

# System Overview

Your system comprises **13 Jinko Tiger Neo 425W N-Type All Black Mono solar panels** to collect sunlight and turn it into DC electricity.

The panels will be connected to **1 G3 GivEnergy 3.6kW hybrid inverter**, which converts the DC electricity into mains (AC) electricity.

A **GivEnergy 5.2kWh LiFePO4 Battery battery storage system** will allow you to store excess energy from sunny days, so that you can use your generated electricity at night too.

We include all the isolators, wiring and meters needed to connect the system safely to your electrical system. Your system will be installed and certified by our trained installation team.

Satellite Image



## Solar Panels: Jinko Tiger Neo 425W N-Type All Black Mono x 13

Long warranty, low degradation, N type all black panel from Jinko

Model

Power 425 watts

Dimensions 1134 x 1722mm



## Inverter: G3 GivEnergy 3.6kW hybrid

The third generation of the GivEnergy Hybrid inverter is a DC-coupled storage solution which allows you to seamlessly integrate battery storage into P...

AC Power 3600 watts

Trackers 2

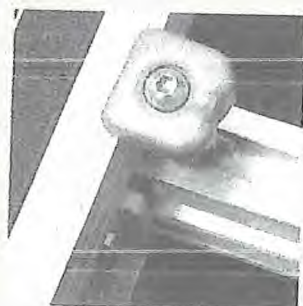
# System components



## Battery: GivEnergy 5.2kWh LiFePO4 Battery

GivEnergy's LiFePO4 chemistry is the safest cell technology on the market, offering higher capacity and higher density cells whilst monitoring individ...

|          |           |
|----------|-----------|
| Capacity | 5.200 kWh |
| Quantity | 1         |



## Mounting: Renusol pitched roof mounting system

Renusol is a German engineered PV roof mounting system. It is extremely versatile and compatible with the most popular roof coverings used in the UK.

|              |                     |
|--------------|---------------------|
| Designed for | Concrete Tile roofs |
| Colour       | Not specified       |

# System Performance

We have made an estimate of the annual energy generation of your system. This takes into account the following factors that affect the output of a solar array.

## The location of the system

Sunlight is weaker near the poles than near the equator. We use data from a meteorological model of the intensity of sunlight over the course of the year in different locations all over the world.

## The orientation of the system

Solar panels that face south receive a little more sunlight than panels that face east or west. However, in diffuse light the orientation of the panels makes little difference, so the effect is less marked than many people imagine.

## The degree of shading

If you have trees, neighbouring buildings or nearby high ground that will shade your PV array, the output of the system will be reduced. We have used a 'sunpath diagram' that estimates how often sunlight will be blocked from reaching the panels.

**We expect your system to generate**  
**4,117 kWh per year**

### Installation data

Installation capacity of PV system – kWp (stc)  
Orientation of the PV system – degrees from South  
Inclination of system (pitch) – degrees from horizontal  
Postcode region

6 kWp  
See roof diagrams  
See roof diagrams  
Zone 11

### Performance Calculations

kWh/kWp (Kk)  
Shade Factor (SF)  
Estimated output (kWp x Kk x SF)

See sunpath diagrams  
See sunpath diagrams  
4117 kWh

## Roof diagrams

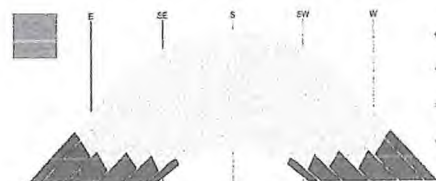


Roof 2 Orientation: 19° Pitch: 40°

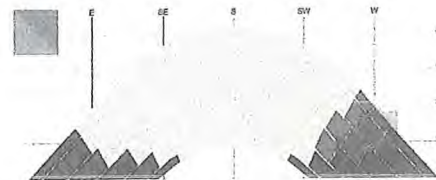


Roof 3 Orientation: 110° Pitch: 40°

## Sunpath diagrams



Shade factor: 1.00 Kk: 625



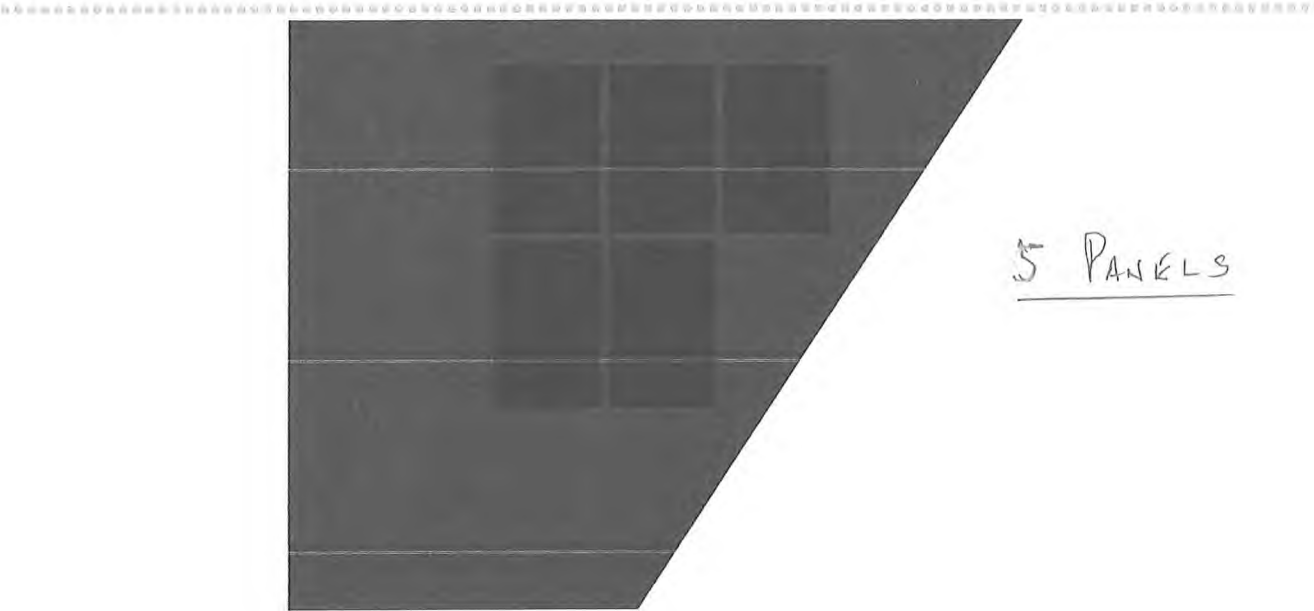
Shade factor: 0.93 Kk: 882

**Important note:** The performance of solar PV systems is impossible to predict with certainty due to the variability in the amount of sunlight from location to location and from year to year. This estimate is based upon a model that takes account of meteorological data at your location and makes an allowance for losses due to shading of the panels. This is a complex calculation however, and no model can be 100% accurate. It should not be considered a guarantee of performance.

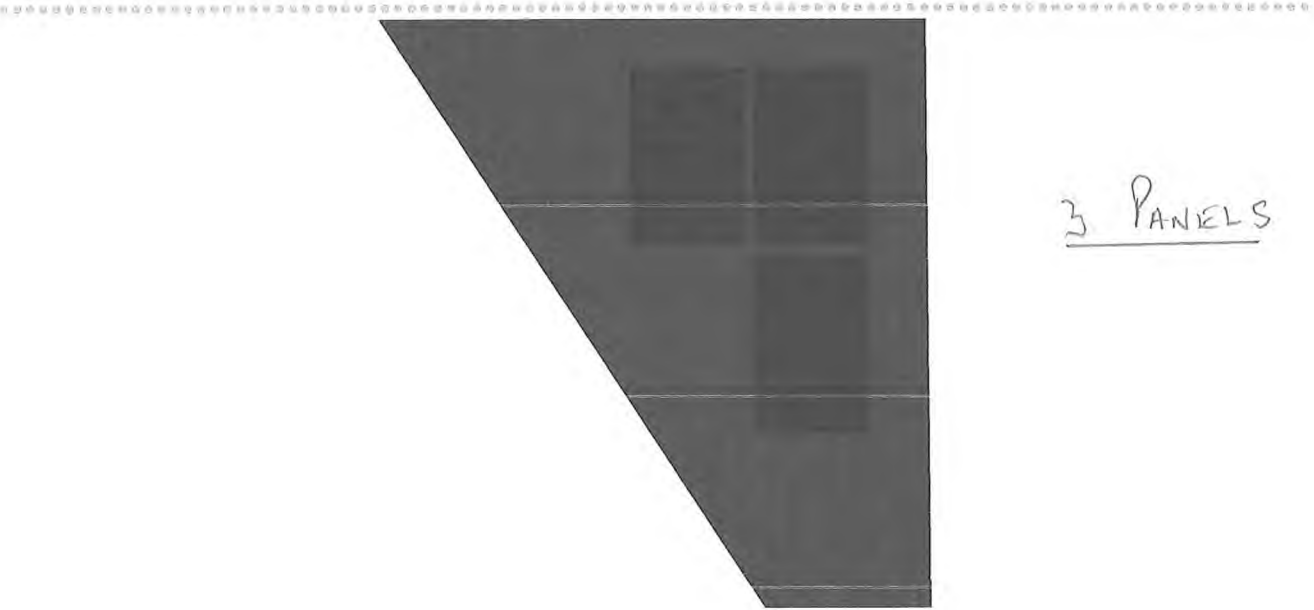
If shading is present on your system that will reduce its output to the factor stated. This factor was calculated using industry standard shading methodology and we believe that this will yield results within 10% of the actual energy estimate stated for most systems.

# Roof Layout

Roof 1



Roof 2



### Roof 3



5 PANELS

# Component list

| Item                                                                                                                                     | Quantity |
|------------------------------------------------------------------------------------------------------------------------------------------|----------|
|  Jinko Tiger Neo 425W N-Type All Black Mono solar panel | 13       |
|  G3 GivEnergy 3.6kW hybrid inverter                     | 1        |
|  Emlite ECA2 1ph Meter (Extended Cover)                 | 1        |
|  Label sheet                                            | 1        |
|  Tigo Retrofit Frame Mounted Optimiser TS4-A-O          | 5        |
|  GivEnergy DC Miniature Circuit Breaker (MCB)         | 1        |
|  GivEnergy GEM120CT Modbus Energy Meter               | 1        |
|  AC electrical install materials                      | 1        |
|  GivEnergy All-in-one to Ring Terminal Cable          | 1        |
|  Rubber Grommet for Gen3 Inverter Plug Cables         | 1        |
|  AC isolator - IMO - 20A 4-pole                       | 2        |
|  GivEnergy 5.2kWh LiFePO4 Battery                     | 1        |
|  IMO 25A DC Isolator 4-pole 2-string                  | 2        |
|  MC4 4mm Connector Pair                               | 4        |
|  50m reel of 4mm2 solar cable                         | 2        |



Renusol black universal end clamp

28



Renusol black universal mid clamp

12



Renusol black end cap

28



Renusol concrete tile roof hook

42



Box of 100

Renusol pan head screw M6x80 (box of 100)

3



Renusol silver rail 3600mm

13



# Inverter checks

## G3 GivEnergy 3.6kW hybrid

### Panels

|          |      |                 |      |
|----------|------|-----------------|------|
| PV power | 5525 | Rated AC output | 3600 |
|----------|------|-----------------|------|

Input 1: 5 Jinko Tiger Neo 425W N-Type All Black Mono solar panels in 1 strings

### Panels

### Inverter

|                                |        |                              |       |
|--------------------------------|--------|------------------------------|-------|
| PV power                       | 2125 W |                              |       |
| Open circuit voltage at -10° C | 213 V  | Max DC voltage               | 580 V |
| V <sub>mpp</sub> at 40° C      | 156 V  | V <sub>mpp</sub> lower limit | 120 V |
| V <sub>mpp</sub> at -10° C     | 177 V  | V <sub>mpp</sub> upper limit | 550 V |
| I <sub>mpp</sub> at 40° C      | 13 A   | Max DC input current         | 15 A  |

### Max voltage

The open circuit voltage of the solar panels never exceeds the voltage limit of the inverter.



### Max power point range

The maximum power point voltage of the solar panels is always above the lower limit of the inverter MPPT tracker. The maximum power point voltage of the solar panels is always below the upper limit of the inverter MPPT tracker.



### Max Current

The maximum power point current of the solar panels is always below the maximum current for the inverter MPPT tracker.



Input 2: 8 Jinko Tiger Neo 425W N-Type All Black Mono solar panels in 1 strings

| Panels                         | Inverter |                              |       |
|--------------------------------|----------|------------------------------|-------|
| PV power                       | 3400 W   |                              |       |
| Open circuit voltage at -10° C | 340 V    | Max DC voltage               | 580 V |
| V <sub>mpp</sub> at 40° C      | 249 V    | V <sub>mpp</sub> lower limit | 120 V |
| V <sub>mpp</sub> at -10° C     | 283 V    | V <sub>mpp</sub> upper limit | 550 V |
| I <sub>mpp</sub> at 40° C      | 13 A     | Max DC input current         | 15 A  |

### Max voltage

The open circuit voltage of the solar panels never exceeds the voltage limit of the inverter.



### Max power point range

The maximum power point voltage of the solar panels is always above the lower limit of the inverter MPPT tracker. The maximum power point voltage of the solar panels is always below the upper limit of the inverter MPPT tracker.



### Max Current

The maximum power point current of the solar panels is always below the maximum current for the inverter MPPT tracker.





# Electrical

## G3 GivEnergy 3.6kW hybrid



### AC Isolator

A AC isolator - IMO - 20A 4-pole has been specified for this input

#### Current

The rated isolator current (20A) is greater than the rated inverter current (16A)



#### Phases

The isolator is suitable for use on a single phase inverter.



## Input 1



### DC Isolator

A IMO 25A DC Isolator 4-pole 2-string has been specified for this input

#### Current

The isolator is rated for a current of 25A, which is more than the expected maximum current of 13.58A.



### Voltage

At 25A the isolator is rated for a voltage of 600V, which is more than the expected maximum voltage of 194.75V.



### Cable

10m of 4mm<sup>2</sup> solar cable has been specified

### Voltage drop

Voltage drop at maximum power point at 40°C will be around 1.10 V (0.71 percent)



## Input 2



### DC Isolator

A IMO 25A DC Isolator 4-pole 2-string has been specified for this input

### Current

The isolator is rated for a current of 25A, which is more than the expected maximum current of 13.58A.



### Voltage

At 25A the isolator is rated for a voltage of 600V, which is more than the expected maximum voltage of 311.6V.





## Cable

20m of 4mm<sup>2</sup> solar cable has been specified

### Voltage drop

Voltage drop at maximum power point at 40°C will be around  
2.21 V (0.89 percent)

