

Grid-Connected System: Simulation parameters

Project : **BLOO3082 Array D**

Geographical Site **London / Camden** **Country** **United Kingdom**

Situation Latitude 51.52° N Longitude 0.12° W

Time defined as Legal Time Time zone UT Altitude 34 m

Albedo 0.20

Meteo data: **London / Camden** MeteoNorm 7.1 station - Synthetic

Simulation variant : **BLOS3082 Array D**

Simulation date 25/02/18 11h12

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-E20-327-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 18 In parallel 1 strings

Total number of PV modules Nb. modules 18 Unit Nom. Power 327 Wp

Array global power Nominal (STC) **5.89 kWp** At operating cond. 5.34 kWp (50°C)

Output of Power Boxes U oper 750 V I at Poper 7.1 A

Total area Module area **29.4 m²** Cell area 26.5 m²

Inverter

Model **SE5k**

Original PVsyst database Manufacturer SolarEdge

Characteristics Operating Voltage 750 V Unit Nom. Power 5.0 kWac

Inverter pack Nb. of inverters 1 units Total Power 5.0 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. 1429 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

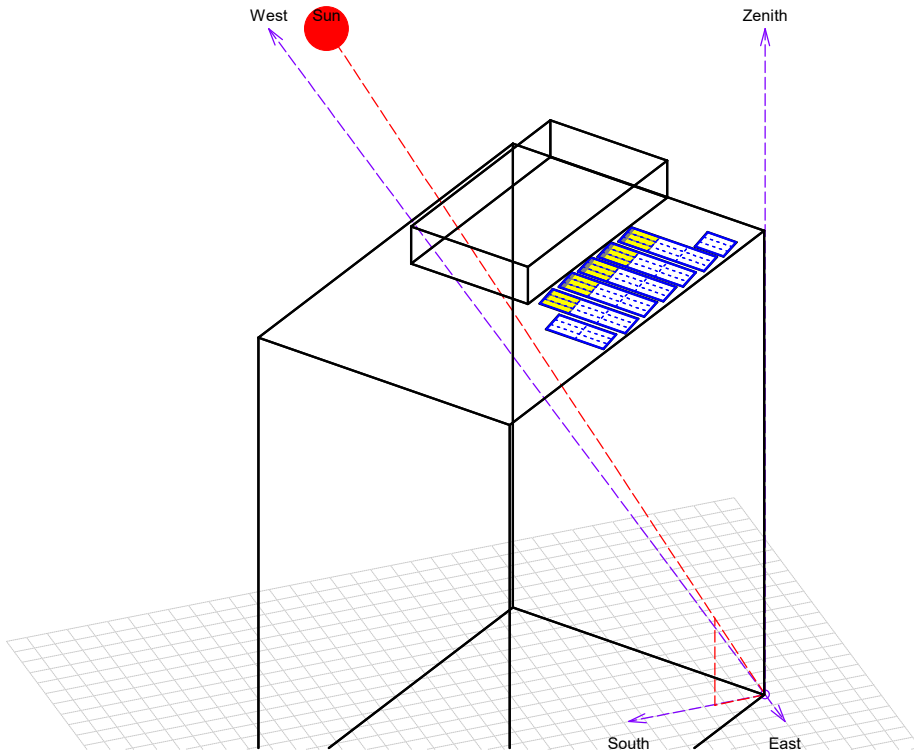
User's needs : Unlimited load (grid)

Grid-Connected System: Near shading definition

Project : BLOO3082 Array D
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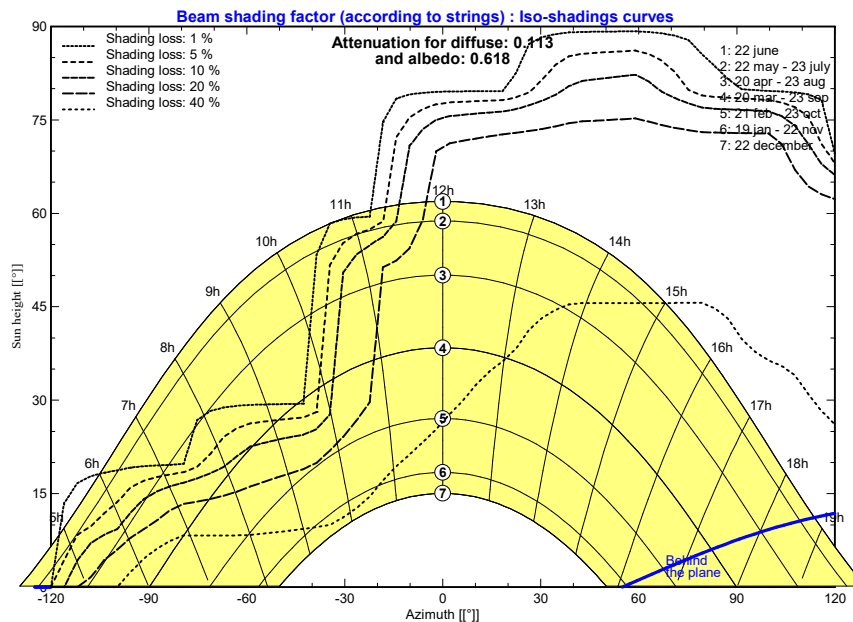
Main system parameters		System type	Grid-Connected
Near Shadings	According to strings	Electrical effect	100 %
PV Field Orientation	tilt	azimuth	-35°
PV modules	Model	Pnom	327 Wp
PV Array	Nb. of modules	Pnom total	5.89 kWp
Inverter	Model	Pnom	5.00 kW ac
User's needs	Unlimited load (grid)		

Perspective of the PV-field and surrounding shading scene



Iso-shadings diagram

BLOO3082 Array D - Solar Time



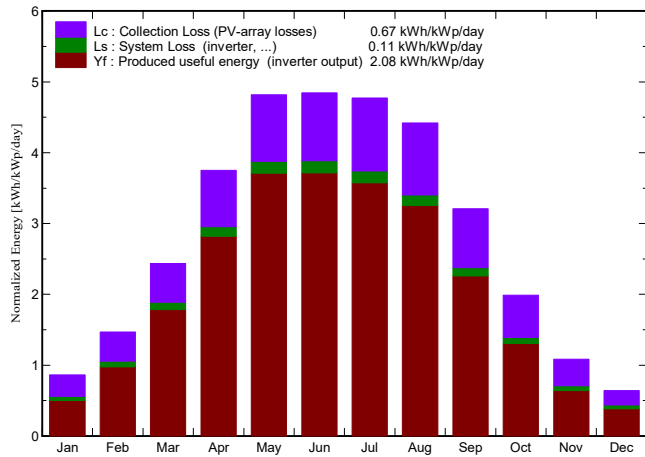
Grid-Connected System: Main results

Project : BLOO3082 Array D
Simulation variant : BLOS3082 Array D

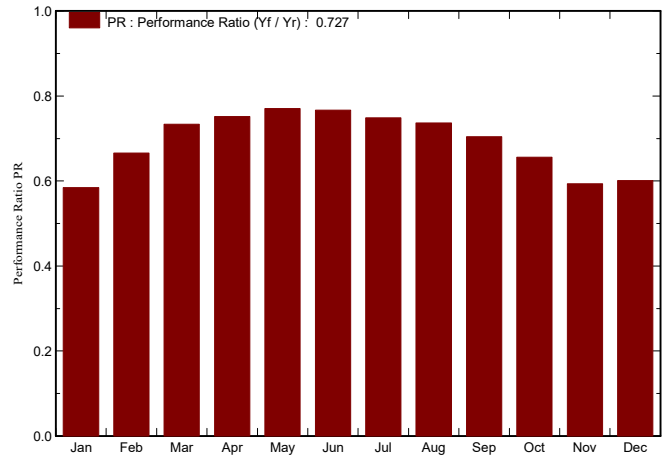
Main system parameters		System type	Grid-Connected
Near Shadings	According to strings	Electrical effect	100 %
PV Field Orientation	tilt 13°	azimuth	-35°
PV modules	Model SPR-E20-327-COM	Pnom	327 Wp
PV Array	Nb. of modules 18	Pnom total	5.89 kWp
Inverter	Model SE5k	Pnom	5.00 kW ac
User's needs	Unlimited load (grid)		

Main simulation results
 System Production **Produced Energy 4476843 W/year** Specific prod. 761 kWh/kWp/year
 Performance Ratio PR **72.74 %**

Normalized productions (per installed kWp): Nominal power 5.89 kWp



Performance Ratio PR



BLOS3082 Array D Balances and main results

	GlobHor kWh/m ²	T Amb °C	GlobInc kWh/m ²	GlobEff kWh/m ²	EArray kWh	E_Grid kWh	EffArrR %	EffSysR %
January	20.9	6.71	26.7	19.0	102.3	91.9	13.04	11.72
February	35.3	6.70	41.1	31.8	173.9	161.2	14.41	13.36
March	69.6	8.37	75.5	62.3	344.6	325.7	15.56	14.70
April	105.1	10.93	112.5	96.5	522.0	497.9	15.81	15.08
May	143.2	14.19	149.4	132.6	707.6	677.3	16.14	15.45
June	143.7	17.22	145.3	128.3	686.4	655.8	16.09	15.38
July	145.3	18.93	148.0	130.1	682.6	652.3	15.71	15.02
August	130.2	18.91	137.0	118.5	621.2	593.8	15.45	14.77
September	86.8	16.28	96.3	80.2	420.0	399.1	14.86	14.12
October	53.6	13.10	61.6	47.9	253.9	237.9	14.05	13.16
November	26.1	9.35	32.5	23.3	125.1	113.6	13.12	11.91
December	16.0	6.84	19.9	14.6	79.7	70.4	13.64	12.06
Year	975.8	12.33	1045.7	885.1	4719.3	4476.8	15.38	14.59

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 : BLOO3082 Array D

Simulation variant : BLOS3082 Array D

Main system parameters

System type **Grid-Connected**

Near Shadings

PV Field Orientation

PV modules

PV Array

Inverter

User's needs

According to strings

tilt 13°

Model SPR-E20-327-COM

Nb. of modules 18

Model SE5k

Unlimited load (grid)

Electrical effect 100 %

azimuth -35°

Pnom 327 Wp

Pnom total **5.89 kWp**

Pnom 5.00 kW ac

Loss diagram over the whole year

