Liquid Cooling


Cooling Your Controller

Fans are another important inclusion in your armament to keep things performing at their best. Here again there are more options than you can poke a stick at. Some actually look like fans others have multicolour light arrays, again adjustable to suit your current disposition.

You might think that all these are just toys; and to a degree you are correct – however this stuff is rugged and has exceptional operation life of at least 100,000 hours so although out there, it is a modern necessity for EV performance optimization.

You might just want to do, (or better), an install like this!

With the ever increasing offerings of high performance/high power IGBT based motor controllers – liquid cooling is becoming not just a nice to have for the occasional high speed blast (within speed limits of course); But rather for everyday operation, and longevity of your precious controller.

An ideal source of lightweight highly efficient cooling systems is from the computer sector – Err; gaming computer sector to be precise. As you could imagine there is a wondrous array of options available from this quarter.


If you are lucky enough to be installing a Soliton 1, NetGain or Zilla then you will need to obtain a suitable radiator (4 x 120mm would be good), liquid pump - preferably variable speed (Industrial Quality), appropriate fittings and adaptors to route your transparent Laboratory grade tube where it is needed. Oh; and of course you will want to fill your beast with UV reactive coolant in the colour that best suits your vehicle, or your mood.



ISSUE
34
November-2011

MONTHLY JOURNAL OF THE ATA
ELECTRIC VEHICLE INTEREST GROUPS
GEELONG & MELBOURNE

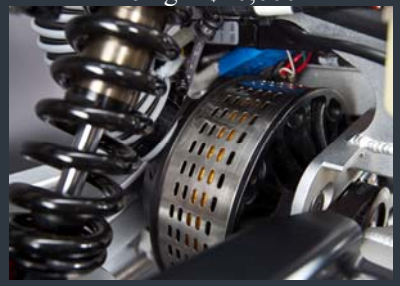
ZERO

Power is provided via a "Z-Force" Li-ion battery that has, in street format, an expected life of 112,000km at 70% DOD, and 4.4kWh capacity, range is 93km, top speed 108kmh. There is a range of optional motors to suit the rider's ability and requirements. Standard power plant appears to be the Agni motor with its advanced Axial Air Gap design. Performance option is the PMG 132 motor – with Mars motors also seemingly on the menu.

Interestingly, transmission on the road bikes is provided via a "Poly Chain® GT® Carbon™ belt" with a 420 chain as an option; the 420 is standard on the off road offerings.

If you would like a test ride, the Zero range is available through:

Jeffery Motorcycle Centre
1029a Burwood Hwy
Ferntree Gully
(03) 9758 7322
Pricing ≈ $10,000



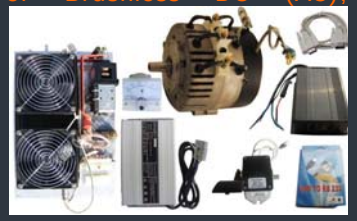
Zero Motorcycles

Out of Santa Cruz California come Zero motorcycles. Zero has developed a range of all electric drive bikes that are specifically designed for a range of users – from the insane trials enthusiast with their fervour for jumping off 10 m boulders. Through the off road aficionado taking high speed dirt work in their stride with associated air time on the MX and X through to the everyday commuter on the street use Zero S, XU and DS models.

All dirt bikes come in either off road only or street legal format. The amazing thing throughout the entire Zero range is that the all alloy construction of the frame provides a chassis that weighs in at between 6.7 and 8.8Kg – superlight for incredible manoeuvrability, but still strong enough to stand up to the rigours of Motocross events. In fact the entire gross weight across the range is from 84kg to 135kg.

Kelly Kits

Kelly controllers have expanded their range of pre packaged EV kits. Kits range from single Mars motors either Brushed DC or Brushless DC (AC),



through to dual car and motorcycle type hub motors.

Although these offerings are primarily for 48volt to 72volt operation there are a few 144 volt packs available. All necessary components are provided to construct your EV project. Pricing ranges from $769 through to $4993.
Well worth a look!
http://kellycontroller.com

Altrax SPM Controllers

Alltrax inc. the Golf Cart electric motor controller experts have released a new range of Series – Permanent Magnet (SPM) electric motor controllers.
The new range is designed specifically for the latest high performance permanent magnet DC motors like the Agni and Perm motors.
Unlike the other Alltrax controllers the SPM comes with an integrated cooling fan and colour coded terminals on the top of the enclosure. Another inclusion is the integral main contactor control port that provides up to 5A activation current and 0.5A continuous drive to the contactor – these figures ideally suit the Gigovac and Kilovac range of main contactors with their 0.15Amp hold in current.

The new free configuration software even allows for contactor disconnect at zero throttle.
Amperages range from 200 to 800Amps at voltages from 24V to 72Volts.
The base plate is an integrated heat sink that allows for attachment to any available mounting surface to increase heat dissipation.
Programming is easily done via a USB interface. No more searching for a USB/Serial converter.

With any luck Alltrax may be contemplating releasing a controller in the class of the Raptor 600/1200A range that the Alltrax design engineers made when they were DC Power Systems.

The Shape of Things to Come??

Now here's one that slipped under the radar. Australian engineering organisation Varley, a 100+ year old company that's more associated with aerospace, and defense electric vehicles, has come up with the evR450. A gull winged sports coup powered by two Ultramotive CARBON motors, each with a peak power rating of 150kW (and 522 Nm of torque), and each offers a continuous power of 58 kW & 122 Nm. As the motors weigh only 40kg, the evR's 300 kW of peak power will be pushing a very light vehicle, and with in excess of 1000 Nm of torque, acceleration can be expected to be exciting, to say the least.
Acceleration is claimed to be 3.8 seconds for the 0-100 km/h run, and has an electronically-limited top speed of 200 km/h (125 mph). Range is 150 km that can be doubled with an additional (but perceptibly heavier) lithium-ion battery pack.
The Lithium Ion cells that make up the 24Kwh pack can easily be charged by plugging into mains power. The Inverters that control the AC motors are described as "state of the art", coming from years of development in the electric solar racing industry.
The evR450 was unveiled at October's Electric Vehicles Conference in Brisbane, and Varley says it will release the supercar for public sale in early 2012. You may have to save your pocket money for a while though – expected price is in the $195,000 bracket, but what a car!!

This Month's Q&A Technology Tip

Q: I've got an old Volks Wagon is there an "interesting" option for a drive train the gives it a bit of GO?
A: Rebirth Auto has a very interesting drive train for the Volks Wagon / Porsche range. It comprises two Kostov 9" motors in belt driven tandem, controlled via a Soliton 1. Output power is impressive at 260HP at 5000RPM and 80Nm torque. Price, well you won't get to much change out of $9400.

see http://rebirthauto.com/ra-vwsa-twin.aspx