

# Solar Smart [Site]

Site location

**CV47 2GR UK**

Project

**HS2**

Usage: 24h per day, 7 days a week 1st June -to- 31th July

## Solar charge & diesel fuel consumption report.



# Solar Smart [Site]

**Each component is designed to work alone OR together in ANY combination to save energy.**

Our first major trial of Solar Smart SITE components working together was a groundworks site @ HS2. A two month trial to gather data on power demands and inputs from our Solar Site products working together.

The final aim to increase sustainable power input over time with extra battery storage and solar panels. Then record the results.

Starting with the Solar Pod on it's own, powering 9 units for 1 month. Then scaling up the solar input in month 2 adding a Power Pod and Solar Smart Panels to the roofs of the site cabins.



**Solar Pod**

**Sustainable Power Supply**

Easily add a sustainable power supply to remote locations. Generate solar power and autoswitch with the back up diesel generator.



**Battery Pod**

**High capacity battery bank**

Use batteries as your primary source of power. Attach multiple Power Pods to your setup for even more power storage potential.



**Solar Smart**

**Plug in solar panels**

Every roof is a renewable opportunity. No complicated installation, plug solar directly into your cabins. Auto switch with the local grid (or Solar Pod) when demand is high.

**June  
Month 1**



**Solar Pod**

**July  
Month 2**



**Solar Pod**



**Battery Pod**



**Solar Smart**

## Site cabin list.

Units powered by the Solar Smart SITE.

### 32x10 Temperature scanning cabin

2 x 2kw heaters  
1 x 300w temperature scanning machine  
4 x 100w 900mm LED lights  
3 x 5w emergency exit lights  
3 x 10w outside lights  
1 x light switch  
1 x PIR  
4 x 13amp single sockets  
3 x 13amp double sockets

### 32x10 Canteen cabin

1 x 2kw kettle  
1 x 1.5kw toaster  
1 x 900w microwave  
1 x 150w fridge  
1 x 2kw boiler  
5 x 100w 1200m lights  
3 x PIR  
2 x 2kw heaters  
1 x 50w wireless router  
2 x 13amp double sockets

### 32x10 Office

2 x 2kw heater  
2 x 100w laptops  
1 x 150w fridge  
2 x 300w printer  
6 x 13amp double sockets  
5 x 100w 1200mm lights  
1 x light switch

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2 x 100w laptops  
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1 x 50w wireless router

### 32x10 Office

2 x 2kw heater  
2 x 150w laptops  
1 x 100w tv  
2 x 300w printer  
6 x 13amp double sockets  
5 x 100w 1200mm lights  
1 x light switch  
1 x 50w wireless router

### 20x8 Store

2 x 100w 1200mm lights  
No light switch  
18 x 20w radio chargers  
1 x 1kw toaster  
2 x 13amp double sockets

### 20x8 Store

1 x 100w 1200mm light

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1 x 100w 1200mm light

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1 x 100w 1200mm light

*Plus.....*

**5 x external 150w lights**

**2 x water bowsers, 1kw each**

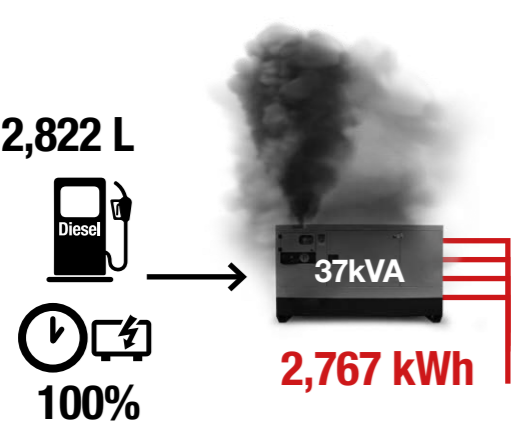


# Generator    **VS**    Solar Pod

Recorded data from remote telemetry

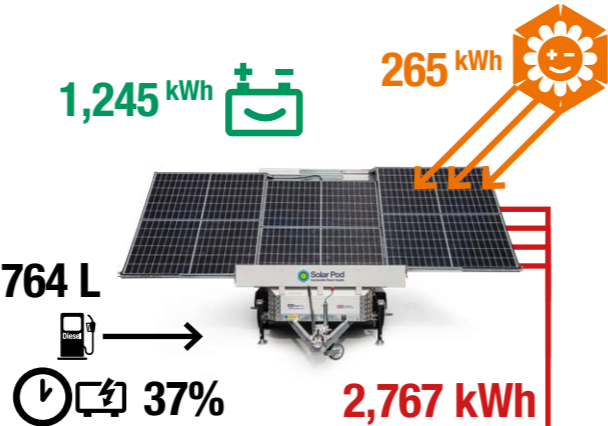
## Standard construction site stand-alone generators

Ordinarily, the temporary accommodation on this site would be powered by a 37kva Diesel Generator.



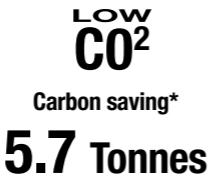
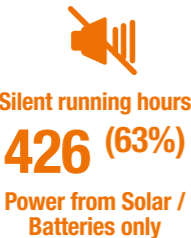
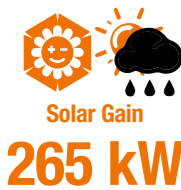
Total diesel cost  
**£5,079**

The Solar Pod has been on site for 4 weeks, and the standby generator has only ran for 246 hours across these 4 weeks. An average of 8.2 hours per day. Reading the telemetry data, we are able to show that frequently, the site is powered silently and emission free either by direct solar or energy stored in the batteries.



Total diesel cost  
**£1,375**

	37kVA Diesel Generator	Solar Pod 30
TOTAL SOLAR GAIN	0	265 kWh
POWER FROM BATTERIES	0	1,245 kWh
TOTAL CONSUMPTION	2,767 kWh	2,767 kWh
FUEL USED	Fuel Projected 2,822 Litres	Fuel actual 764 Litres
GEN HOURS	672 hours	246 hours
TOTAL FUEL COST	@ 1.80p per ltr = £5,079	@ 1.80p per ltr = £1,375
TOTAL LOCAL CO <sup>2</sup> PRODUCED	7,785 kg	2,107 kg



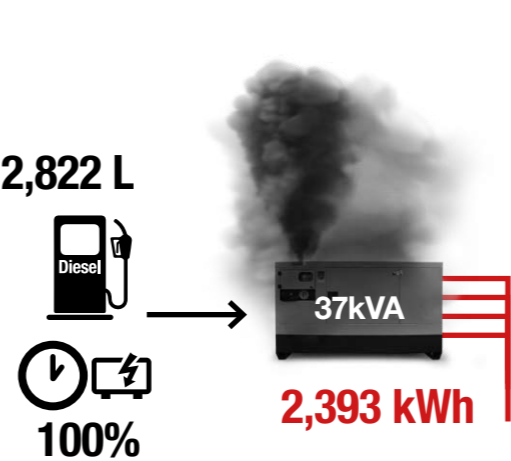
NOTE: Carbon emission statistics are from Department for Business, Energy & Industrial Strategy.  
Greenhouse gas reporting: conversion factors 2019. <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2019>.  
<https://www.boilerjuice.com/red-diesel-prices/>

# Generator    **VS**    Solar Smart SITE

Recorded data from remote telemetry

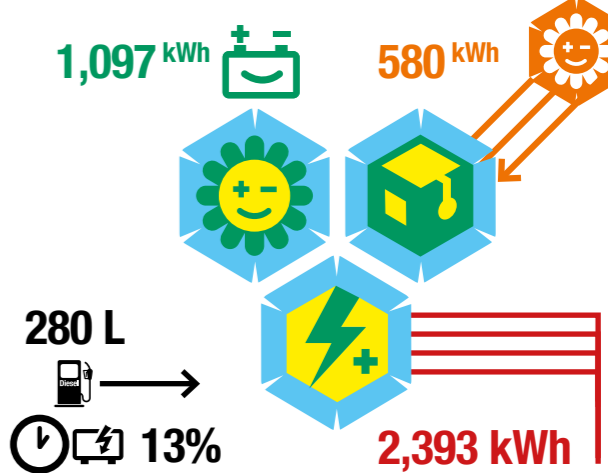
## Standard construction site stand-alone generators

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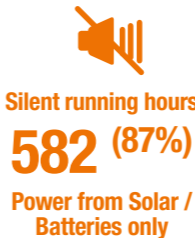
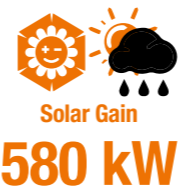
Total diesel cost  
**£5,079**

The Solar Smart SITE setup has been on site for 4 weeks, and the standby generator has only ran for 90 hours across these 4 weeks. An average of 2.9 hours per day. Reading the telemetry data, we are able to show that frequently, the site is powered silently and emission free either by direct solar or energy stored in the batteries.



Total diesel cost  
**£504**

	37kVA Diesel Generator	Solar Smart SITE Setup
TOTAL SOLAR GAIN	0	580 kWh
POWER FROM BATTERIES	0	1,097 kWh
TOTAL CONSUMPTION	2,393 kWh	2,393 kWh
FUEL USED	Fuel Projected 2,822 Litres	Fuel actual 280 Litres
GEN HOURS	672 hours	90 hours
TOTAL FUEL COST	@ 1.80p per ltr = £5,079	@ 1.80p per ltr = £504
TOTAL LOCAL CO <sup>2</sup> PRODUCED	7,785 kg	771 kg



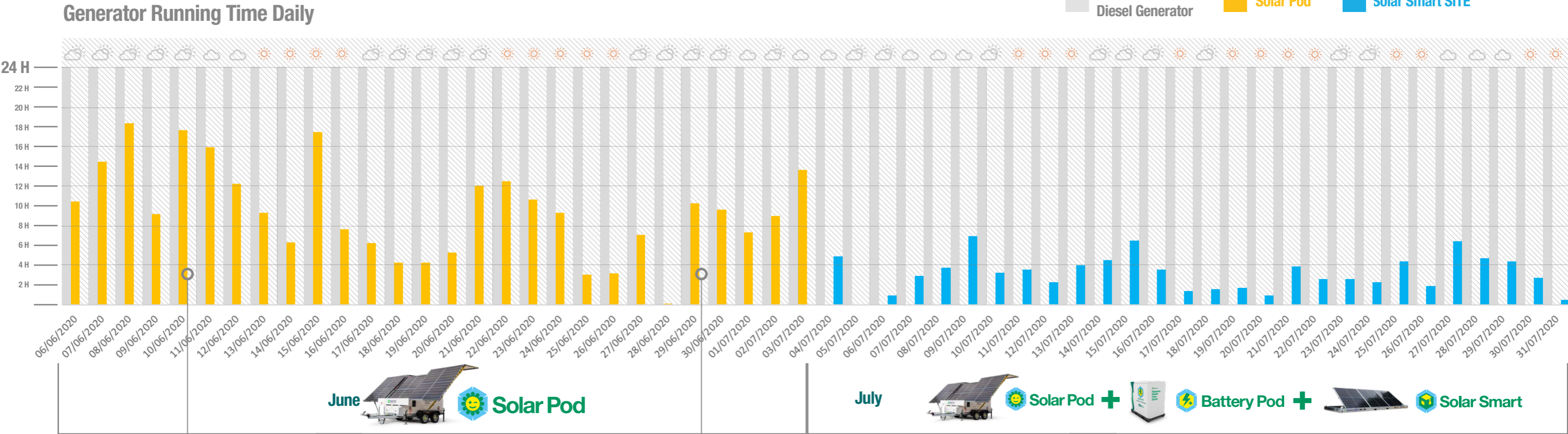
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<https://www.boilerjuice.com/red-diesel-prices/>

Site time line

How the site performed after Solar Smart SITE items were added, and cabin efficiency upgrades were made.

Sunny Partly Sunny Cloudy  
WEATHER DATA = <https://www.timeanddate.com/weather/uk/coventry/historic?month=7&year=2020>

Standard 37kVA Diesel Generator Solar Pod Solar Smart SITE



Upgraded lighting inside cabins - from Fluro to LED strips



Upgraded cabin heating to timer controlled



Upgraded cabin kettles (x3) to 1 cup water heaters.

Average per day

	Average kW from Diesel Generator per day	Average Generator running time per day	Average litres of diesel fuel used per day	Average CO2 emissions per day	Average CO2 emissions per day % reduction
Solar Smart SITE	19.2 kW	3.2 hours	9.9 L	27.4 kg	87% Reduction
Solar Pod	57.1 kW	9.5 hours	29.5 L	81.4 kg	61.4% Reduction
Standard 37kVA Diesel Generator	102.0 kW	24 hours	76.5 L	211.1 kg	100% On Time

Project savings

Compared to a 37kVA diesel generator

Diesel Saving  
4,572 L

LOW CO<sub>2</sub>  
Carbon saving\*  
12.7 Tonnes

1000 Hours  
Generator running time saving.  
Power from solar & batteries only.

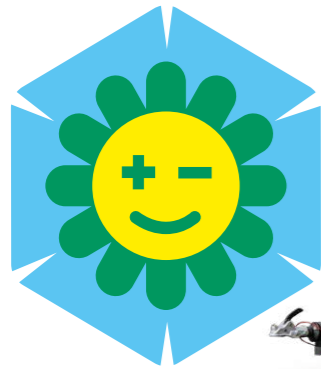
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All our products on site working together to maximise fuel savings and solar power input / output.



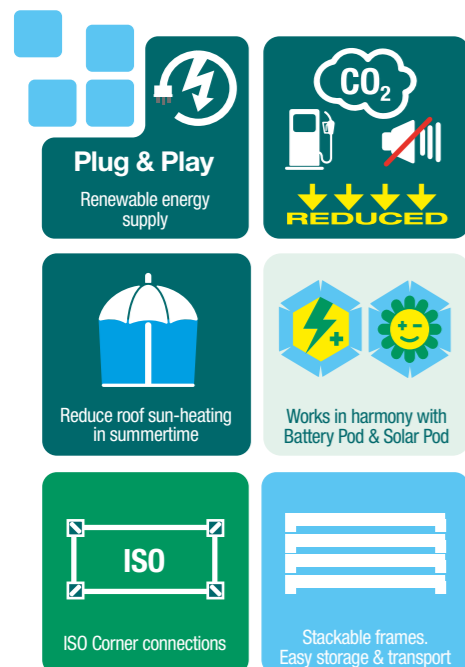
Solar Pod



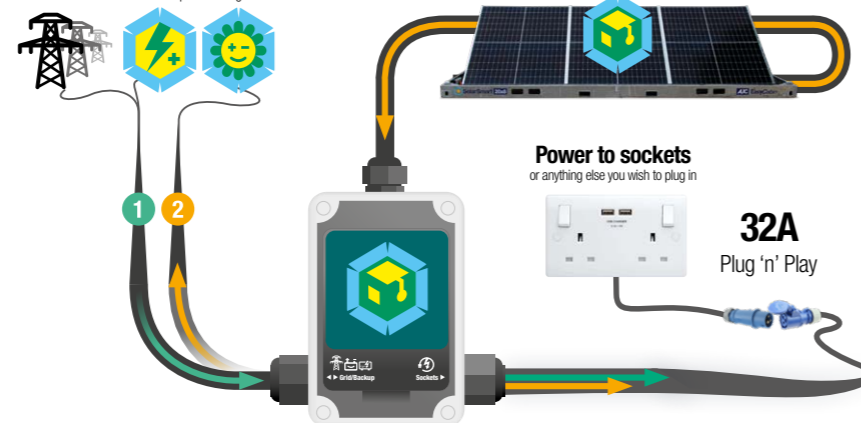
Battery Pod



Solar Smart

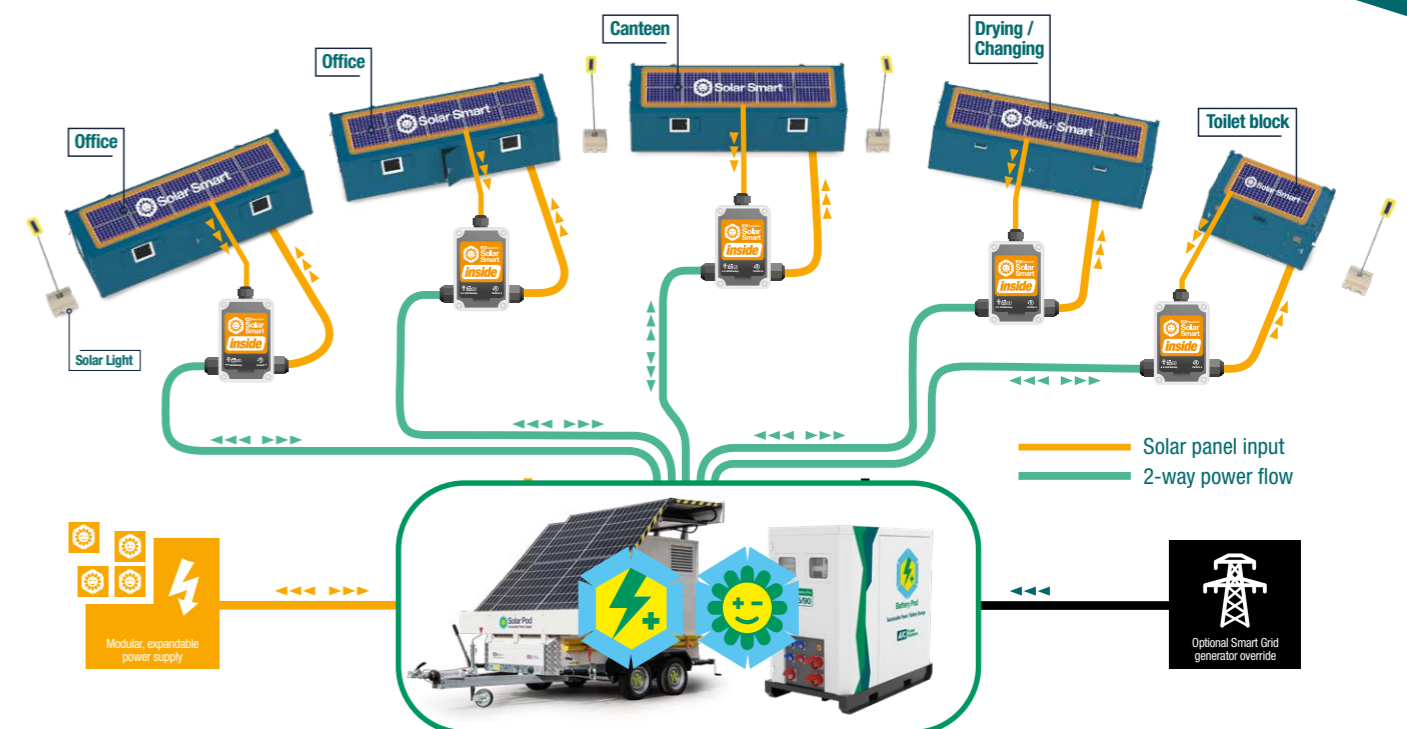


Smart Grid / Solar Pod / Battery Pod Backup  
or other power storage device



**1 High demand**  
Incoming solar & other power combines to meet demand.

**2 Power Harvesting**  
Low demand & high solar input. Spare solar power diverted to battery storage.



# AIM for Zero emissions & Zero fuel on your remote sites.



## Efficient static welfare units

Designed to use energy in the most efficient ways possible. LED lighting, low power heating & appliances throughout.

## Further fuel savings could have been made on this site, with Ecosmart Plug 'N' Play.

Site cabins with automatic power management build in.  
Designed to work directly with Solar Smart SITE products.



We have dedicated support teams to help you with every part of your journey with us.

We are more than just a manufacturer. Your success is the key to our success.

- Sales Support
- Marketing Support
- Delivery / Handover
- Product Training

- Service Support
- Technical Support
- Parts / Upgrades



[www.ajcpowersolutions.co.uk](http://www.ajcpowersolutions.co.uk)

01582 486663

[info@ajcpowersolutions.co.uk](mailto:info@ajcpowersolutions.co.uk)

DESIGNED & BUILT IN THE UK

AJC Trailers, Head Office & Factory, Unit 10, Cosgrove Way, Luton, Beds, LU1 1XL

### FOOTNOTES

I. Annual solar input based on usage hours per day, 130 days in winter mode and 130 days in summer mode. Each day is a typical usage day. 60p per litre red diesel.

II. CO2 per Litre of fuel / DEFRA 2022 figures. Red Diesel = 2.758

III. Solar panels achieve maximum output in direct sunlight, but they work in normal daylight and cloudy weather too. The amount of power a 48v solar panel or charging kit generates in cloudy weather will be lower compared to direct sunlight. Also the positioning of the cabin will affect the solar charging of the batteries i.e. under trees, etc. Solar assessment is based at Luton, Bedfordshire, UK.

IV. This assessment is guidance ONLY. As part of our on-going commitment to improvement we reserve the right to alter specifications, designs or figures, without prior notice. All dimensions and weights are approximate.