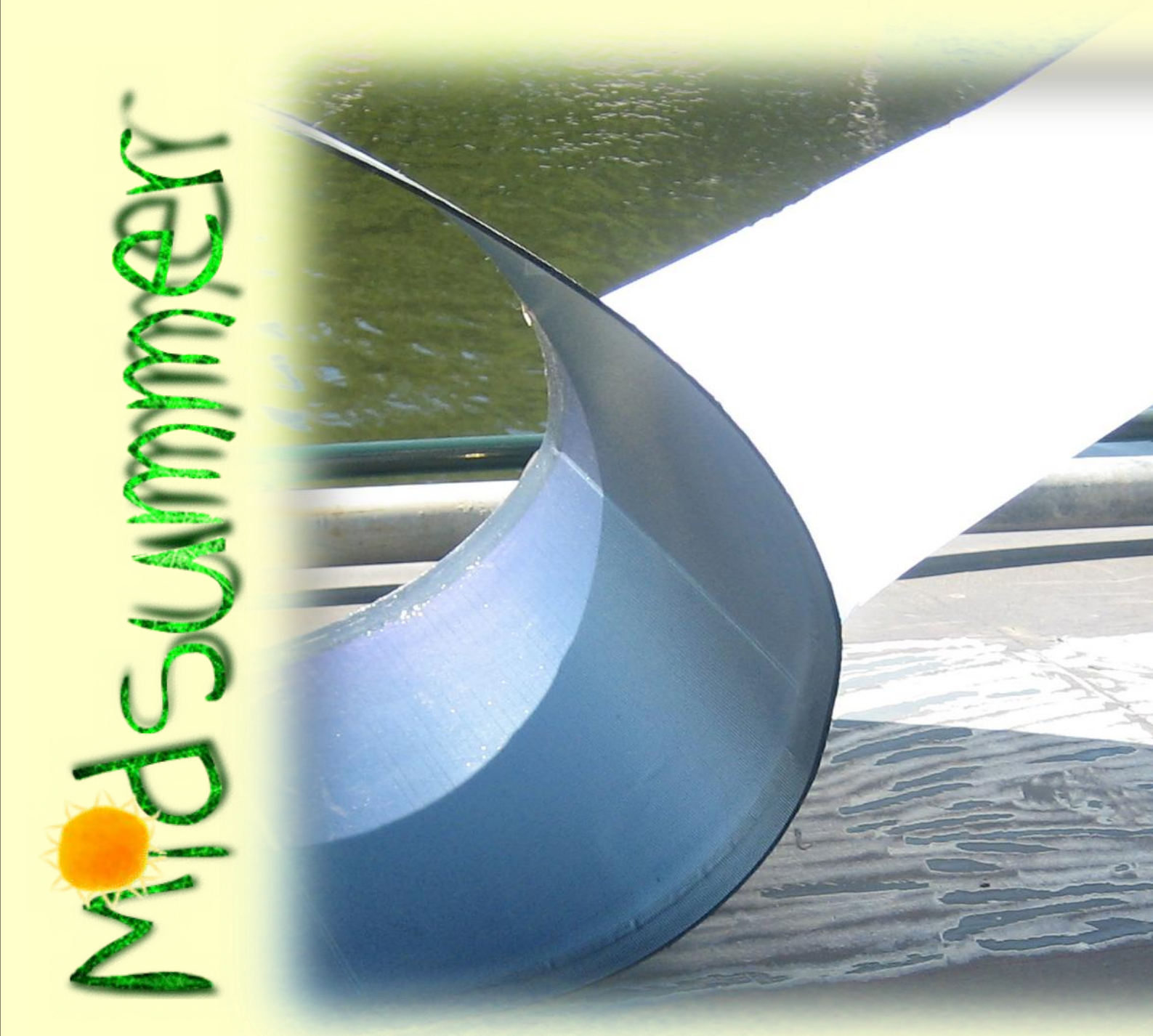
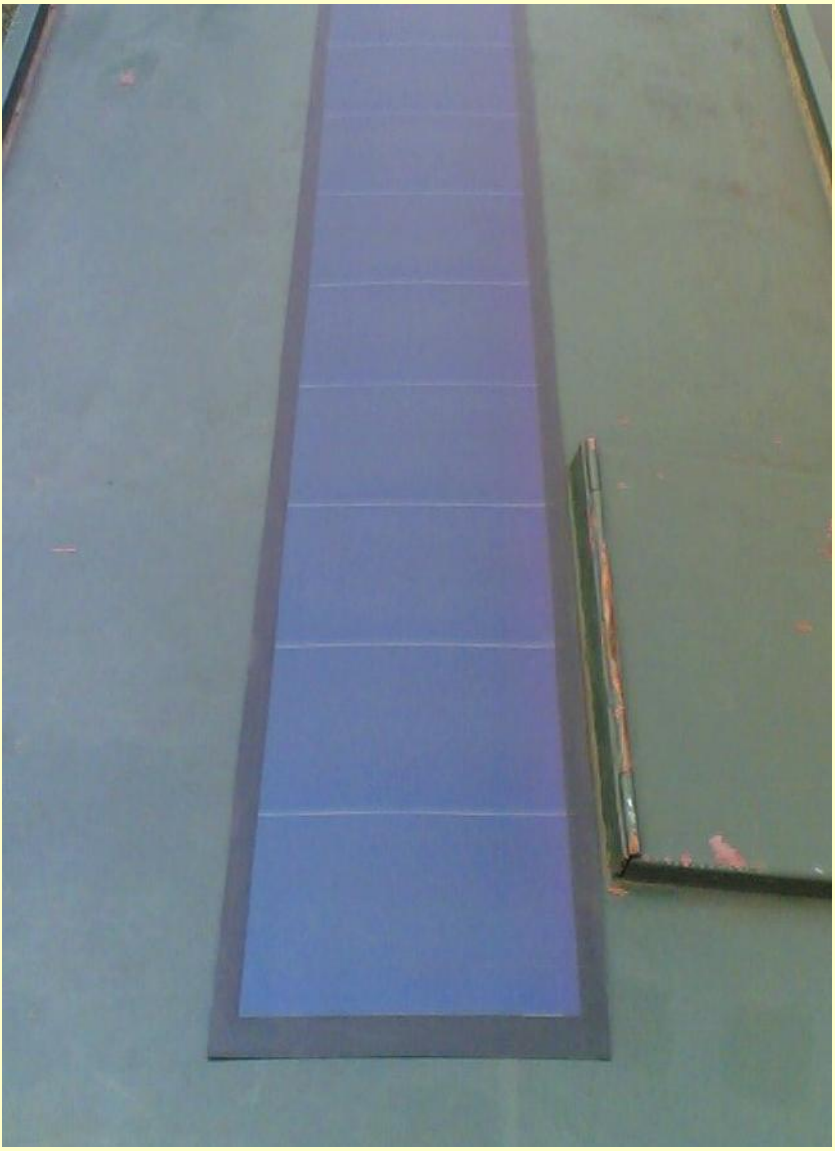
Installing Uni-Solar laminate solar panels

Midsummer





Introduction

Laminate solar panels are an extremely neat power solution for narrowboats and caravans. Instead of a bulky frame and fragile glass top, the laminate panel simply bonds to the roof. Once it is there it will be barely noticable, and it is tough enough to walk upon with soft-soled shoes.

This guide describes how to fit a UniSolar 68-Watt laminate panel to a roof, along with a MorningStar SunSaver charge controller.

You will need the following tools:

- *pencil*
- *drill with 1/2" bit*
- *sandpaper*
- *white spirit*
- *wire to carry 10A current*
- *soldering iron & heatshrink tubing, or 'chocolate block' wire connectors*
- *Screws & screwdriver for mounting controller*
- *fork terminals to connect controller (bare wire can be used if not available)*

A multimeter is useful for checking the installation.

Preparation

1) Choose a location for the panel. The surface to be bonded to does not have to be completely flat, as the panel is flexible. However, the panel won't bend to very tight radii or round sharp corners. Small scale roughness, such as welds on a narrowboat roof, is best avoided where possible. Other factors to consider are: proximity to the battery bank, to minimise the length of connecting wires; how the wires will be led from the battery bank to where they pass through the roof, and minimising shading of the panel.

2) Lay down the panel on the roof, and draw round it with a pencil. Mark the positions where the wires exit the panel.

3) It is important that the area to be bonded to is clean and sound. Any loose, flaky paint must be removed, and then the surface lightly sanded to provide a 'key' for the adhesive. Patches of bare steel are fine - the adhesive will bond well to metal. If a textured paint has been used, it may be better to scrape back to bare metal to provide a flat surface. A heat gun (or blowtorch) and scraper is the fastest method.

4) Drill two holes for the wires. Note that there is a blob of sealant around each wire, so the holes have to be made wide enough to allow the panel to sit flat on the roof.

5) Wipe the area down with white spirit to remove any dust and grease.

6) Lay the panel down to check that it fits snugly before continuing.

Laying the panel

You will need at least two - ideally three - people for this part of the job.

1) Beginning at the end that the wires come out, peel back the first 6” of backing paper. You will need to cut the backing paper so that the wires will come through. Carefully position the wired end of the panel in place. You probably need one person below, pulling the wires through the holes to ensure no loops get caught under the panel; one person positioning the panel and ensuring it is aligned; and ideally another person holding the rest of the panel out of the way.

2) Ensure that this end of the panel is aligned exactly with the pencil marks you made earlier before continuing. Then carefully peel back the rest of the backing paper and unroll the rest of the panel onto the roof.

3) Working from the centre of the panel, push down all over to ensure a good bond between the panel and the surface. A roller could be used for this - in the absence of one, squeeze down with your wrists. Bare feet also seem to work fairly well at applying the right amount of pressure.

Please note, we cannot guarantee compatability of the adhesive with any surface you might try to stick it to - steel is fine, as are most standard topcoat paints found on narrowboats. But we haven't done exhaustive tests on every surface known to man so fitting it is at your own risk!

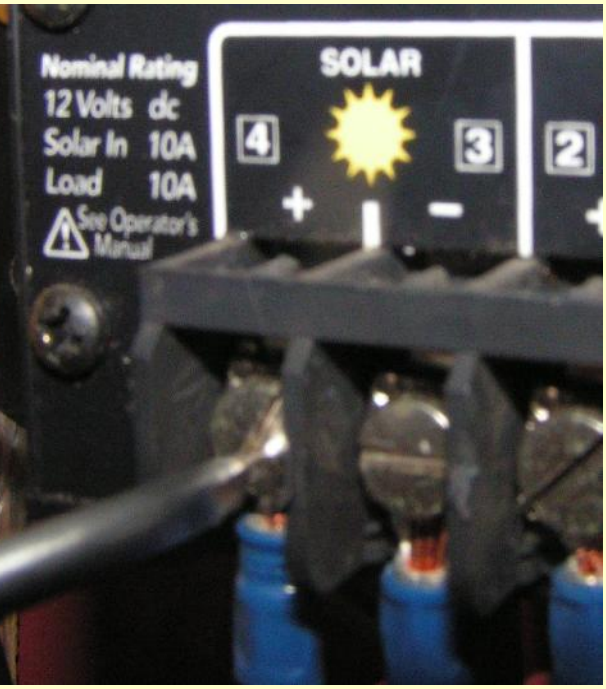
Wiring

1) Decide on a location for your solar controller, and mount it using the four screw holes provided. Almost anywhere will do, although it is good to minimise the wire run to the battery from the controller.

2) Run two lengths of wire from the controller location to where the positive (red) and negative (black) wires will be protruding an inch or so under the roof below the solar panel. This may mean installing some conduit, or removing panelling to run the wires behind it.

3) Join the short panel wires to the new lengths of wire with solder and heatshrink, or with 'chocolate block' connectors.

Solar controller



There is a detailed instruction manual supplied with the controller. However, connecting it is essentially just a matter of wiring the wires you have just run from the solar panel to the two terminals marked 'solar' + and -, and attaching another two wires from the 'battery' + and - terminals to the battery bank, preferably via a fuse board.

In most caravans and narrowboats appliances are wired via a common negative terminal block, and a fuse board for the positive wires, and these will probably be the easiest places to connect your solar controller to. However it can be hard-wired direct to the battery if preferred. If there is a master battery switch that cuts off power to the fuse board, this is the preferred option, as otherwise the solar panel will not be charging the batteries when the master switch is turned off.

The green LED on the controller lights when the panel is connected and producing electricity. Use a multi-meter to check it is charging the battery, by measuring the voltage with and without the controller attached - the battery voltage should be higher with the controller attached.

You may like to add an ammeter between the controller and the battery to see how much current you are getting from the panel.