Version 7.3.4

PVsyst - Simulation report

Grid-Connected System

Project: Tongatapu FV 1

Variant: FV1 V1

No 3D scene defined, no shadings

System power: 7002 kWp

Tokomololo - Tonga

Autor(a)
Universidad Europea (Spain)

Project: Tongatapu FV 1

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Project summary

Geographical Site
Tokomololo
Tonga

Situation

Latitude	-21.19 °S
Longitude	-175.24 °W
Altitude	19 m
Time zone	UTC+12

Project settings

Albedo	0.20

Meteo data
Tokomololo
Meteonorm 8.1 (2016-2021), Sat=100% - Sintético

System summary

Grid-Connected System

No 3D scene defined, no shadings

PV Field Orientation
Fixed plane
Tilt/Azimuth 21 / 180 °

Near Shadings
No Shadings

User's needs
Unlimited load (grid)

System information

PV Array

Nb. of modules	10773 units
Pnom total	7002 kWp

Inverters

Nb. of units	6 units
Pnom total	6120 kWac
Pnom ratio	1.144

Results summary

Produced Energy	10782813 kWh/year	Specific production	1540 kWh/kWp/year	Perf. Ratio PR	84.38 %

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General parameters

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

PV Field Orientation

Orientation		Sheds configuration	Models used	
Fixed plane		No 3D scene defined	Transposition	Perez
Tilt/Azimuth	21 / 180 °		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	RSM-132-8-650-M
(Original PVsyst database)	
Unit Nom. Power	650 Wp
Number of PV modules	10773 units
Nominal (STC)	7002 kWp
Modules	567 Strings x 19 In series
At operating cond. (50°C)	
Pmpp	6408 kWp
U mpp	652 V
I mpp	9820 A

Inverter

Manufacturer	Generic
Model	Ingecon Sun 1110TL B400 IP54 H1000
(Original PVsyst database)	
Unit Nom. Power	1020 kWac
Number of inverters	6 units
Total power	6120 kWac
Operating voltage	573-820 V
Max. power (=>35°C)	1109 kWac
Pnom ratio (DC:AC)	1.14

Total PV power

Nominal (STC)	7002 kWp
Total	10773 modules
Module area	33465 m²

Total inverter power

Total power	6120 kWac
Max. power	6654 kWac
Number of inverters	6 units
Pnom ratio	1.14

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. 1.1 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 0.2 %

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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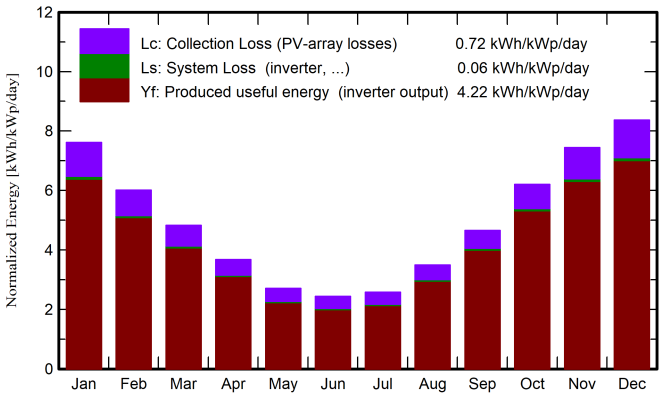
Main results

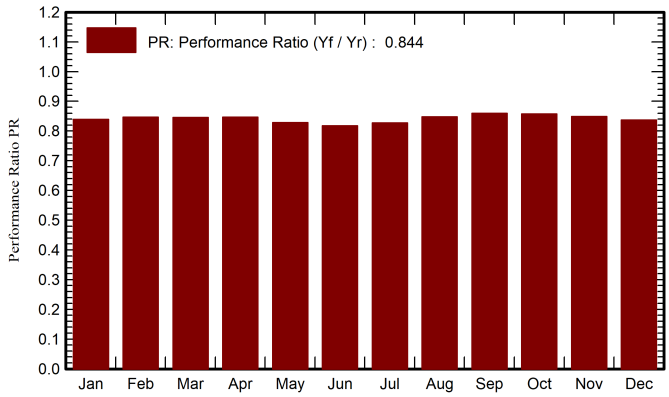
System Production

Produced Energy	10782813 kWh/year	Specific production	1540 kWh/kWp/year
		Perf. Ratio PR	84.38 %

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	237.3	73.74	26.47	236.2	231.8	1407359	1387881	0.839
February	179.2	78.86	26.84	168.5	164.2	1012580	998683	0.847
March	174.1	67.53	26.57	149.5	144.1	898372	885360	0.846
April	141.1	59.06	25.10	110.4	104.8	664262	654073	0.846
May	121.2	46.67	24.14	83.8	77.2	494833	485898	0.828
June	113.7	43.96	22.58	73.2	66.1	427685	419453	0.818
July	120.5	46.96	21.74	80.1	73.0	472709	464004	0.828
August	148.1	51.11	21.81	108.3	101.4	652781	642584	0.848
September	169.2	56.74	21.91	139.8	134.1	853277	841157	0.859
October	212.8	68.10	23.33	192.5	187.6	1171549	1155157	0.857
November	227.5	70.63	24.15	223.3	219.0	1345523	1326712	0.849
December	254.4	59.66	25.73	259.5	255.0	1543394	1521850	0.837
Year	2099.0	723.02	24.18	1825.0	1758.3	10944325	10782813	0.844

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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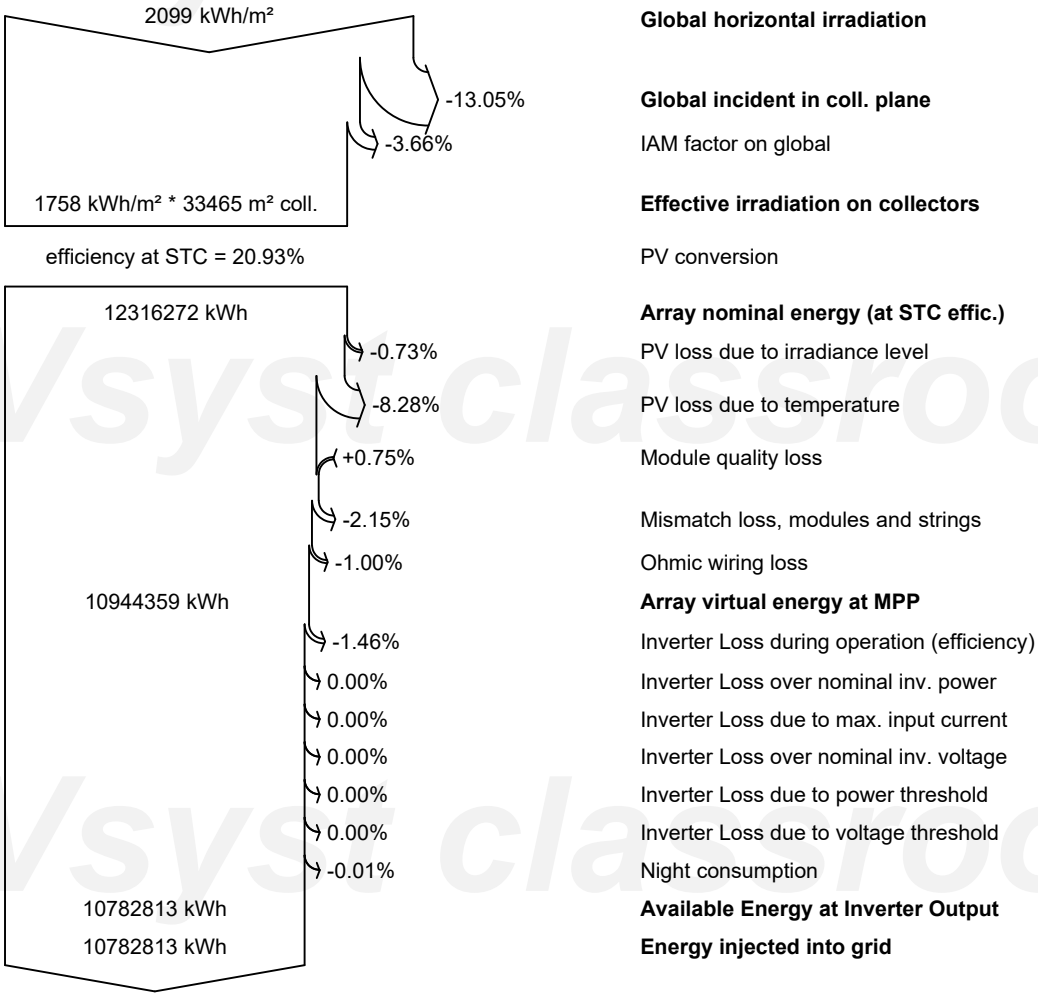
Loss diagram



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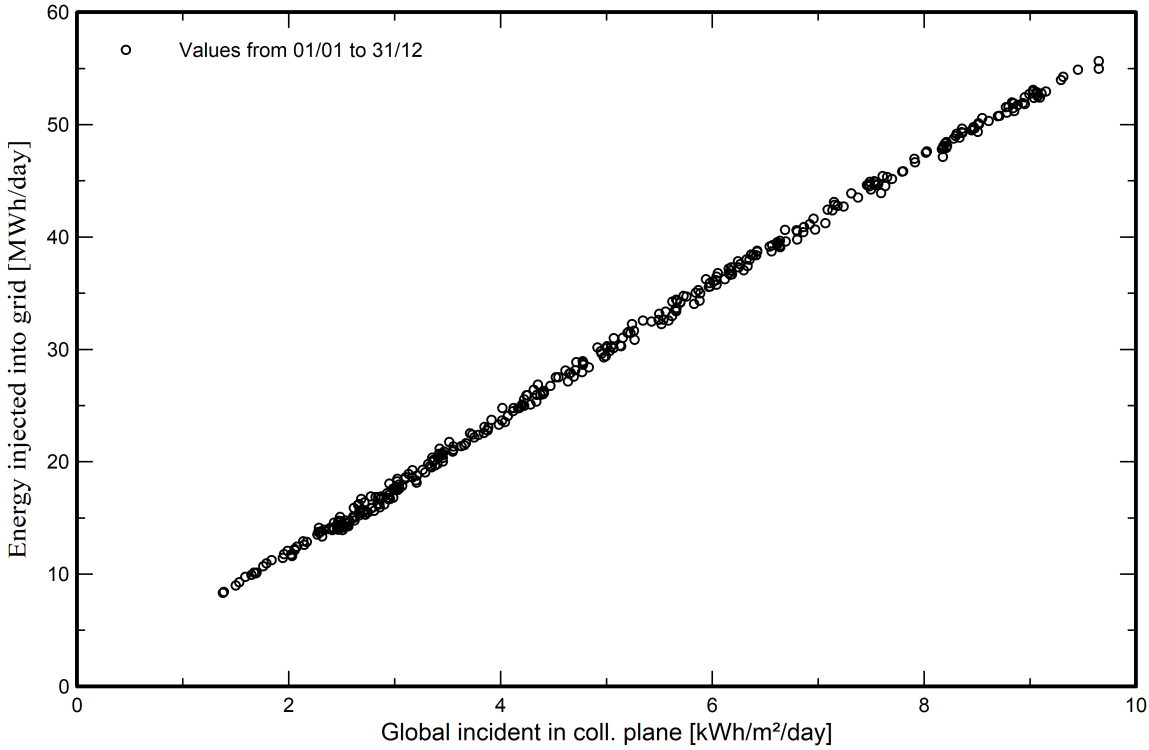
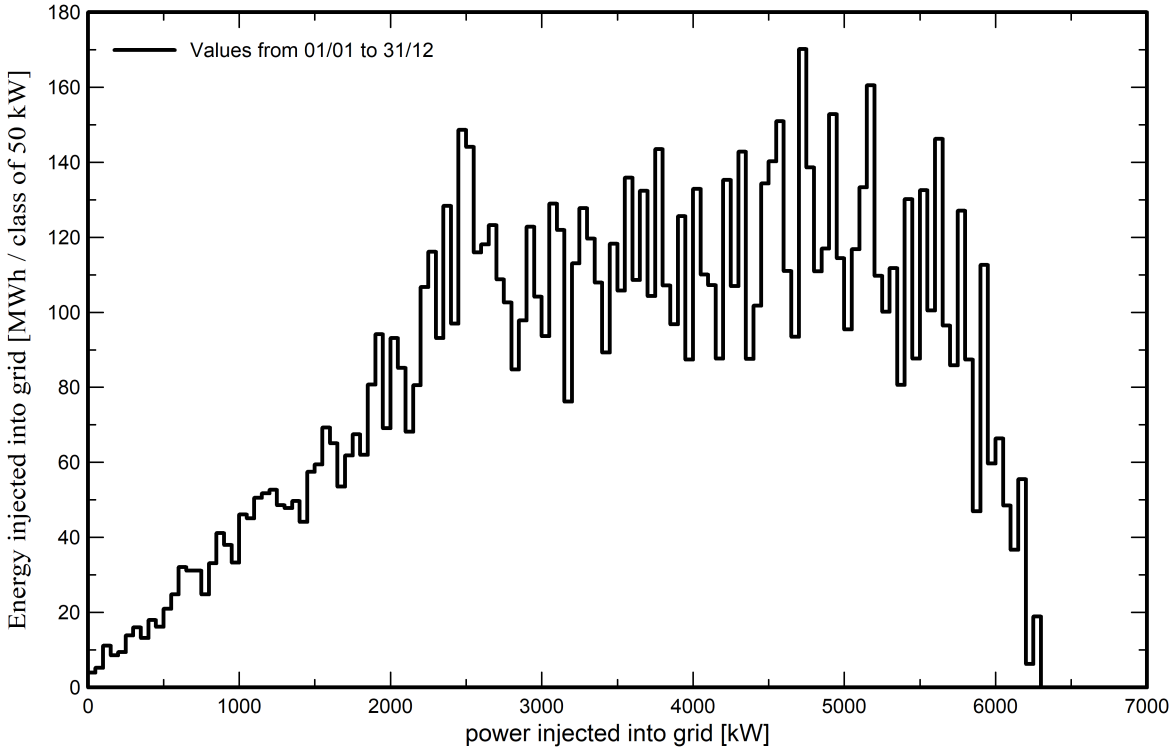
Predef. graphs

Diagrama entrada/salida diaria



Distribución de potencia de salida del sistema



Single-line diagram

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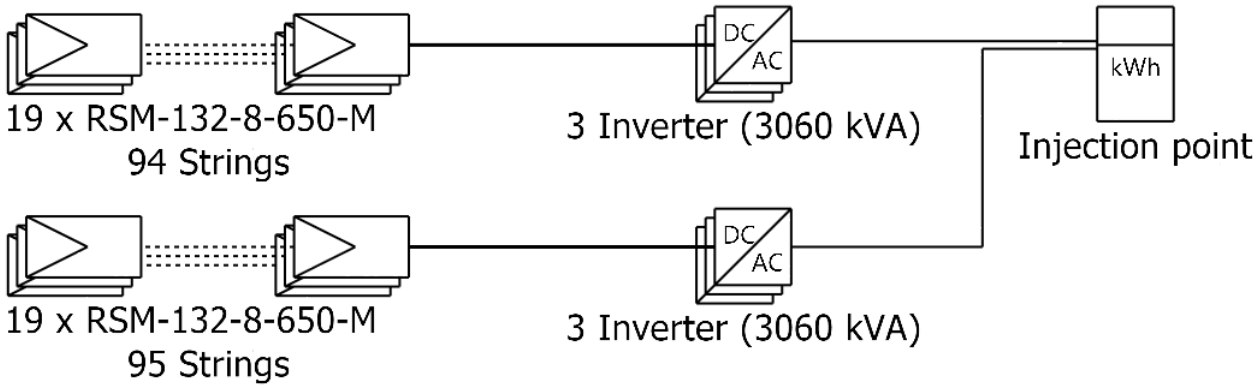

PV module	RSM-132-8-650-M
Inverter	Ingecon Sun 1110TL B400 IP54 H1000
String	19 x RSM-132-8-650-M

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