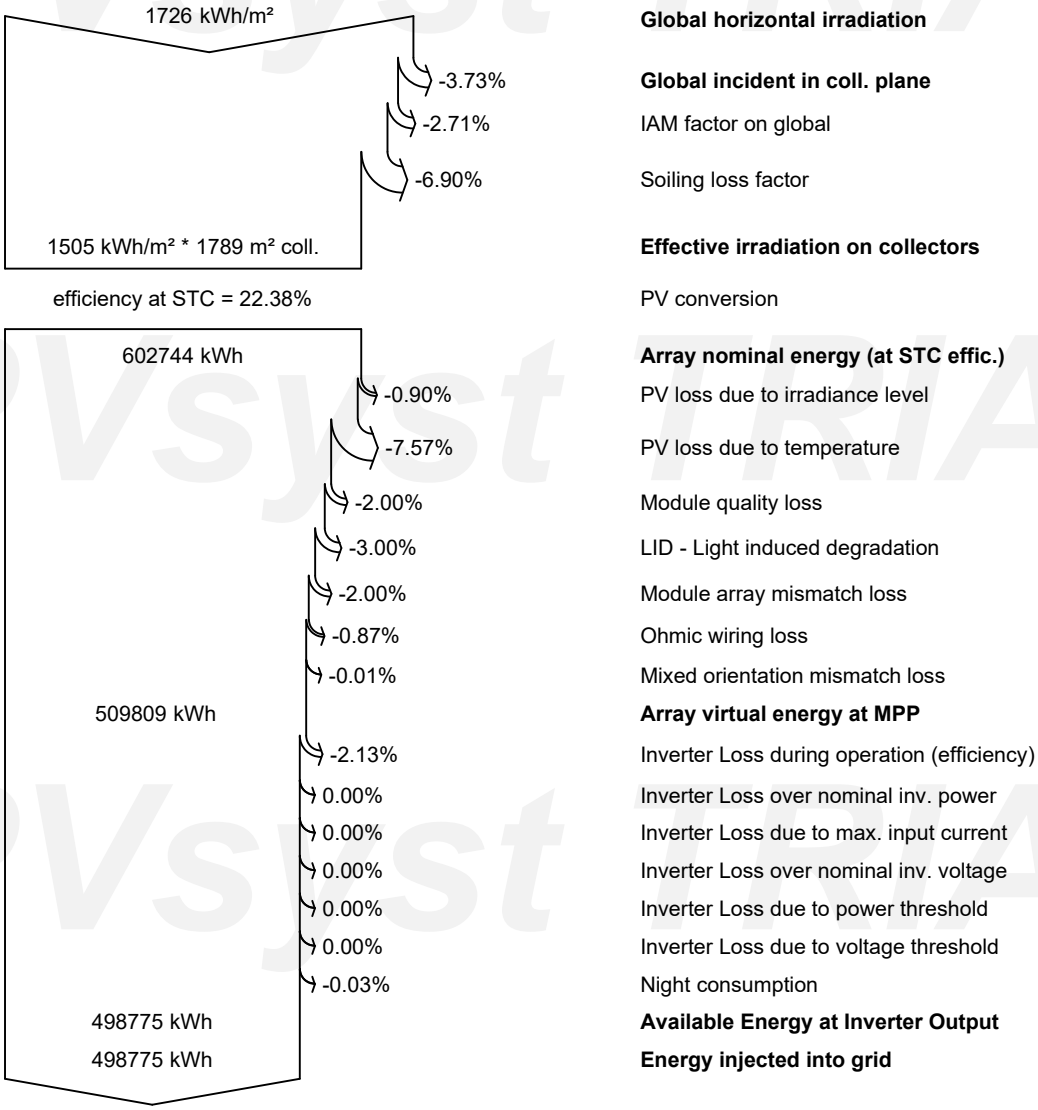
Loss diagram



Global horizontal irradiation
Global incident in coll. plane
IAM factor on global
Soiling loss factor
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
LID - Light induced degradation
Module array mismatch loss
Ohmic wiring loss
Mixed orientation mismatch 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
Night consumption
Available Energy at Inverter Output
Energy injected into grid

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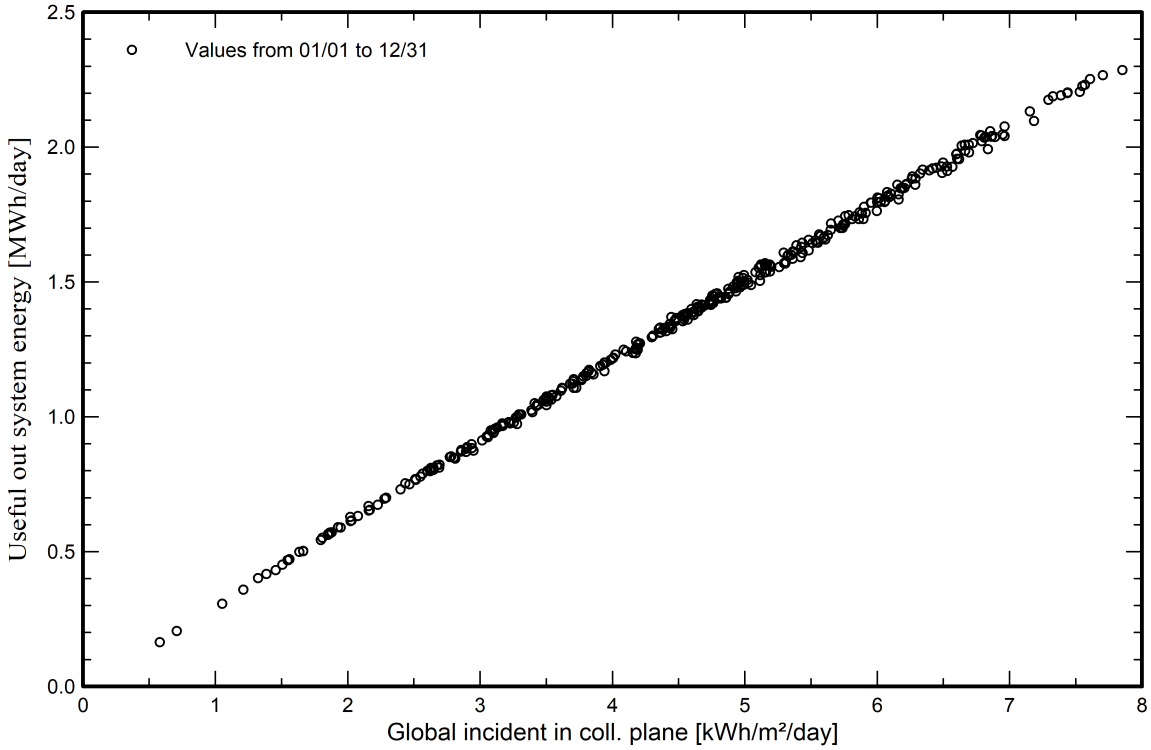
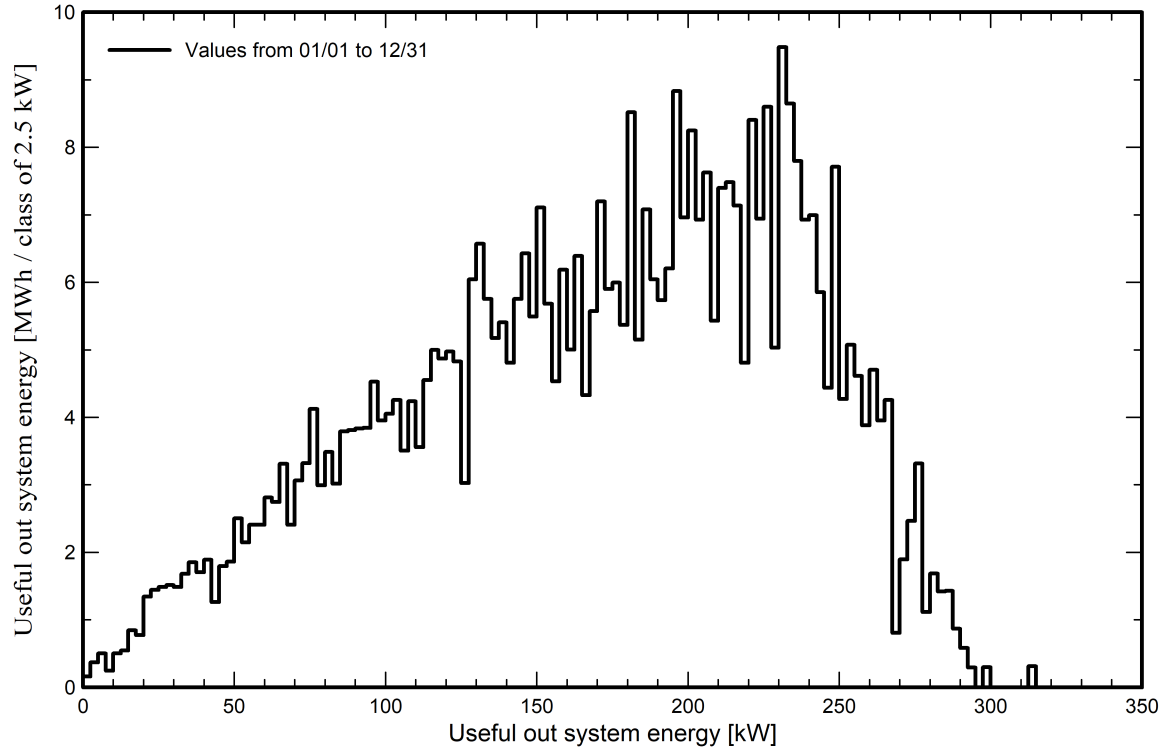
Predef. graphs

Daily Input/Output diagram



System Output Power Distribution



e-line diagram not avai