Fitting solar panels

Gilbert Park measures up for solar panels and installs them on his Merry Fisher's coachroof

MAIN Gilbert Park runs a Merry Fisher 855 like this INSET RIGHT Neat installation for solar panels

My crew and their mum were going to visit me and stay on the boat for three days in August. The destination was to be Ryde on the Isle of Wight, an ideal place for children. But I could foresee a problem.

It's a drying harbour, which is no problem for my Merry Fisher 855, as all I have to do is tilt the engines up. There is water on the pontoons, but no electricity: three days and nights with fridges and water pumps at full pelt might stress the domestic battery.

Solar panels were the answer. I'd had them professionally fitted before to two other boats and had studied the installation, so this time I decided to install them myself.

Planning and preparation

Space was limited and I wanted to get the maximum size onto the cabin top. I'd decided on rigid, framed panels as they offer the best value for money. However, when I measured the space, I realised that the panel size I wanted might not actually fit. When calculating size you have to add on the mounting feet as well, and they add an extra 6cm on each side.

I wasn't sure if I could squeeze the mounting feet on or not, so I made some paper templates. Sure enough, the rigid panels would not fit with brackets included, so I decided instead to go for semi-flexible panels of the same size, stuck directly to the fibreglass.

Once I knew the size I could order them along with the controller and all the cables I needed. I'd studied various articles in PBO and on the basis of these ordered the more efficient Maximum Power Point Tracking (MPPT) controller.

I found Photonic Universe to be a helpful and relatively inexpensive supplier, and usefully they give Cruising Association members a discount.

Installation

The boat has two batteries: one for each engine. The port engine battery also supplies the domestic services and I decided to only charge this battery. The other I always switch off once the engines are finished with and there is a switched link should one battery be flat.

The final point to consider is how to fix them onto the roof. There are four options: stick them on with Sikaflex; drill holes and screw or rivet them on; use double-sided industrial adhesive tape, or use Velcro. I don't like drilling holes in my boat and the instruction manual advised against using the tape or Velcro if there is any curvature on the roof – which there is on my boat.

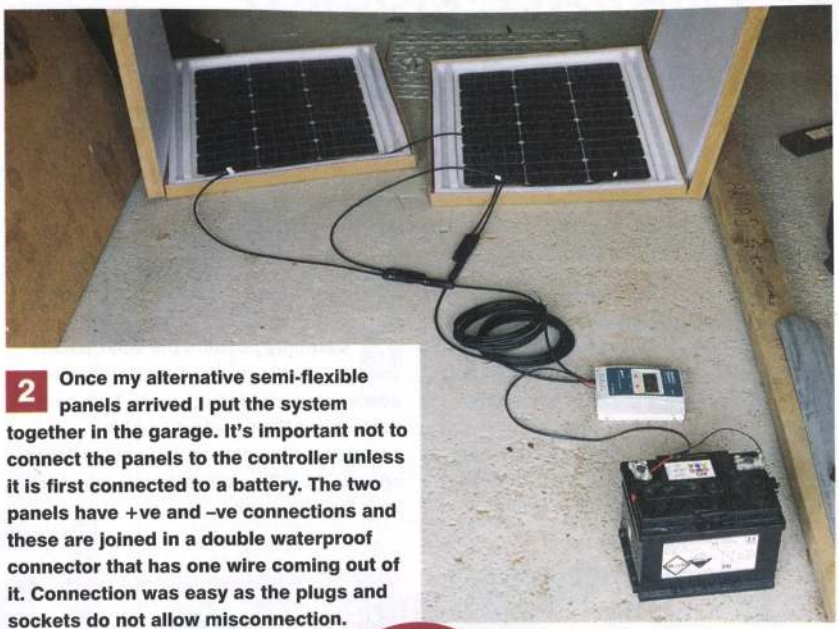
Ordinary Sikaflex is not recommended. Instead I used Sikaflex 252 with the prior application of activator and primer. It's not a cheap option and all the products had to be sourced from the internet as none of the chandleries I tried had them in stock.

The crew

There's nothing like starting them young. For the past three years short holidays have been spent on the boat with Captain Granddad. Amelia is now aged seven and acts as Chief Helmsman (but only in open water at low speeds with constant supervision) and Joseph, aged four, is Chief Lookout, just in case pirates are around.

Testing solar panels and running wires

1 I cut out paper templates to the size of the rigid solar panels I wanted including the additional mounting brackets, but it was pretty obvious I'd not be able to get them to fit.



2 Once my alternative semi-flexible panels arrived I put the system together in the garage. It's important not to connect the panels to the controller unless it is first connected to a battery. The two panels have +ve and –ve connections and these are joined in a double waterproof connector that has one wire coming out of it. Connection was easy as the plugs and sockets do not allow misconnection.

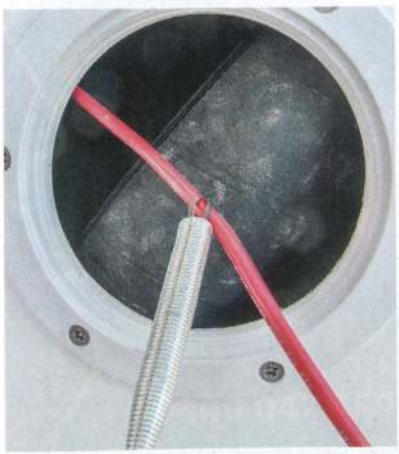
Step by step

3 Before starting work disconnect any shorepower. Although the system you are installing is 12V you should remember that the battery charger will be live if mains current is available. Disconnect the battery (ies) as well.

4 The first thing to decide is where to mount the controller. It should be out of the way, but accessible and not in an area where it can get wet. For me this was in the aft part of the cabin where I can also get to route the various wires.

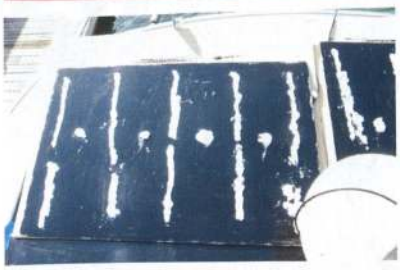
5 Adjacent to the controller, drill a hole large enough to take the wires and allow them to bend easily.

6 Then it's a matter of feeding the two charging wires to the battery. The +ve side should be fused. The maximum output from the controller is 10A so I used a fuse of this size.



7 One tip for feeding wires is to use a flexible gripper (about £1 from a street market). It's designed to pick up small parts but will grab wires inside a compartment you can see but can't reach.

Installation, testing and finishing off



1 Mark out where the panels will go and mask off the surroundings. Apply activator to the GRP (which has been lightly sanded) and solar panels and allow to dry for ten minutes. Then apply primer in a light, uniform coat and wait a further 30 minutes. Apply Sikaflex in long beads on the panel, leaving a break about halfway down to allow water to drain.

2 Carefully position the solar panels within the masked area and smooth down using a balled up cloth. Take care not to bend the panels: I used the polystyrene insert from the packing held against them to protect them against this until fixed in place.

3 Put weights on the panels (a tool box and a solar shower with 5lt of water in it in my case) at their point of maximum curvature to avoid bending and make sure they are held in place until the Sikaflex has gone off. I left mine overnight. The cardboard packing here helps to spread the weight evenly.

Step by step

4 The wires from both solar panels have to go through a hole cut in the roof. I'd recommend drilling a pilot hole first to be sure of location inside and out. Once you know where the wires are to go I drilled two holes with a hole saw and then 'joined' them together with a Dremel. I needed quite a large hole because of the size of the connectors and the lack of space in the roof void.

5 Having got the wires through the cabin top they came through a panel in the roof where they were joined to the connector inside. I did this so the join would be protected from the elements.

6 Now it was possible to check all was working – and it was! I could proceed to tidy up the wiring.

7 I also decided to fit a switch so I could isolate the panels if need be. Interestingly, although it is mentioned in the instruction book none of my professionally fitted systems of the past had this. I fitted a split grommet in the hole the wires pass through.

8 There's always one part of a job that is never straightforward. And on this one it was fitting the waterproof through-deck cable gland. I had four wires with big plugs so I opted for an Index Marine gland that you could adapt to your needs. It was still a struggle to get the stainless cover on, not helped by the Sikaflex I'd applied around holes and slits to ensure watertightness.

9 With the gland cover finally in place the job was complete.