

## Grid-Connected System: Simulation parameters

**Project :** 4 Wild Court

**Geographical Site** Wild Court Country **United Kingdom**

**Situation** Latitude 51.52° N Longitude -0.12° W  
 Time defined as Legal Time Time zone UT Altitude 24 m  
 Albedo 0.20

**Meteo data:** Wild Court Meteonorm 7.1 (1986-2005) - Synthetic

**Simulation variant :** WILD4061\_Final

Simulation date 31/03/20 11h50

### Simulation parameters

**Collector Plane Orientation** Tilt 6° Azimuth -45°  
**Models used** Transposition Perez Diffuse Perez, Meteonorm  
**Horizon** Free Horizon  
**Near Shadings** Detailed electrical calculation (acc. to module layout)

### PV Array Characteristics

**PV module** Si-mono Model **LG370Q1C-V5**  
 Custom parameters definition Manufacturer LG Electronics  
 Number of PV modules In series 8 modules In parallel 2 strings  
 Total number of PV modules Nb. modules 16 Unit Nom. Power 370 Wp  
 Array global power Nominal (STC) **5.92 kWp** At operating cond. 6.30 kWp (50°C)  
 Array operating characteristics (50°C) U mpp 305 V I mpp 21 A  
 Total area Module area **27.6 m²** Cell area 25.1 m²

### Inverter

Custom parameters definition Model **Solis-3P5k-4G**  
 Characteristics Manufacturer Ginlong  
 Operating Voltage 180-1000 V Unit Nom. Power 5.00 kWac  
 Max. power (=>25°C) 5.50 kWac  
 Inverter pack Nb. of inverters 2 \* MPPT 50 % 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. 213 mOhm Loss Fraction 1.5 % at STC  
 Module Quality Loss Loss Fraction -0.8 %  
 Module Mismatch Losses Loss Fraction 1.0 % at MPP  
 Strings Mismatch loss Loss Fraction 0.10 %  
 Incidence effect, ASHRAE parametrization IAM = 1 - bo (1/cos i - 1) bo Param. 0.05

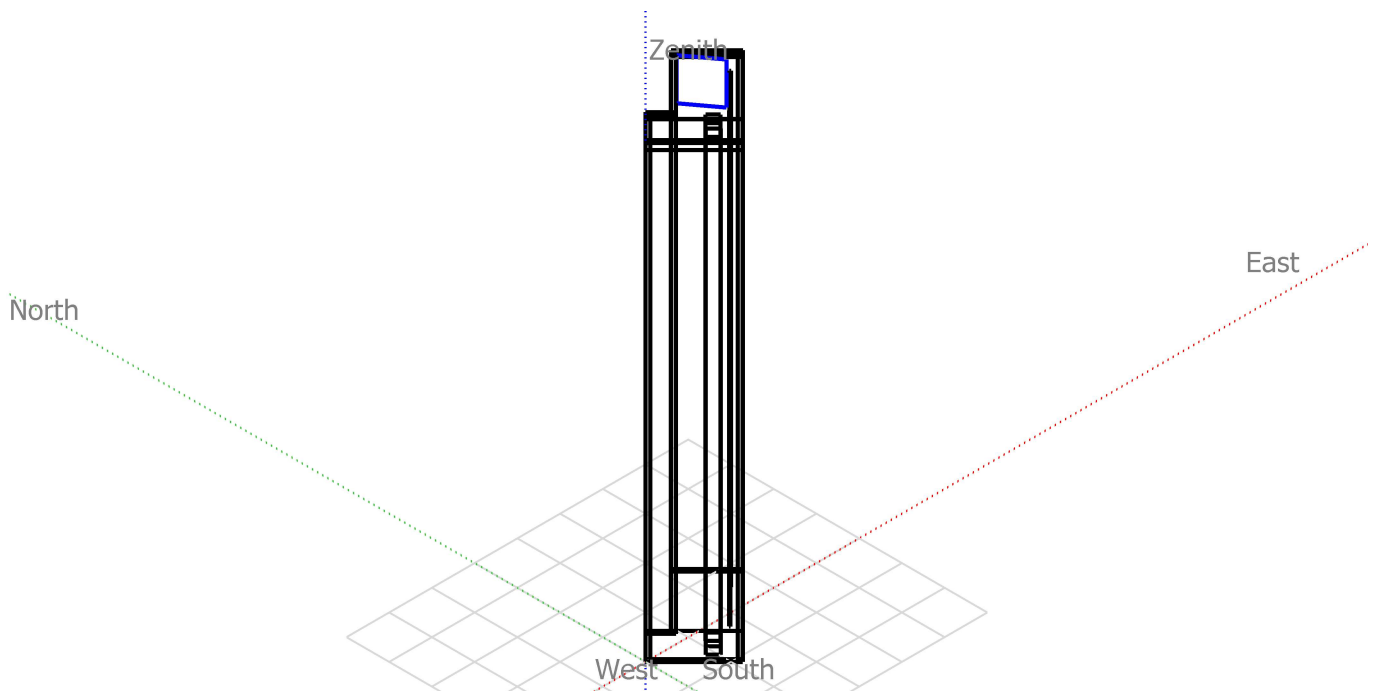
**User's needs :** Unlimited load (grid)

## Grid-Connected System: Near shading definition

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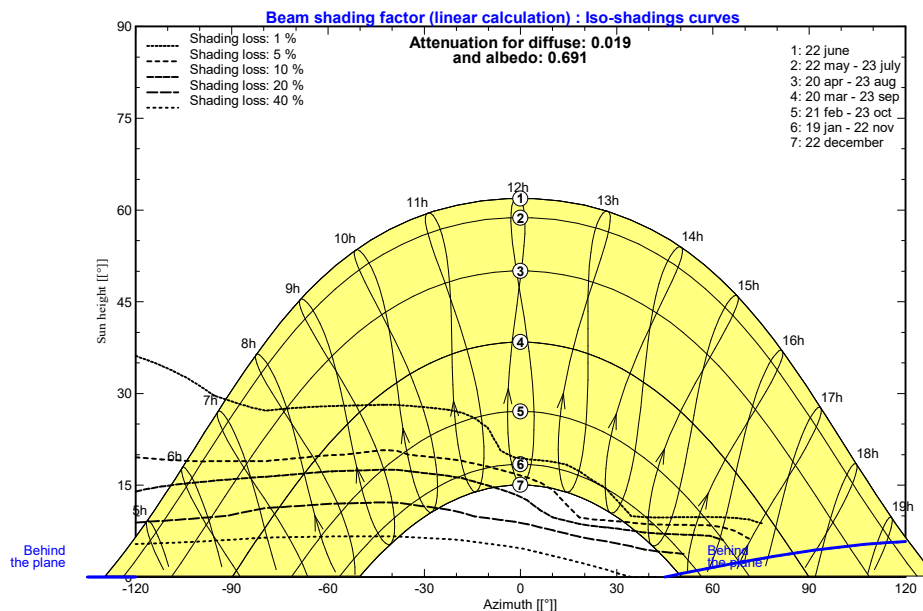
<b>Main system parameters</b>	System type	<b>Grid-Connected</b>		
<b>Near Shadings</b>	Detailed electrical calculation	(acc. to module layout)		
PV Field Orientation	tilt	6°	azimuth	-45°
PV modules	Model	LG370Q1C-V5	Pnom	370 Wp
PV Array	Nb. of modules	16	Pnom total	<b>5.92 kWp</b>
Inverter	Model	Solis-3P5k-4G	Pnom	5.00 kW ac
User's needs	Unlimited load (grid)			

### Perspective of the PV-field and surrounding shading scene



### Iso-shadings diagram

4 Wild Court



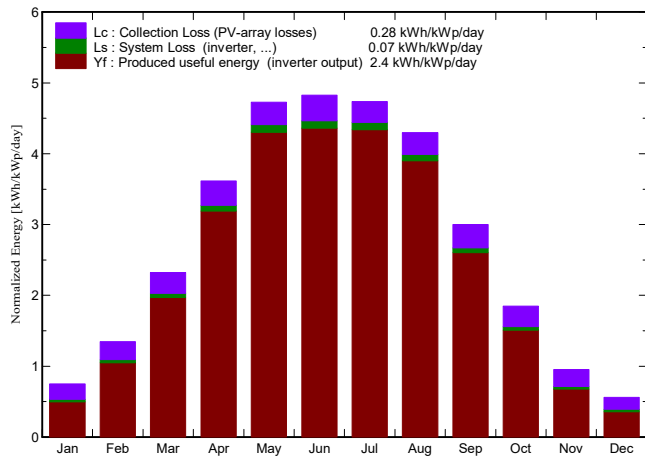
## Grid-Connected System: Main results

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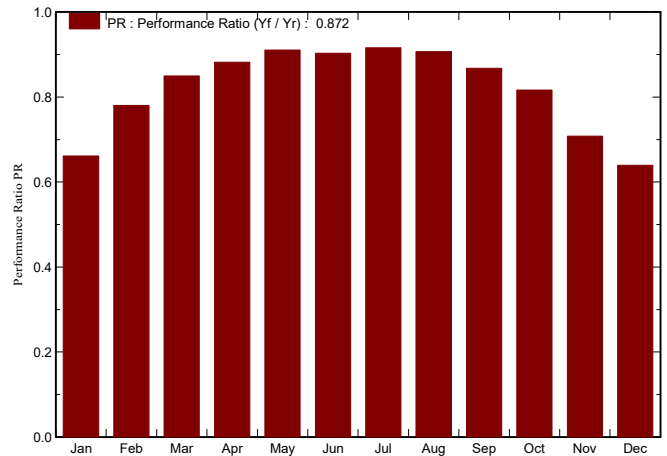
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**Main simulation results**  
**System Production**                      **Produced Energy** **5194 kWh/year**      Specific prod. 877 kWh/kWp/year  
**Performance Ratio PR** **87.21 %**

**Normalized productions (per installed kWp): Nominal power 5.92 kWp**



**Performance Ratio PR**



### WILD4061\_Final Balances and main results

	GlobHor	DiffHor	T Amb	GlobInc	GlobEff	EArray	E_Grid	PR
	kWh/m <sup>2</sup>	kWh/m <sup>2</sup>	°C	kWh/m <sup>2</sup>	kWh/m <sup>2</sup>	kWh	kWh	
<b>January</b>	20.9	13.20	6.61	23.2	20.6	97.7	90.8	0.662
<b>February</b>	35.3	23.52	6.60	37.7	34.6	180.9	174.1	0.780
<b>March</b>	69.6	46.15	8.27	71.9	67.5	372.1	361.8	0.850
<b>April</b>	105.2	61.01	10.83	108.5	102.7	581.3	566.9	0.882
<b>May</b>	143.3	77.11	14.09	146.5	139.6	809.2	789.9	0.910
<b>June</b>	143.7	88.82	17.12	144.8	137.2	793.1	774.2	0.903
<b>July</b>	145.3	80.80	18.83	146.8	139.5	815.4	796.0	0.916
<b>August</b>	130.2	71.42	18.81	133.3	126.3	732.4	715.4	0.907
<b>September</b>	86.6	49.41	16.18	90.0	84.7	474.5	462.1	0.868
<b>October</b>	53.6	32.66	12.89	57.3	52.9	285.9	277.1	0.816
<b>November</b>	26.0	16.63	9.25	28.7	25.6	126.9	120.1	0.708
<b>December</b>	16.0	12.26	6.65	17.4	15.5	71.8	65.9	0.640
<b>Year</b>	975.7	572.98	12.21	1006.2	946.5	5341.3	5194.4	0.872

Legends:	GlobHor      Horizontal global irradiation	GlobEff      Effective Global, corr. for IAM and shadings
	DiffHor      Horizontal diffuse 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	PR      Performance Ratio

## Grid-Connected System: Loss diagram

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### Loss diagram over the whole year

