



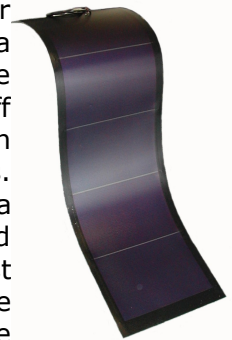
Kia Ora Campers!

Welcome one and all to this months Experts Corner!

We are going to have a look at Solar Power this month, more specifically we shall look at the benefits and ease with which we can harness the sun's free, renewable energy.

"Solar" is the Latin word for "sun" – and it's a powerful source of energy. In fact, the sunlight that shines on the Earth in just one hour could meet world energy demand for an entire year! The process of converting sunshine into electricity is known as the **photo voltaic effect**.

Simply put photo voltaic tiles (*layman's term: solar panels*) work by converting some of the energy in sunlight into a clean form of electricity that can be used in our motorhomes. **CAUTION! SCIENCE CONTENT:**The "PV" cells consist of a positive and a negative slice of silicon placed under a thin slice of glass. As the protons of the sunlight beat down onto the PV cell they knock the neutrons off the silicon. The negatively charged free neutrons are attracted to the silicon but are trapped by the magnetic field that is formed from the opposing fields. Small wires on the silicon catch these neutrons and when connected in a circuit an electric current is formed. As technology has advanced, we now find that we can make these panels extremely durable, flexible and almost indestructible. The unit shown right is the Alphatron PVL29T which is the models used on the Kiwi Campers motorhome fleet. It's dimensions are 1410mm x 394mm x 3mm, making it quite a small unit on the roof of your camper. The photo below shows the 6 berth motorhomes at installation time in the Kea Manufacturing factory in Auckland.



These solar panels allow the house batteries to re-charge during the day so that you can empty them during the night with the lights, fridge and TV all going! But there is slightly more to it than just slapping two panels on the roof... Nothing is ever that easy I hear you cry, stress not! The only other thing necessary for attachment in a motorhome is the Solar Charge



Controller unit. This device is about the same size as a cassette tape (*remember those??*) and acts a bit like a one-way valve for the electricity. It stops power being pulled back up from the batteries to the panels at night or under bad weather conditions. Solar power is Direct Current, so if you were using solar panels on your house, you would need a convertor to change to Alternating Current, however as your motorhome runs on Direct Current from your house battery, there is nothing more we need to do!



The application of the solar panels to the roof of a motorhome is a very simple task. The panels themselves are flexible, they are strong enough to be walked on and are self-adhesive. The roof needs to be cleaned and prepped for the application by using something like mineral turpentine, solvent remover or Prepsol® (a great solvent product from Pacer Chemicals®, also removes road tar and bugs!)

Please please please be careful whenever working on the roof of your motorhome. Always work on a flat solid surface and use a good quality, solid and stable ladder to access the roof. Never work alone on the roof, have someone watching out for you.



Remember the ACC adverts on TV?

Once the roof surface has been prepared, the adhesive backing strip can be removed and the panels stuck to the roof. Be very very careful that you don't leave any bubbles or creases in the panels! You can avoid that by adhering one edge first and slowly laying it down from one end to the other, smooth it with your hands as you apply it. Once the solar panels are in place, it is a very good idea to cover them up with a towel, sheet or blanket as they will be conducting electricity immediately. A 12v shock won't kill you, but it is nicer to not receive one! More than one curse has been heard uttered around our workshop during a solar panel installation!

The two cables that come out of each of the panels must be passed through your roof and into the area that houses your power terminals (or batteries if you do not use a terminal point) This is the trickiest part of the install and the one you **must** take the most care about doing. Anytime you need to drill a hole in your motorhome you must be extremely careful as you are risking the integrity of your home! Ensure you have checked and double checked where the hole needs to be and that there are not cables, pipes or wires that you are going to hit when you drill. Next, make sure you are using a clean sharp drill bit, I always make sure that I use a new one for each van, sounds silly but it ensures that your hole is clean and precise. Make the hole just a little larger than the cables that need to be passed through.

After passing the cables through into the interior of your camper, leave just a little bit of slack on the roof so you can secure them. The 3M® cable ties are a great product for holding the cables in place on the roof, just put some sealant or glue on the sticker pad so they are stronger than 3M make them. You only need one or two for each of the cables to guide them towards the hole. Sika® make a sealant called "Silaflex RTV®" which comes in a red tube, it is a bathroom and tile sealant but is perfect for sealing the hole in your roof around the wires as it is flexible, mould inhibiting, weatherproof and white!

The roof work is now complete!



Now, onto the inside!

Before starting any work on the electrics of your motorhome, ensure you disconnect the house batteries so that you won't accidentally receive a shock!

At this point you will have four wires inside your van hopefully close to where the cables from your house battery connect to the appliances in your motorhome (the terminal point) the four wires need to be connected so that the panels run in series. So the positive of one panel connects to the positive terminal on the controller, and the negative wire on that same panel connects to the positive wire of the other panel leaving you with the negative for the 2nd panel to be connected to the controller unit. Wow, I have managed to tongue- tie and confuse myself there!

I have included some information sheets on the products we use that includes a photo of the controller unit that will better show what I am trying to explain here. While we are on the topic of information sheets, I would like to extend my gratitude to Jeoren Brand from Alphanon Pacific Ltd. who has kindly supplied us with not only the solar panels and controller units, but also the information sheets attached! You will find Jeoren's contact details on the bottom of the information sheet for the PV laminate sheets.

Once the panels are attached to the controller unit, you will need to run two wires from the batteries to the controller. When this is all connected and done, reconnect your house batteries, remove the covers from the solar panels and sit down with a cool drink... you're all done!!

Congratulations!

(If this seems like far too much hard work, there are multitudes of companies nation-wide who will be more than happy to install these panels for you.)

That is it for this months "Experts Corner", if there is anything you would like to see in the experts corner, please let us know! Send us an email, write us a letter, give us a call or drop on in for a chat!

Phone: 0800 549 777

Email: nathan.brand@kiwicampers.co.nz

Web: www.kiwisales.co.nz

Postal: 115 Hussey Road

Harewood

Christchurch 8051