Version 7.4.8

PVsyst - Simulation report

Grid-Connected System

Project: Hyundai Kefico

Variant: New simulation variant

No 3D scene defined, no shadings

System power: 4163 kWp

Hyundai Kefico - Vietnam

Author

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Project summary

Geographical Site
Hyundai Kefico
Vietnam

Situation

Latitude	20.93 °N
Longitude	106.26 °E
Altitude	8 m
Time zone	UTC+7

Project settings
Albedo 0.20

Weather data
Hyundai Kefico
Meteonorm 8.1 (1991-2000), Sat=100% - Synthetic

System summary

Grid-Connected System

No 3D scene defined, no shadings

PV Field Orientation

Fixed planes	2 orientations
Tilts/azimuths	6 / 0 °
	6 / 180 °

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	5864 units
Pnom total	4163 kWp

Inverters

Nb. of units	25 units
Pnom total	3750 kWac
Pnom ratio	1.110

Results summary

Produced Energy	4102.63 MWh/year	Specific production	985 kWh/kWp/year	Perf. Ratio PR	85.15 %

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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	6 / 0 ° 6 / 180 °		Diffuse	Perez, Meteonorm
			Circumsolar	separate

Horizon	Near Shadings	User's needs
Free Horizon	No Shadings	Unlimited load (grid)

PV Array Characteristics

PV module

Manufacturer	JA Solar
Model	JAM66D46-710/LB
(Custom parameters definition)	
Unit Nom. Power	710 Wp
Number of PV modules	5864 units
Nominal (STC)	4163 kWp

Inverter

Manufacturer	Huawei Technologies
Model	SUN2000-150K-MG0-400V
(Original PVsyst database)	
Unit Nom. Power	150 kWac
Number of inverters	25 units
Total power	3750 kWac

Array #1 - PV Array

Orientation	#1		
Tilt/Azimuth	6/0 °		
Number of PV modules	2812 units	Number of inverters	12 units
Nominal (STC)	1997 kWp	Total power	1800 kWac
Modules	148 string x 19 In series		
At operating cond. (50°C)		Operating voltage	200-1000 V
Pmpp	1858 kWp	Max. power (=>30°C)	165 kWac
U mpp	709 V	Pnom ratio (DC:AC)	1.11
I mpp	2622 A	Power sharing within this inverter	

Array #2 - Sub-array #2

Orientation	#2		
Tilt/Azimuth	6/180 °		
Number of PV modules	2812 units	Number of inverters	12 units
Nominal (STC)	1997 kWp	Total power	1800 kWac
Modules	148 string x 19 In series		
At operating cond. (50°C)		Operating voltage	200-1000 V
Pmpp	1858 kWp	Max. power (=>30°C)	165 kWac
U mpp	709 V	Pnom ratio (DC:AC)	1.11
I mpp	2622 A	Power sharing within this inverter	

Array #3 - Sub-array #3

Orientation	#2		
Tilt/Azimuth	6/180 °		
Number of PV modules	240 units	Number of inverters	1 unit
Nominal (STC)	170 kWp	Total power	150 kWac
Modules	12 string x 20 In series		
At operating cond. (50°C)		Operating voltage	200-1000 V
Pmpp	159 kWp	Max. power (=>30°C)	165 kWac
U mpp	746 V	Pnom ratio (DC:AC)	1.14
I mpp	213 A	Power sharing within this inverter	

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PV Array Characteristics

Total PV power

Nominal (STC)	4163 kWp
Total	5864 modules
Module area	18216 m²
Cell area	17068 m²

Total inverter power

Total power	3750 kWac
Max. power	4125 kWac
Number of inverters	25 units
Pnom ratio	1.11

Array losses

Array Soiling Losses
Loss Fraction 3.7 %

Thermal Loss factor
Module temperature according to irradiance
Uc (const) 20.0 W/m²K
Uv (wind) 0.0 W/m²K/m/s

Serie Diode Loss
Voltage drop 0.7 V
Loss Fraction 0.1 % at STC

LID - Light Induced Degradation
Loss Fraction 2.0 %

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): User defined profile

0°	50°	60°	65°	70°	75°	80°	85°	90°
1.000	1.000	1.000	1.000	0.995	0.964	0.913	0.750	0.000

DC wiring losses

Global wiring resistance 2.8 mΩ
Loss Fraction 2.0 % at STC

Array #1 - PV Array
Global array res. 5.9 mΩ
Loss Fraction 2.0 % at STC

Array #2 - Sub-array #2
Global array res. 5.9 mΩ
Loss Fraction 2.0 % at STC

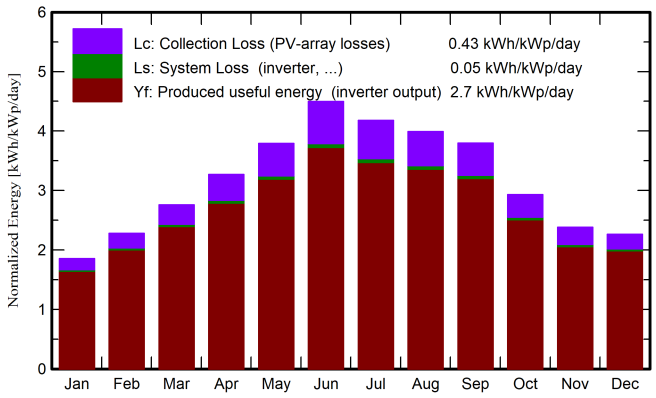
Array #3 - Sub-array #3
Global array res. 76 mΩ
Loss Fraction 2.0 % at STC

Main results

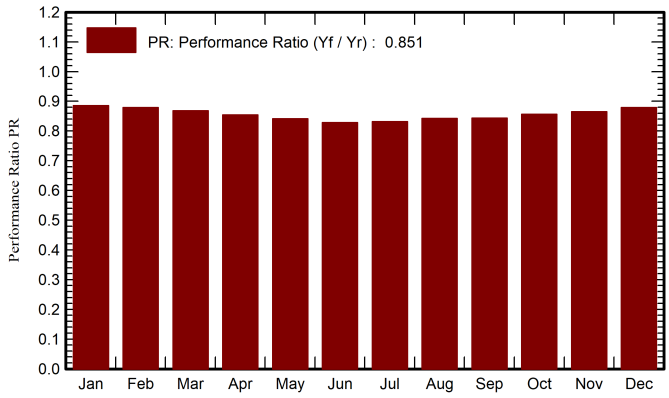
System Production

Produced Energy	4102.63 MWh/year	Specific production	985 kWh/kWp/year
		Perf. Ratio PR	85.15 %

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	58.0	46.16	15.97	57.5	55.0	215.6	212.0	0.885
February	64.3	48.28	17.76	63.8	61.1	237.5	233.5	0.879
March	86.1	69.36	20.72	85.5	81.9	314.5	309.3	0.869
April	98.6	70.73	24.45	98.1	94.0	354.8	348.8	0.854
May	118.2	85.80	28.22	117.6	112.7	419.1	412.2	0.842
June	135.3	76.08	29.77	134.9	129.4	473.7	465.6	0.829
July	130.0	75.97	29.69	129.6	124.2	456.4	448.7	0.832
August	124.2	88.46	28.70	123.7	118.5	441.2	434.0	0.842
September	114.5	74.45	27.09	114.0	109.3	407.2	400.4	0.844
October	91.5	71.31	25.22	90.9	87.0	329.4	324.1	0.856
November	71.9	49.70	21.54	71.4	68.4	261.8	257.4	0.865
December	70.7	50.27	17.71	70.1	67.1	261.0	256.7	0.879
Year	1163.2	806.56	23.93	1157.3	1108.8	4172.4	4102.6	0.851

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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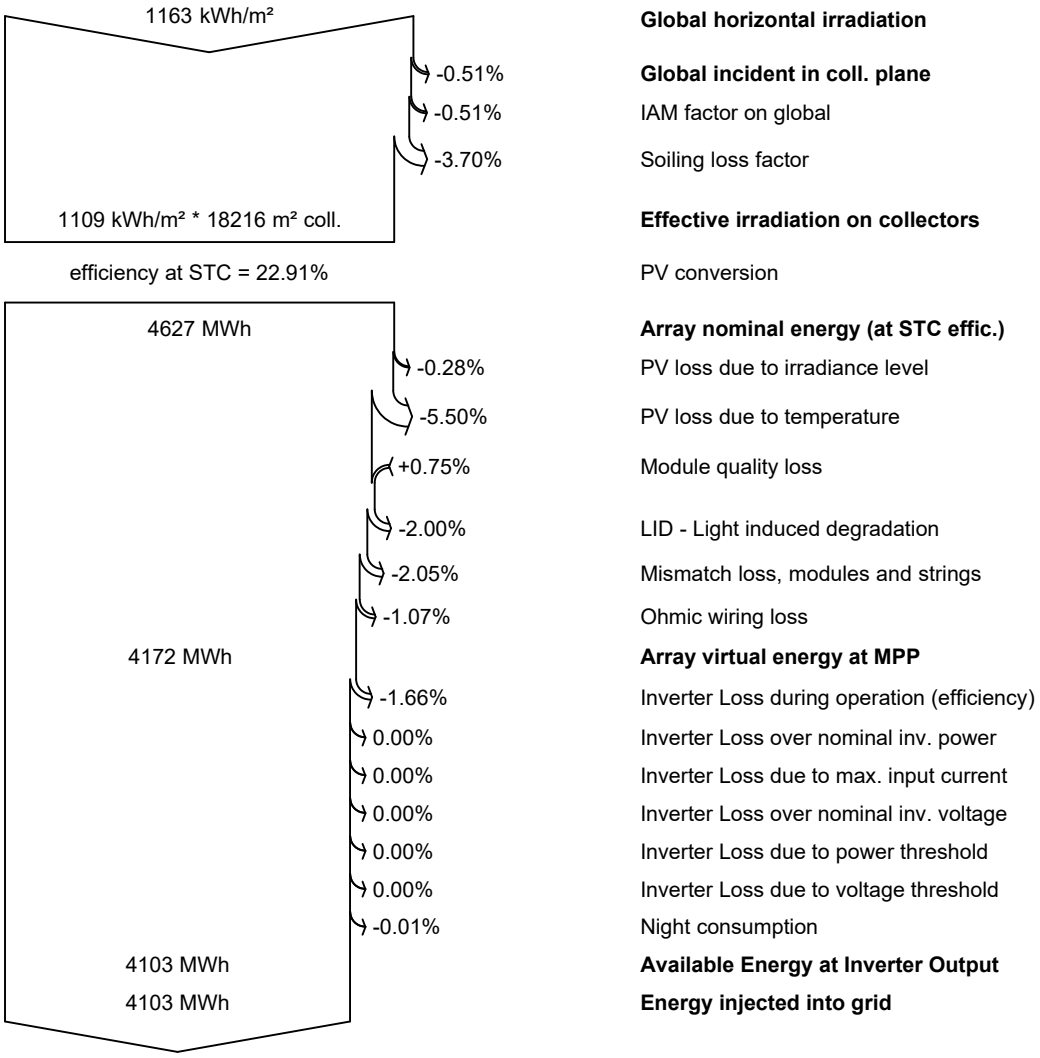
Loss diagram



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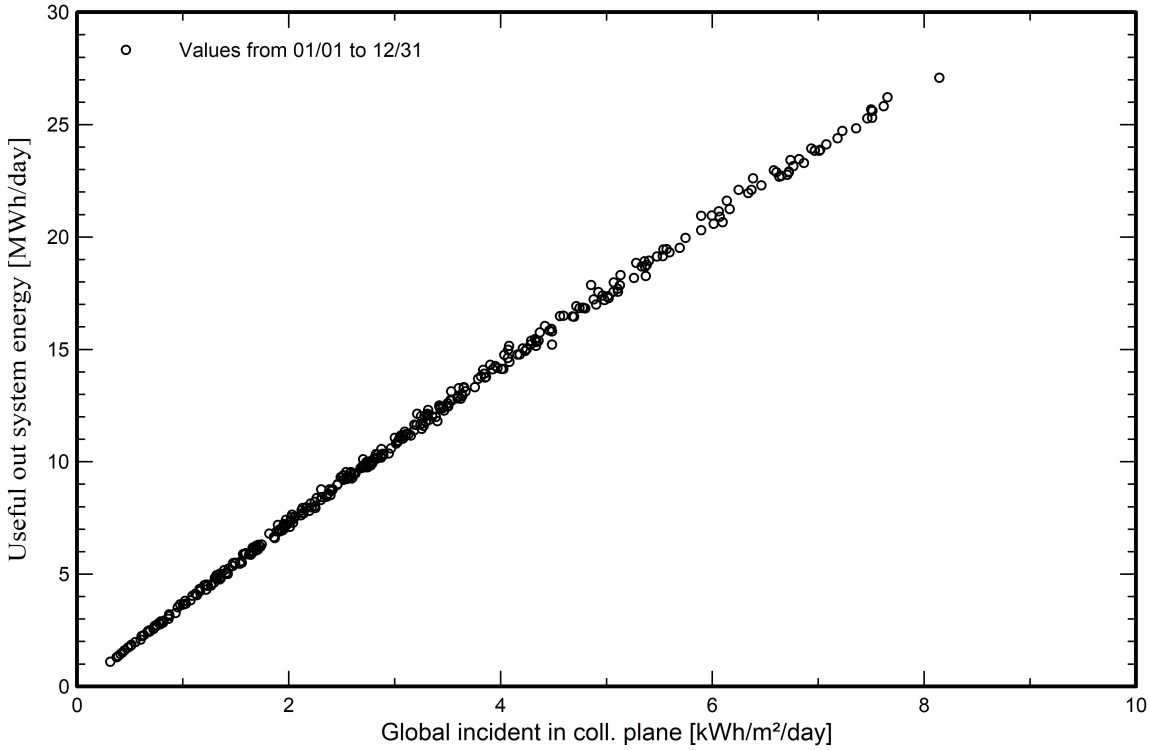
Predef. graphs

Daily Input/Output diagram



System Output Power Distribution