Grid-Connected System: Simulation parameters

Project : **BLOO Array B**

Geographical Site	**Wokingham**		Country	**United Kingdom**
Situation	Latitude	51.38° N	Longitude	0.78° W
Time defined as	Legal Time	Time zone UT	Altitude	93 m
	Albedo	0.20		
Meteo data:	**London / Camden**	MeteoNorm 7.1 station - Synthetic		

Simulation variant : **New simulation variant**

Simulation date 25/02/18 11h54

Simulation parameters

Collector Plane Orientation	Tilt	13°	Azimuth	-35°
Models used	Transposition	Perez	Diffuse	Perez, Meteonorm
Horizon	Free Horizon			
Near Shadings	According to strings		Electrical effect	100 %

PV Array Characteristics

PV module	Si-mono	Model	**SPR-X20-327-COM**	
Original PVsyst database		Manufacturer	SunPower	
SolarEdge PowerBox		Model	**P500**	Unit nom. power 500 W
PV modules on one Powerbox		in series	1	in parallel 1
No. of PowerBoxes		In series	27	In parallel 1 strings
Total number of PV modules		Nb. modules	27	Unit Nom. Power 327 Wp
Array global power		Nominal (STC)	**8.83 kWp**	At operating cond. 8.17 kWp (50°C)
Output of Power Boxes		U oper	750 V	I at Poper 11 A
Total area		Module area	**44.0 m²**	Cell area 39.7 m²

Inverter	Model	**SE7k**		
Original PVsyst database	Manufacturer	SolarEdge		
Characteristics	Operating Voltage	750 V	Unit Nom. Power	7.0 kWac
Inverter pack	Nb. of inverters	1 units	Total Power	7.0 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.	956 mOhm	Loss Fraction	1.5 % at STC
Module Quality Loss			Loss Fraction	1.0 %
Module Mismatch Losses			Loss Fraction	0.0 % (fixed voltage)

Incidence effect, user defined profile

0°	50°	60°	65°	70°	75°	82°	88°	90°
1.00	1.00	0.99	0.97	0.94	0.89	0.77	0.62	0.00

User's needs : Unlimited load (grid)

Grid-Connected System: Near shading definition

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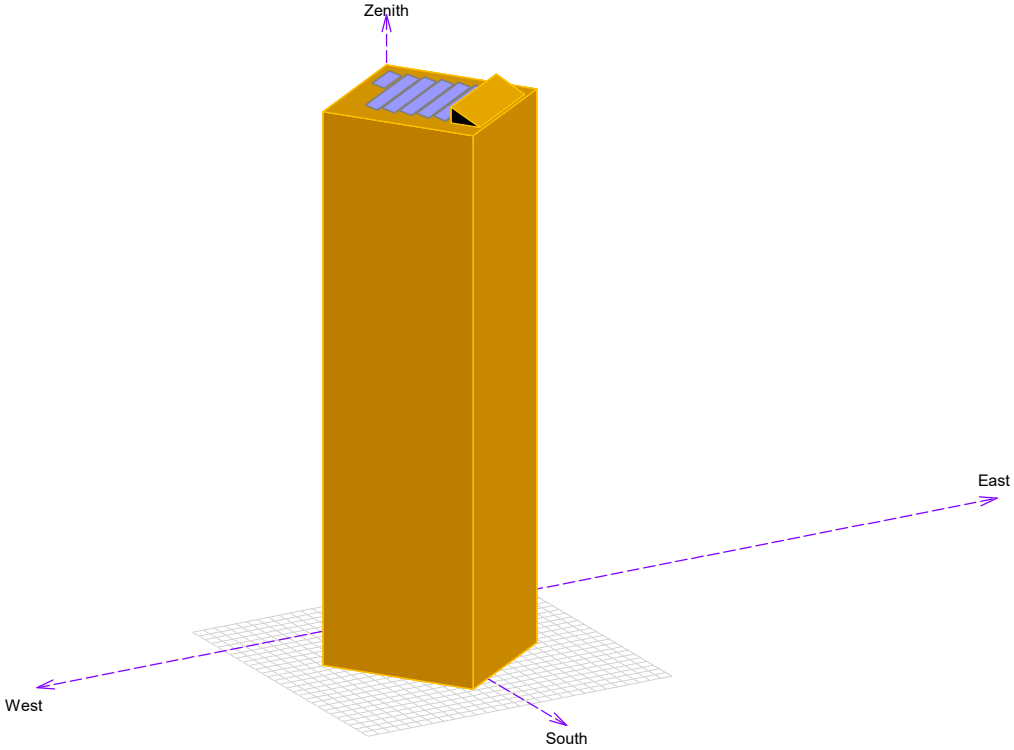
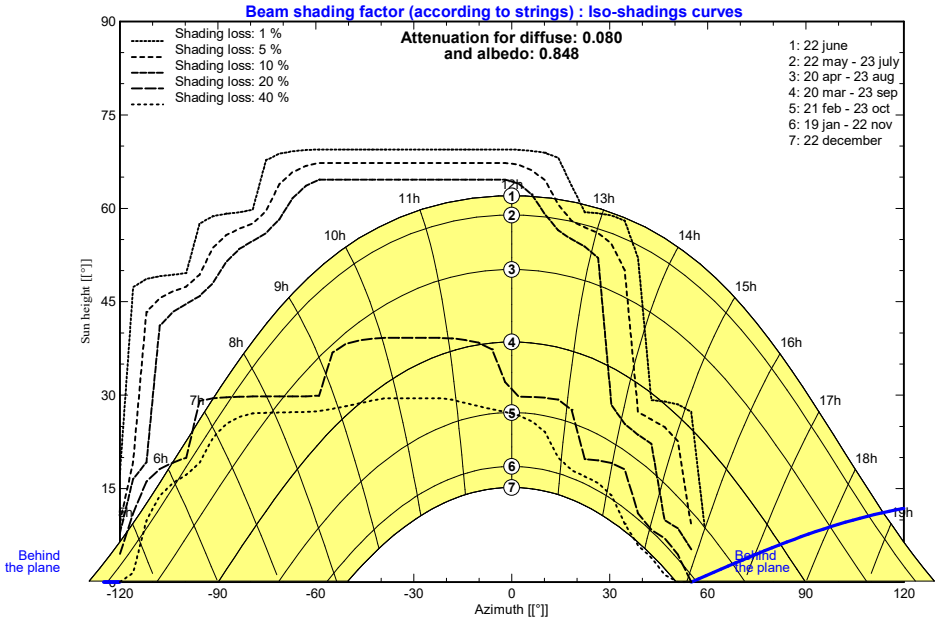
Main system parameters	System type	**Grid-Connected**		
Near Shadings	According to strings		Electrical effect	100 %
PV Field Orientation	tilt	13°	azimuth	-35°
PV modules	Model	SPR-X20-327-COM	Pnom	327 Wp
PV Array	Nb. of modules	27	Pnom total	**8.83 kWp**
Inverter	Model	SE7k	Pnom	7.00 kW ac
User's needs	Unlimited load (grid)			

Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram

BLOO Array B - Solar Time



Grid-Connected System: Main results

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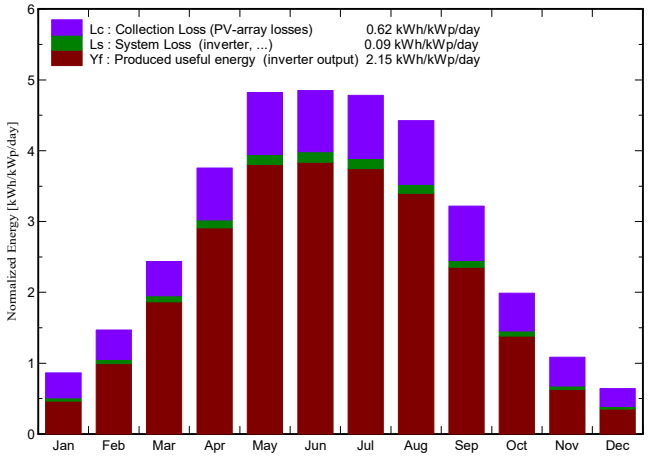
Main simulation results

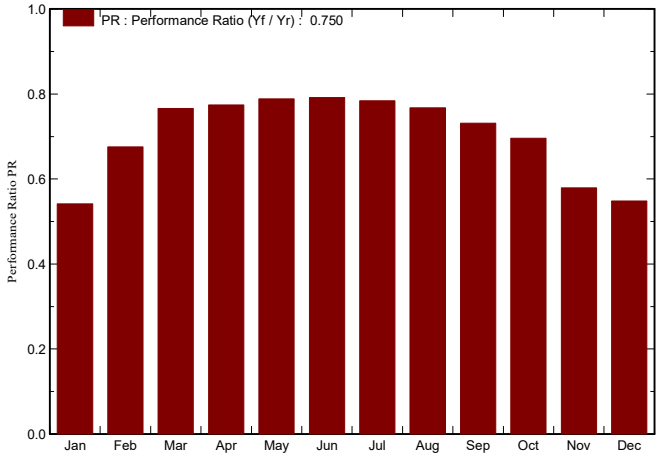
System Production — **Produced Energy** **6.93 MWh/year** — Specific prod. 785 kWh/kWp/year

Performance Ratio PR 75.00 %

Normalized productions (per installed kWp): Nominal power 8.83 kWp



Performance Ratio PR



New simulation variant

Balances and main results

	GlobHor kWh/m²	T Amb °C	GlobInc kWh/m²	GlobEff kWh/m²	EArray MWh	E_Grid MWh	EffArrR %	EffSysR %
January	20.9	6.71	26.7	19.8	0.140	0.128	11.86	10.86
February	35.3	6.70	41.2	33.8	0.260	0.246	14.35	13.54
March	69.6	8.37	75.6	66.7	0.534	0.511	16.05	15.37
April	105.1	10.93	112.7	101.4	0.800	0.770	16.13	15.53
May	143.2	14.19	149.5	137.6	1.080	1.041	16.40	15.82
June	143.7	17.22	145.5	133.7	1.055	1.017	16.48	15.88
July	145.3	18.93	148.2	136.7	1.064	1.026	16.31	15.72
August	130.2	18.91	137.2	124.9	0.965	0.930	15.97	15.40
September	86.8	16.28	96.5	85.2	0.649	0.623	15.28	14.67
October	53.6	13.10	61.7	52.4	0.398	0.379	14.65	13.95
November	26.1	9.35	32.5	24.9	0.179	0.166	12.53	11.61
December	16.0	6.84	19.9	14.8	0.107	0.096	12.20	11.00
Year	975.8	12.33	1047.2	931.9	7.232	6.934	15.68	15.04

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

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Loss diagram over the whole year