Lampiran B

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Grid-Connected System: Simulation parameters

Project : **STTPLN**

Geographical Site	**Jakarta**		Country	**Indonesia**
Situation	Latitude	6.2°S	Longitude	106.7°E
Time defined as	Legal Time	Time zone UT+7	Altitude	7 m
	Albedo	0.20		
Meteo data:	**Jakarta**	Meteonorm 7.1 (2010-2014), Sat=100% - Synthetic		

Simulation variant : **STTPLN**

Simulation date 30/07/17 00h20

Simulation parameters

Collector Plane Orientation	Tilt	15°	Azimuth	0°
Models used	Transposition	Perez	Diffuse	Perez, Meteonorm
Horizon	Free Horizon			
Near Shadings	No Shadings			

PV Array Characteristics

PV module	Si-poly	Model	**STP 260-20/Wem**		
Original PVsyst database		Manufacturer	Suntech		
Number of PV modules		In series	18 modules	In parallel	3 strings
Total number of PV modules		Nb. modules	54	Unit Nom. Power	260 Wp
Array global power		Nominal (STC)	**14.04 kWp**	At operating cond.	12.57 kWp (50°C)
Array operating characteristics (50°C)		U mpp	495 V	I mpp	25 A
Total area		Module area	**87.9 m²**	Cell area	78.8 m²

Inverter		Model	**STP17000TL**		
Custom parameters definition		Manufacturer	SMA		
Characteristics		Operating Voltage	400-800 V	Unit Nom. Power	17.0 kWac
Inverter pack		Nb. of inverters	1 units	Total Power	17.0 kWac

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.	331 mOhm	Loss Fraction	1.5 % at STC
Module Quality Loss			Loss Fraction	-0.8 %
Module Mismatch Losses			Loss Fraction	1.0 % at MPP
Incidence effect, ASHRAE parametrization	IAM =	1 - bo (1/cos i - 1)	bo Param.	0.05

User's needs : Unlimited load (grid)

PVsyst Evaluation mode

Grid-Connected System: Main results

Project : **STTPLN**

Simulation variant : **STTPLN**

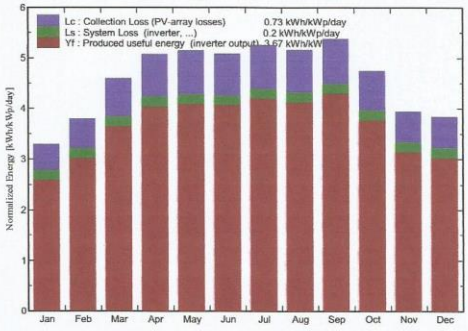
Main system parameters	System type	**Grid-Connected**			
PV Field Orientation	tilt	15°	azimuth	0°	
PV modules	Model	STP 260-20/Wem	Pnom	260 Wp	
PV Array	Nb. of modules	54	Pnom total	**14.04 kWp**	
Inverter	Model	STP17000TL	Pnom	17.00 kW ac	
User's needs	Unlimited load (grid)				

Main simulation results

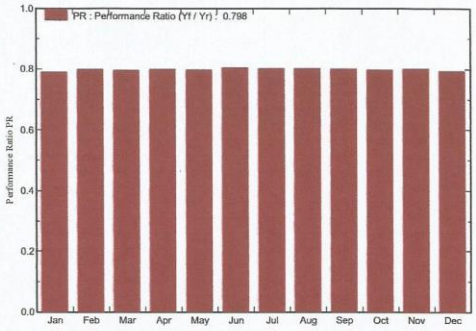
System Production

Produced Energy	**18.82 MWh/year**	Specific prod.	1341 kWh/kWp/year
Performance Ratio PR	79.8 %		

Normalized productions (per installed kWp): Nominal power 14.04 kWp



Performance Ratio PR



STTPLN

Balances and main results

	GlobHor kWh/m²	T Amb °C	GlobInc kWh/m²	GlobEff kWh/m²	EArray MWh	E_Grid MWh	EffArrR %	EffSysR %
January	110.3	26.17	102.1	97.8	1.217	1.131	13.57	12.62
February	111.7	25.83	106.3	102.2	1.267	1.190	13.57	12.74
March	143.4	26.49	142.3	137.5	1.676	1.589	13.41	12.71
April	146.0	26.43	151.8	147.1	1.787	1.701	13.39	12.75
May	147.0	26.79	159.3	154.7	1.867	1.780	13.34	12.72
June	137.7	26.05	152.1	147.8	1.795	1.716	13.43	12.84
July	147.0	26.25	162.4	157.9	1.912	1.827	13.40	12.81
August	150.8	26.44	159.6	154.8	1.880	1.795	13.41	12.81
September	159.0	26.44	161.2	156.0	1.894	1.810	13.38	12.78
October	152.2	27.07	146.8	141.5	1.726	1.642	13.39	12.73
November	126.3	26.42	117.8	113.1	1.403	1.322	13.56	12.78
December	130.3	26.25	118.5	113.7	1.403	1.317	13.48	12.65
Year	1661.7	26.39	1680.2	1624.0	19.827	18.821	13.43	12.75

Legends:

GlobHor	Horizontal global 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	EffArrR	Effic. Eout array / rough area
GlobEff	Effective Global, corr. for IAM and shadings	EffSysR	Effic. Eout system / rough area

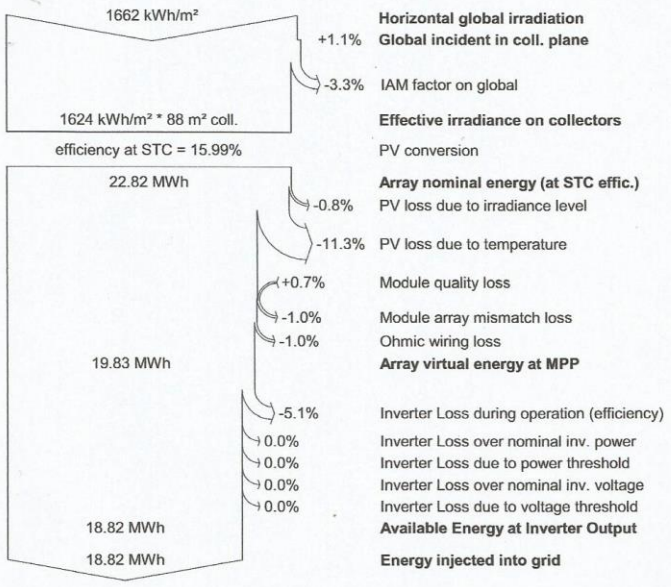
Grid-Connected System: Loss diagram

Project : **STTPLN**

Simulation variant : **STTPLN**

Main system parameters	System type	**Grid-Connected**		
PV Field Orientation	tilt	15°	azimuth	0°
PV modules	Model	STP 260-20/Wem	Pnom	260 Wp
PV Array	Nb. of modules	54	Pnom total	**14.04 kWp**
Inverter	Model	STP17000TL	Pnom	17.00 kW ac
User's needs	Unlimited load (grid)			

Loss diagram over the whole year



PVsyst Evaluation mode