

NEW VEHICLES & DUAL BATTERIES

New car technology requires new battery management technology.

WORDS BY STUART PEDDLE | PIC BY CARLISLE ROGERS

New vehicle technology also calls for new technology in managing the alternator and battery charging capabilities. You see, a lot's changed in the way new 4WDs self regulate, and it's all to do with something called the ECU (see sidebar over the page). Fortunately, REDARC have been on the case for a while, patenting new technology to manage the specific needs of touring 4WDers. Read on for the full story...

THE SITUATION

Australia continues to follow the global trend of reducing vehicle exhaust emissions. New cars sold in Australia from 2013 must meet 'Euro 5' exhaust emissions standards and the even tougher 'Euro 6' standard comes into effect around 2017.

For the most part, the changes are aimed at increasing fuel efficiency and

reducing engine emissions. However, they can also frustrate the 4WD enthusiast, particularly when faced with the ugly prospect of drinking warm beer from their fridge connected to a flattened auxiliary battery.

The new engine and alternator control technology (ECU) we are experiencing is nothing new. It's widely known that tem-

perature-compensating alternators have been used primarily in Toyota's range of D4D common rail diesels since the early 2000s.

This technology is sure to become more common, especially with an influx of overseas models due to the decline of our automotive manufacturing industry.

THE SOLUTION

A smarter product is therefore required to ensure the auxiliary battery is 100% charged while also coping with the fluctuations in voltage from the alternator. It is important to note that current sensing in the vehicle's electrical system means that all additional electrical accessories must be grounded to the vehicle chassis or body, not to the main battery negative terminal.

South Australian automotive electronics manufacturer REDARC, prior to 2010, developed a patented solution.

They developed a family of In-Vehicle Battery Chargers known as the 'BCDC' to charge auxiliary or house battery banks to 100% state of charge while on the move – without the need to alter the vehicles standard functions or 'trick' the alternator.

They feature a multi stage DC-DC battery charger that is designed for installation in any 12 or 24V car, 4WD, truck, bus or marine electrical system.

A key feature of the BCDC In-Vehicle Battery Chargers is the voltage inverter

technology that overcomes voltage drop when the auxiliary or house batteries are a considerable distance from the charging source; such as with caravans, camper trailers, trucks and buses.

Most critically though – to avoid the warm beer conundrum – they boost the low output voltages provided from ECU Controlled Alternators to your auxiliary battery. These voltages are researched by REDARC Engineers and have been selected to suit a wide range of vehicles.

THE RANGE

The standard BCDC range will operate on voltage sensing alone in vehicles where the alternator voltages do not regulate lower than 12.7V at any time.

The wider range of BCDC variants are applied in vehicles fitted with ECU Controlled Variable Voltage Alternators.

Thus, the battery charger family continues to grow and units are available in

6 Amp, 20 Amp, 25 Amp and 40 Amp outputs, plus the latest 20A 24V output model, BCDC2420.

Then, of course, there is the mighty Manager30 unit which acts as a DC-DC charger, solar regulator, battery monitor, and 240V charger.

It's important to ensure that the correct BCDC is selected for your vehicle,

the type of use it gets, and your battery charging requirements. REDARC have developed a database that determines the correct BCDC model to use for each vehicle. If you have any questions or require help choosing the right BCDC for your vehicle, contact your local REDARC Installer, or visit www.redarc.com.au.



THE INTRODUCTION OF ECU

Car manufacturers have had to introduce new technology to meet global emissions targets, and they have designed the ECU (Engine Control Unit) to interconnect with the alternator and to monitor electrical load.

The ECU can control important engine functions via the CANBUS, including injection duration and timing to better control emissions as loads vary. The ECU can even shut off the alternator in certain circumstances, adjust the alternator output voltage. We refer to these alternators as ECU Controlled Variable Voltage Alternators.

INCORPORATING SOLAR

The BCDC1225, BCDC1240 and BCDC2420 models feature MPPT solar regulators, which can be used to charge your auxiliary batteries from solar panels. The MPPT Solar charging algorithm extracts the maximum available power from your solar panels at any given time.

In addition to the BCDC In-Vehicle battery charger family, another product recently released by REDARC is 'The Manager30 – Battery Management System', which handles all alternator types with its inbuilt DC-DC charger, MPPT solar regulator, and battery monitoring. [VIEW](#)