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# POWERING THE UNIT



Once your welfare cabin is safely deployed, you need to get it up and running. This GenFree unit can be powered either from an external power source or by an onboard SOLARFlow™ electrical system which harvests energy from solar panels on the roof and walls of the unit to charge the battery. All electrical items run from battery power alone with no need for a generator to be running.

The GenFree unit generates so much solar energy that it does not require a back-up generator to achieve full functionality.

# 4

## 4. POWERING THE GENFREE UNIT



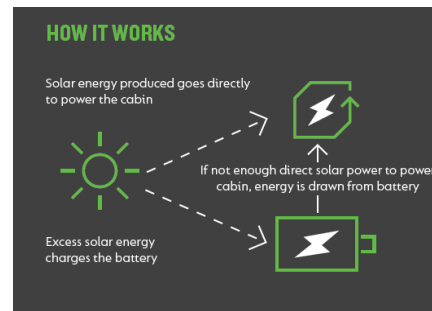
This welfare cabin is fitted with a unique SOLARFlow™ electrical system which is powered entirely by an array of solar panels mounted on the roof and on the sides of the cabin. Energy generated by these solar panels is fed into 200Ah lithium ion batteries.

The energy stored in the 5.12kVa batteries is used to power all the electrical items in the cabin. These include PIR-sensor 24V lighting inside and out; low-power 3-pin plug sockets for computers etc.; kettle; microwave; instant water heaters; electric hand dryers; USB charging points; hydraulic ram deployment system; and the UV water sterilisation system. Heating is supplied by an ultra low-consumption diesel heater using 0.25 litres of fuel per hour. The heater can use either low net-CO2 emission HVO biofuel or white diesel interchangeably. There is no need to empty or clean the fuel tank when changing between fuels.

The cabin may also be powered using an external power source.

In Section 4 of the Manual, we explain how to use the various power sources.

**CAUTION:** To ensure the optimum performance of the solar-powered GenFree cabin, the unit should be parked with its tow hitch facing south in an open exposed area with as little shade as possible over the roof or side vertical solar panels. **DO NOT PARK CABIN IN THE SHADE OR UNDER COVER.** Avoid areas under trees, tunnels or close to tall buildings if at all possible.



### 4.1 USING AN EXTERNAL POWER SOURCE

The welfare unit can be connected to an external electrical power supply using a standard 32A 230V AC cable connected to the socket located under the anti-vandal cover.

Before connecting this cabin installation to the mains supply, check that:

- the supply available at the site supply point is suitable for the cabin's electrical installations and appliances;
- the voltage and frequency and current ratings are suitable.

#### IMPORTANT

This cabin is internally supplied with a TN-S earthing arrangement. In accordance with Regulation 717.411.4 BS7671:2018:

**THIS CABIN SHALL NOT BE CONNECTED TO A PME SUPPLY**

EXTERNAL SUPPLY MUST BE:

- Single phase
- 230V
- 32A
- No less than 2.5mm<sup>2</sup> wire
- Cables must meet H07RN-F (BS-EN 50525-2-21) standard as set out in Regulation 717.52 BS7671:2018

## 4.1.1 TO CONNECT EXTERNAL ELECTRICITY SUPPLY



1. Before connecting, flip the cabin external supply RCD to the OFF position (RCD located inside the white cupboard under the Canteen worktop).



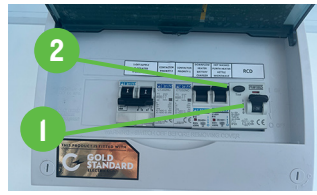
2. Open the cover to the inlet socket on the front of this cabin and insert the connector of the supply flexible cable. Next raise the cover of the electricity outlet provided at the site supply point and insert the plug of the supply cable.



3. If using an external power supply, make sure the CAM switch located beneath the work surface in the Canteen is in the correct position. In towable cabins this switch is located in the white cupboard below the counter. UP for internal solar/battery power, DOWN for external power.



4. When the two ends of the supply cable are inserted into their respective sockets, and the Internal/ External CAM switch is in the correct position, locate main RCD panel on the wall in the Canteen and flip the external supply RCD up to the ON position.



**RCD Board - TEST:** Next it is essential to check the operation of residual current devices (RCDs/ RCBOs) fitted in cabin. To test the Main RCD open the cover and ensure the RCD paddle [1] is in the "ON" position. Press the TEST button [2], the paddle will move to the down "OFF" position and power will be cut to all circuits. If this does not happen, the RCD is faulty and the electrical system should not be used until rectified by qualified personnel. To reset the RCD or any MCB push the paddles to the "ON" position.



### IMPORTANT

IN THE CASE OF DOUBT OR, IF AFTER CARRYING OUT THE PROCEDURE, THE SUPPLY DOES NOT BECOME AVAILABLE OR IF THE SUPPLY FAILS, CONSULT THE SITE OPERATOR OR THE OPERATOR'S AGENT OR A QUALIFIED ELECTRICIAN.



### CAUTION

THE CABIN SUPPLY FLEXIBLE CABLE MUST BE FULLY UNCOILED TO AVOID DAMAGE BY OVERHEATING.

## 4.1.2 TO DISCONNECT EXTERNAL ELECTRICITY SUPPLY



1. Before disconnecting, flip the cabin external supply RCD to the OFF position (RCD located inside the white cupboard under the Canteen worktop).



2. Unplug the cable first from the site supply point and then from the cabin inlet connector.

### PERIODIC INSPECTION

Preferably not less than once every three years and annually if the cabin is used frequently, the cabin's electrical installation and supply cables should be inspected and tested and a report on their condition obtained as prescribed in BS 7671 Requirements for Electrical Installations published by the Institution of Engineering and Technology & BSI.

# 4.2 USING THE INTERNAL SOLARFLOW™ POWER SYSTEM

The SOLARFlow™ electrical system in the GenFree cabin uses 200Ah 5.12kVA batteries to power all electrical appliances in the unit. The batteries are charged with energy generated by an array of solar panels mounted on the roof, in an extendable roof tray and on the sides of the cabin.

Heating is supplied via an ultra-low consumption 24V air-blown diesel heater which consumes 0.25 litres of fuel per hour.

In the rest of Section 4, we explain how to operate and maintain the SOLARFlow™ hybrid system.

# 4.3 HEATER CHECKS BEFORE USE

## 4.3.1 HEATER FUEL CHECK AND FILL



1. There are three ways to check the fuel level in the Deep Green or GenFree cabins.
  1. Using the Gauge Panel in the Canteen. When the electrics are switched on, this Gauge Panel displays the levels of the fuel, fresh water and waste tanks.
  2. Using the physical fuel gauge which is found in the fuel compartment in the front of the cabin in 12ft, 16ft and 20ft units.
  3. Cabin owners that have access to the SOLARTrack™ remote monitoring system are able to see the cabin fuel level using this system. An email alert is also sent to the SOLARTrack™ user when the fuel level falls below a defined level.



2. If fuel is needed, the fuel filler cap [1] is located in the base of the fuel compartment [2] in the front of the cabin. Fill the fuel reservoir with the correct amount of HVO biofuel or traditional white diesel. Do NOT use bio diesel. Replace and lock the cap and/or the fuel compartment door as appropriate.

**SOLARTrack™**  
All tank levels in Deep Green or GenFree cabins can be remotely monitored by authorised users via the online SOLARTrack™ system. Contact your cabin provider to see if you have access to this system and for instructions on how to use it.

**NOTE**  
The heater can use either HVO biofuel or white diesel interchangeably and the tank can be filled with either. The tank does NOT need to be emptied and cleaned if fuels are changed.

**CAUTION**  
TO PROTECT THE CABIN HEATER FROM DAMAGE, IT IS VITAL THAT THERE IS ALWAYS FUEL IN THE TANK. IF THERE IS NOT ENOUGH FUEL IN THE TANK, ALL ELECTRICS IN THE CABIN WILL TURN OFF. A WARNING WILL BE ISSUED VIA EMAIL AND ON THE DISPLAY SCREEN IN THE CANTEEN AND THE CABIN WILL NOT FUNCTION UNTIL FUEL IS ADDED.

## 4.4 TURNING ON THE ELECTRICAL SYSTEM



The E-STOP Isolator controls the electrical system and must be released or the electrics will not work. If it is pressed in, twist button clockwise to release. Now all the electrical items in the cabin will function.



If the batteries do not seem to be charging in the hours of daylight, check that the Solar Charger Switches are in the ON position. They are located inside the bench seat in the Canteen. If switched OFF, the solar panels will not charge the batteries.



To save energy, the electrics are also controlled by PIR sensors in the light fittings, and will turn off automatically if no movement is detected for 10 minutes. Make a movement to turn back on.

## 4.5 LEAVING THE CABIN



As the cabin electrics are controlled by PIR-sensor, there is no need to turn anything off when you leave the cabin. All electrics will turn off automatically after 10 minutes as will the Canteen and Office heaters.



When you vacate the cabin, the Drying Room heater will stay on for 4 hours unless switched off manually.



### CAUTION



**In the case of emergency such as fire in the cabin or risk to life from electrical shock, press Emergency Stop isolator in to turn off all electrics immediately.**