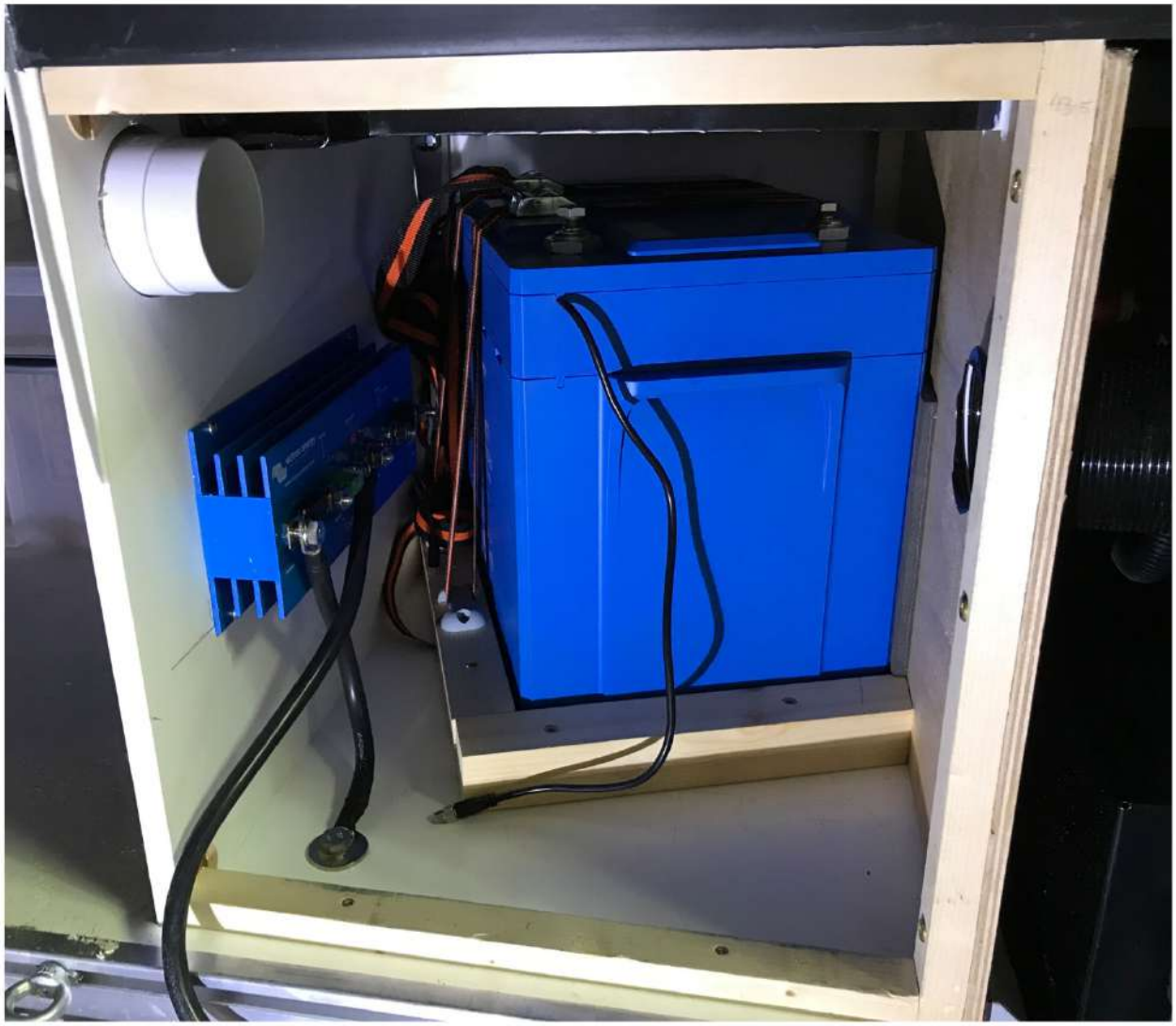
300ah Victron Lithium-Ion battery system

Installation description

We were requested to design a power management system to retrofit to a 2016 Hymer A class motorhome which would allow the customer to run his air-conditioning unit while parked without a mains grid supply. This is not a particularly difficult problem to solve until we were informed that he wanted to do this for at least a month without moving the motorhome.

The Dometic Freshjet 2200 air-conditioning unit that we fitted had a maximum DC draw of 85 Amps, bearing in mind that the compressor would cycle this would mean that he would need between 200AH and 500AH of battery power a day depending on the weather conditions. We overcame this problem by fitting the systems below:

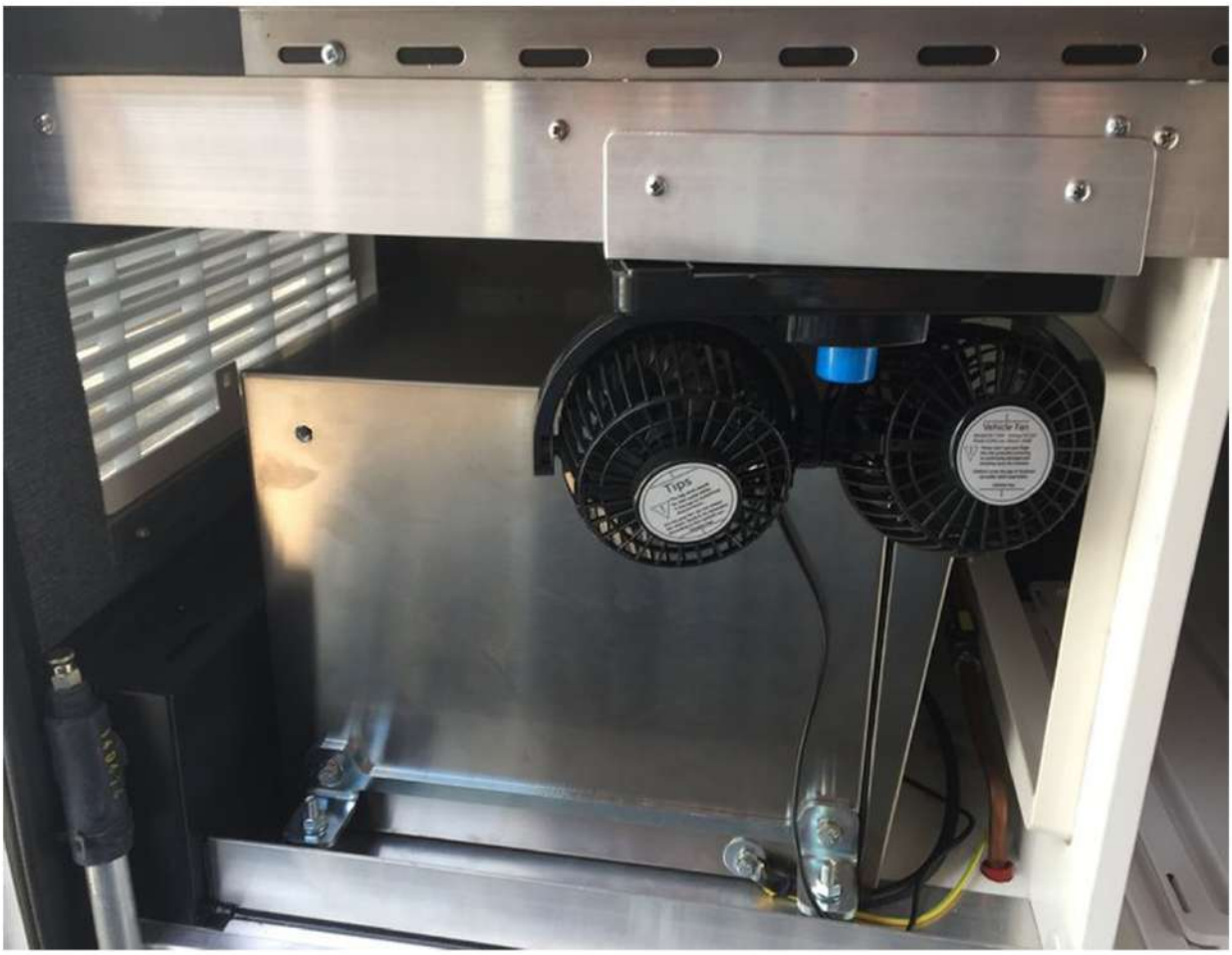
It was decided to install a 300 AH Victron lithium-Ion battery. Unfortunately the Hymer power management system would not support a Lithium battery or a large solar array, so it was decided to install a full Victron system as an island system; this would not affect the Hymer system or the Hymer warranty. We simply disconnected the Hymer charger and the split charge, and the feed into the Hymer system was controlled by a Victron DC/DC transformer which also acted as a one way switch, so this was the only point of connection between the 2 systems. This fooled the Hymer system to think it was connected to a battery.



We then installed a 2 KVA Victron Multiplus and a colour control to show all the levels, charge currents and discharge currents. A Victron Battery management system was installed to regulate all the charge and discharge currents and ensure battery protection. All the cabling was calculated to ensure all the devices had the required power and the engine alternator was charging the Lithium battery whenever the vehicle engine was running.

The biggest solar array we were able to fit on the motorhome roof was 580 watts, this comprised of 3 x 100w and 2 x 140w Victron solar panels. This would give a potential output of 48 Amps which in perfect conditions would supply a large proportion of the power requirement. These panels were run into 2 x 30amp Victron MPPT charge controllers. The solar system alone was unfortunately not sufficient to provide a reliable system, so we also installed a Dometic Tec29 LPG generator. To provide fuel for the generator we installed two refillable under slung tanks and two Alu-Tec refillable cylinders, this provided 110 litres of LPG which could be used to run the generator, the heating and cater for the cooking requirements.

The Victron colour control enabled us to offer a generator start/stop function direct from the colour screen, this function also enabled the customer to fulfil the AC and DC requirements using the Lithium battery which was being recharged by the solar panels, if the battery level dropped to a certain level the generator would automatically start and started charging the battery, once the battery was charged to a pre-set parameter the generator would turn off.



If you would like to discuss your requirement please contact us