



**PVKIT027**  
**20 X SSM60C250 + 10 X SMI-D480W-60**

**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 :** KIT027

Simulation date 05/02/13 14h02

**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-mono Model **SSM60C-250**  
 Manufacturer Senersun LTD.  
 Number of PV modules In series 1 modules In parallel 20 strings  
 Total number of PV modules Nb. modules 20 Unit Nom. Power 250 Wp  
 Array global power Nominal (STC) **5.00 kWp** At operating cond. 4454 Wp (50°C)  
 Array operating characteristics (50°C) U mpp 27 V I mpp 163 A  
 Total area Module area **32.5 m²** Cell area 28.1 m²

**Inverter** Model **SMI-D480W-60**  
 Manufacturer Enecsys Limited  
 Characteristics Operating Voltage 24-35 V Unit Nom. Power 0.450 kW AC  
 Inverter pack Number of Inverter 10 units Total Power 4.500 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. 2.8 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)

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**Grid-Connected System: Main results**

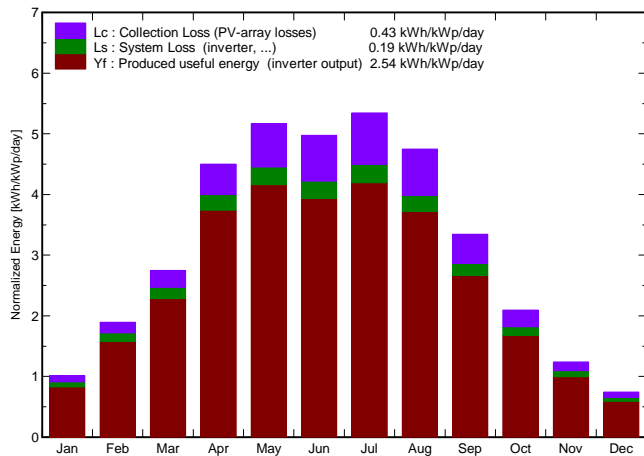
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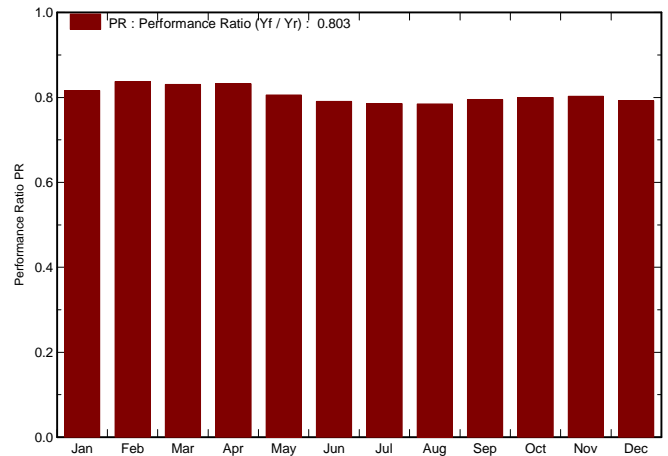
<b>Main system parameters</b>	System type	<b>Grid-Connected</b>	
PV Field Orientation	tilt	40°	azimuth 0°
PV modules	Model	SSM60C-250	Pnom 250 Wp
PV Array	Nb. of modules	20	Pnom total <b>5.00 kWp</b>
Inverter	Model	SMI-D480W-60	Pnom 450 W ac
Inverter pack	Nb. of units	10.0	Pnom total <b>4500 W ac</b>
User's needs	Unlimited load (grid)		

<b>Main simulation results</b>			
System Production	<b>Produced Energy</b>	<b>4629 kWh/year</b>	Specific prod. 926 kWh/kWp/year
	Performance Ratio PR	80.3 %	

**Normalized productions (per installed kWp): Nominal power 5.00 kWp**



**Performance Ratio PR**



**KIT027**  
**Balances and main results**

	GlobHor	T Amb	GlobInc	GlobEff	EArray	E_Grid	EffArrR	EffSysR
	kWh/m²	°C	kWh/m²	kWh/m²	kWh	kWh	%	%
<b>January</b>	16.0	2.30	31.4	30.5	141.2	128.1	13.82	12.54
<b>February</b>	32.0	1.00	53.0	51.4	240.8	221.8	13.96	12.86
<b>March</b>	63.0	2.50	85.3	82.5	382.5	354.2	13.78	12.76
<b>April</b>	115.0	5.10	135.0	130.8	600.0	561.5	13.66	12.79
<b>May</b>	156.0	10.40	160.2	155.1	690.3	645.1	13.24	12.38
<b>June</b>	154.0	13.30	149.3	144.2	633.2	590.0	13.03	12.15
<b>July</b>	165.0	15.20	165.6	160.3	696.6	650.5	12.93	12.07
<b>August</b>	132.0	15.90	147.2	142.7	618.6	577.5	12.91	12.06
<b>September</b>	80.0	13.80	100.4	97.3	429.5	399.4	13.14	12.22
<b>October</b>	44.0	10.50	65.0	63.0	282.1	259.8	13.34	12.29
<b>November</b>	20.0	6.50	37.2	36.1	164.3	149.3	13.58	12.34
<b>December</b>	11.0	4.00	23.1	22.5	101.5	91.7	13.48	12.18
<b>Year</b>	988.0	8.42	1152.7	1116.3	4980.5	4629.1	13.28	12.34

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

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**Grid-Connected System: Loss diagram**

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**Loss diagram over the whole year**

