



**PVKIT008**  
**2 X 17 X SSP60C230 + STP8000TL-20**

**Grid-Connected System: Simulation parameters**

**Project :** DENMARK KITS

**Geographical Site** Kobenhavn **Country** Denmark

**Situation** Latitude 55.4°N Longitude 12.4°E  
Time defined as Legal Time Time zone UT+1 Altitude 5 m  
Albedo 0.25

**Meteo data :** Kobenhavn, Synthetic Hourly data

**Simulation variant :** KIT008

Simulation date 05/02/13 13h50

**Simulation parameters**

**Collector Plane Orientation** Tilt 40° Azimuth 0°

**Models used** Transposition Hay Diffuse Measured

**Horizon** Free Horizon

**Near Shadings** No Shadings

**PV Array Characteristics**

**PV module** Si-poly Model **SSP60C-235**  
Manufacturer Senersun LTD.  
Number of PV modules In series 17 modules In parallel 2 strings  
Total number of PV modules Nb. modules 34 Unit Nom. Power 235 Wp  
Array global power Nominal (STC) **7.99 kWp** At operating cond. 7.06 kWp (50°C)  
Array operating characteristics (50°C) U mpp 449 V I m pp 16 A  
Total area Module area **55.3 m²** Cell area 47.8 m²

**Inverter** Model **Sunny Tripower STP 8000TL-10**  
Manufacturer SMA Solar Technology AG  
Characteristics Operating Voltage 320-800 V Unit Nom. Power 8.00 kW AC

**PV Array loss factors**

Thermal Loss factor U<sub>c</sub> (const) 20.0 W/m²K U<sub>v</sub> (wind) 0.0 W/m²K / m/s  
=> Nominal Oper. Coll. Temp. (G=800 W/m², T<sub>amb</sub>=20°C, Wind=1 m/s.) NOCT 56 °C  
Wiring Ohmic Loss Global array res. 496 mOhm Loss Fraction 1.5 % at STC  
Module Quality Loss Loss Fraction 0.0 %  
Module Mismatch Losses Loss Fraction 2.0 % at MPP  
Incidence effect, ASHRAE parametrization IAM = 1 - bo (1/cos i - 1) bo Parameter 0.05

**User's needs :** Unlimited load (grid)

**PVKIT008**  
**2 X 17 X SSP60C230 + STP8000TL-20**

**Grid-Connected System: Main results**

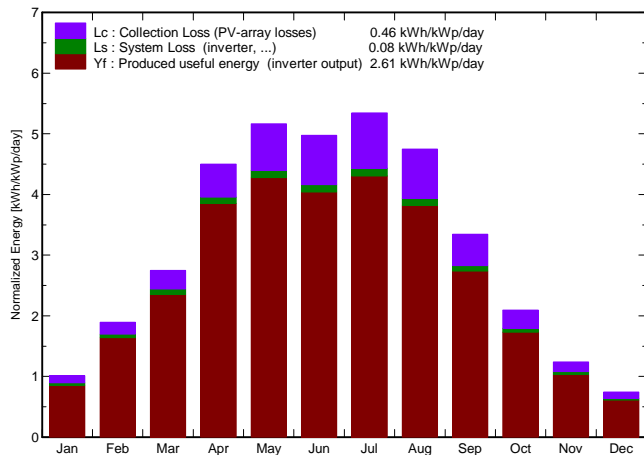
**Project :** DENMARK KITS

**Simulation variant :** KIT008

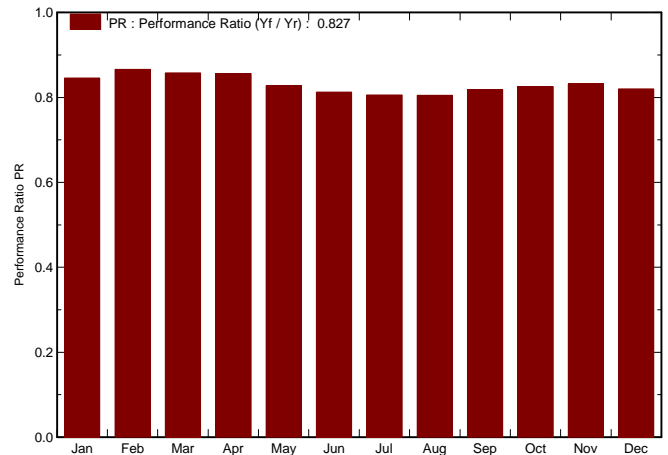
<b>Main system parameters</b>	System type	<b>Grid-Connected</b>
PV Field Orientation	tilt	40°
PV modules	Model	SSP60C-235
PV Array	Nb. of modules	34
Inverter	Model	Sunny Tripower STP 8000TL-20
User's needs	Unlimited load (grid)	
	azimuth	0°
	Pnom	235 Wp
	Pnom total	<b>7.99 kWp</b>
	Pmax	8.00 kW ac

<b>Main simulation results</b>			
System Production	<b>Produced Energy</b>	<b>7613 kWh/year</b>	Specific prod. 953 kWh/kWp/year
	Performance Ratio PR	82.7 %	

**Normalized productions (per installed kWp): Nominal power 7.99 kWp**



**Performance Ratio PR**



**KIT008**

**Balances and main results**

	GlobHor	T Amb	GlobInc	GlobEff	EArray	E_Grid	EffArrR	EffSysR
	kWh/m <sup>2</sup>	°C	kWh/m <sup>2</sup>	kWh/m <sup>2</sup>	kWh	kWh	%	%
January	16.0	2.30	31.4	30.5	223	212	12.82	12.22
February	32.0	1.00	53.0	51.4	381	367	12.98	12.51
March	63.0	2.50	85.3	82.5	605	585	12.81	12.39
April	115.0	5.10	135.0	130.8	949	924	12.71	12.37
May	156.0	10.40	160.2	155.1	1090	1060	12.30	11.96
June	154.0	13.30	149.3	144.2	998	969	12.09	11.73
July	165.0	15.20	165.6	160.3	1097	1067	11.98	11.64
August	132.0	15.90	147.2	142.7	974	947	11.97	11.63
September	80.0	13.80	100.4	97.3	677	657	12.19	11.82
October	44.0	10.50	65.0	63.0	445	428	12.38	11.92
November	20.0	6.50	37.2	36.1	259	247	12.59	12.02
December	11.0	4.00	23.1	22.5	159	152	12.46	11.85
Year	988.0	8.42	1152.7	1116.3	7858	7613	12.32	11.94

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

**PVKIT008**  
**2 X 17 X SSP60C230 + STP8000TL-20**

**Grid-Connected System: Loss diagram**

**Project :** DENMARK KITS

**Simulation variant :** KIT008

<b>Main system parameters</b>	System type	<b>Grid-Connected</b>	
PV Field Orientation	tilt	40°	azimuth 0°
PV modules	Model	SSP60C-235	Pnom 235 Wp
PV Array	Nb. of modules	34	Pnom total <b>7.99 kWp</b>
Inverter	Model	Sunny Tripower STP 8000TL-20	8.00 kW ac
User's needs	Unlimited load (grid)		

**Loss diagram over the whole year**

