

Dual Carbon Cell

The Ryden dual carbon battery, developed by Power Japan Plus, is a new, more sustainable, safer, longer-lasting and cost-effective battery technology. The Ryden cell makes use of a completely unique chemistry, with both the anode and the cathode made of simple carbon. The dual carbon design combined with an organic electrolyte, allows for a unique current flow within the cell; positively charged lithium ions flow to the anode and the negatively charged anions flow to the cathode. This shortens the distance of current flow within the battery, allowing for faster charge and discharge. In testing, the cell has completed more than 3,000 charge/discharge cycles with virtually no performance degradation, meaning that it could conceivably last the lifetime of a car. Ryden cells barely heat up during charge and discharge--it "experiences minimal thermal change"--vastly reducing the risk of thermal runaway. It is conceivable that these cells can provide 100% power for 15+ years of operation.



Power Japan Plus

In the search for better electric-car batteries, lots of lab research has to happen before anything can be announced. Recently, a company called Power Japan Plus came out of stealth mode to unveil a new battery chemistry, with both electrodes--anode and cathode--made of carbon. The new cell, known as the Ryden Dual-Carbon Battery, promises energy density equal to today's lithium-ion cells, but less capacity loss over time and far greater safety. It is also almost entirely recyclable, with less energy input over its lifetime--and none of the rare or heavy metals required in various lithium-ion cell chemistries. Dual-carbon cells have been described in theory since at least 1978, but years of development were required to make them reliable, cost-effective, and suitable for mass production in high volumes. With energy density comparable to lithium-ion, the company claims that its Ryden dual-carbon chemistry can recharge at up to 20 times as fast and deliver more than 4 Volts from a single cell; therefore less cells per install.

Renault Kangoo Maxi Z.E.

Renault Australia's Managing Director, Justin Hocevar said "we are excited to broaden our existing relationship with Australia Post in rolling out the Kangoo Z.E. in Australia. Through our partnership with Australia Post, we are able to comprehensively investigate the business case for introducing the fully electric Kangoo Z.E. van in Australia in the future."

Some of the alternative fuel initiatives implemented across Australia Post's network have included the rollout of:

- 740 electric bikes that have replaced motorbikes at various locations
- 100 hybrid vehicles introduced to the fleet to replace existing six cylinder vehicles, reducing emissions by over 30 percent
- 25 hybrid trucks introduced into StarTrack's fleet of vehicles, improving fuel efficiency by 20 percent improvement on average



In an Australian-first, Renault's 100 percent electric-powered delivery vans will shortly join Australia Post's fleet in Melbourne and Sydney. The Renault Kangoo Maxi Z.E. (Zero Emission) electric van, currently not sold in Australia, is widely used across Europe and the United Kingdom and will be used exclusively by Australia Post from mid-2014 for a 12 month proof-of-concept.

Australia Post Head of Environmental Sustainability, Andrew Sellick said using the Renault Kangoo Maxi Z.E. for day-to-day parcel and letter deliveries is another exciting step in Australia Post's sustainability journey and an important step in assessing the real-world use of electric commercial vehicles.

"The Kangoo Maxi Z.E. assessment is part of a broader strategy to explore alternative fuels at Australia Post, including using biofuel and hybrid vehicles in our current fleet."

First up, the Port Melbourne Business Hub will receive 2 Renault Kangoo Maxi Z.E. vans mid-year, with the remaining 2 vans delivered to Sydney by year-end. Charging stations at each location will be powered by accredited GreenPower sources.

Isle of Man TT



Currently the Isle of Man TT race is being contested, (24/5 to 6/6/2014). However the TT Zero competition is a little bit lacking this year with MotoCzysz not participating. Having blitzed the field on the previous four occasions they're absence is a little odd. However the Mugen Shinden team are running two machines, both of which have hidden deep within their twin-spar carbon fiber reinforced polymers (CRFP) frames a bit of tech from the Americas. It seems that Mugen have been working with Mission Motors to develop a motor and, presumably, other race components specific to its needs. As a result the bikes now boast a compact oil-cooled 100kW power plant with 220Nm of torque. That's a 7.5kW increase from last year. Along with slimmer, more aerodynamic fairings and a bit more battery capacity, the team has hopes of the 240kg bike rounding the course at an average speed of 115 mph. If it does, that would be a new record and most likely put it ahead of the competition. So far the practice session from Saturday has resulted in a 112.3mph average speed.

Bultaco Rapitan



I couldn't resist one more Electric Motorbike, particularly when the manufacturer was the famous Spanish company Bultaco. After 13 years in limbo, the brand is about to resurrect itself as an electric motorcycle manufacturer, starting in 2015 with the Rapitan and Rapitan Sport. Both models feature 40kW and 125Nm electric motors, Hossack-style front end suspension and enough battery storage to get over 200 km in town. Apart from the bikes' unique and funky looks, they aim to differentiate themselves in two key ways. Firstly, with a Norm Hossack-style front end suspension similar to the Telelever system BMW uses on many of its road bikes. This kind of suspension system does an outstanding job of controlling brake dive, and separating braking from turning forces, than a traditional telescopic fork.

Bultaco believes it has found a more efficient way to use regenerative braking to put energy back into the bikes' Li Ion batteries. "The Bultaco Drive Train System (DTS), unlike other electrical two-wheeled vehicles, enables the maximum energy performance to be yielded from regenerative braking in a system that is similar to the Formula 1 ERS. This is possible because the technology applied to the chassis maximizes the rear wheels' adherence during braking, which enables a considerable electrical braking torque to be applied. The Rapitan has a running weight of 189kg which is kept low, which should make these two offerings very quick-steering bikes. It also opens up enough free space where the Rapitan's tank would normally be to store a full-face helmet.

<http://www.bultaco.es/en/bultaco-rapitan>

The *SHAPE* of Thing to Come!!



B7 Electric Super Race

As a design concept for the next generation of Le Mans hybrid cars, the B7 is envisioned as having electric hub-mounted motors in each wheel. These motors would then be powered by super capacitors. Super capacitors have the potential to discharge and recharge much more efficiency when compared to conventional batteries. Perhaps more importantly though, super capacitors have the capacity to be discharged in sudden and potent bursts, providing an exceptional boost in power, so much so that the Electric Super Race has a hypothetical top speed of around 500km/h. Designer FilipTejszerski sees the B7 as using a small LPG V8 combustion engine for compliance with the hybrid part of the Le Mans race, which would be used solely to recharge the capacitors; no power from the V8 would be directed into powering the wheels. To help control the extreme speed of the B7, the super-capacitors provide high-performance regen braking. The braking package will also be connected to a comprehensive air-brake system and automatic suspension control to keep the car stable while wiping off serious speeds.

This Month's Technology Review



ClipperCreek, EV charger manufacturer, has announced a new smart grid-connected charging station, which includes an embedded revenue grade sub-meter and a variety of grid control options, including variable current and charge timing to suit grid demand. The CS-40-SG2 is built on a ClipperCreek CS-Series, 40 Amp charging platform and Itron's utility meter and communications technology. The unit is intended to extend a utility's energy management intelligence to the charging station through a ZigBee wireless communication interface. It also communicates via WiFi to give local access to charging and metering data via a Smart Phone or WAN device.