

Proterra

Proterra have been building composite bodied hybrid electric busses since 2008; now Proterra has introduced a 10m long 68 passenger all electric unit that is capable of fast charging in under 10 minutes. The EcoRide BE-35 buses have 72 kW-h lithium-ion battery packs that are just 50 percent larger than the 53 kW-h battery packs found in the Tesla Roadster and provide the buses with three hours of running time or a range of 30 miles (48km).

The BE-35nis powered by a single UQM PowerPhase® 150 permanent magnet motor with custom engineering for Proterra. Rated at 150 kW peak (100 kW continuous) power, it generates 650 Nm of torque. The drive motor is coupled to a three-speed transmission designed to meet the requirements of heavy-duty transit applications. Savings over diesel is expected to be in excess of \$300,000 over the 16 year life of the bus.



Proterra Busses for Nashville

Proterra is a leader in the design and manufacture of clean technology and clean energy, providing zero emission vehicles that enable bus fleet operators to significantly reduce operating cost while delivering clean, quiet power to the community. The EcoRide™ is the world's first battery electric bus with fast charge enabled infinite range. With unmatched durability and energy efficiency based on rigorous industry testing at Altoona, the Proterra product is manufactured in Greenville, South Carolina. In February this year 7 Proterra's were sold to the Nashville metropolitan transport authority. In a trial to ascertain the longterm cost reduction of EV busses in comparison to CNG and Diesel equivalents. The Proterra buses will serve the free downtown Music City Circuit, which is designed to help residents and visitors reach sports and entertainment venues, downtown hotels, residences and offices more quickly and easily.



EV – News Issue 58 – Mar 2014 - Compiled by K. Leach (03) 52250931
<http://community.ata.org.au/branches/geelong-ev-branch/>

Hybrid Porsche Plugin

The Porsche's 2.1-tonne sedan body sacrifices nothing to accommodate its electric wizardry. The only indicators are the discreet hybrid badges on the front doors. The battery pack is tucked under the boot floor. And because it has switched to lithium-ion technology it can store five times more energy than the old nickel-metal hydride pack of the first Panamera.

The new battery pack is heavier than the original at 130kg (up from 80kg) but the overall weight gain of the entire car is 115kg due to the extra cabling, cooling and recharging equipment.

The supercharged 3.0-litre V6 petrol engine provides 245kW of power and 440Nm of torque. The electric motor has 70kW of power and 310Nm of torque. But as is the case with all hybrids, the two outputs cannot simply be added because the peaks arrive at different points. So Porsche has calculated the net result of the petrol and electric motors combined is 306kW of power and 590Nm of torque.



Porsche Panamera

Unlike most hybrid cars on sale today Porsche's new Panamera sedan can be driven up to 36km on electric power alone before its supercharged V6 engine takes over. A regular Toyota Prius can barely travel 1km on electricity in ideal conditions before the petrol engine kicks into action. Porsche has created a hybrid car which sips less fuel than a Toyota Prius and has the performance of a Holden Commodore V8. The only catch: Porsche's fuel miser costs \$300,000. You could buy more than 10 Toyota Prius C hatchbacks for that. In addition to charging the battery from a regular power socket at your home or office the Porsche Panamera's battery pack can be fully boosted with about 45 minutes of normal driving. Porsche engineers found a way to artificially load the engine to provide enough charge to the battery pack while on the move. They estimate the engine uses about two to three litres of extra fuel to bring the battery up to full charge. The Holden Volt can travel further than the Panamera on battery (88km versus 36km) but once the Volt's battery runs flat it reverts to petrol power and can't fully recharge itself without a power socket.



SK Innovation



Kia is using lithium-ion polymer battery cells supplied by SK Innovation in the battery pack for the new Soul EV. The pack features an energy density of 200 Wh/kg which is on the high end of specific energy ratings for current EVs. These batteries are the result of a three-year joint development program between Kia Motors Corporation and SK Innovation in Korea.

Engineers from Kia developed the pack using 192 SK lithium-ion polymer battery cells in eight modules, for a total capacity of 27 kWh. The pack incorporates advanced thermal control technology to maintain individual cells at optimum temperature and structural design to enhance crash worthiness. Nickel-rich NCM (nickel-cobalt-manganese) cathode material is used in the mass production of the battery cells for Soul EV. High performance electrolyte additive and anode materials were also developed to meet various performance requirements (such as safety and lifecycle), while maintaining high energy density. The integral stability of the Kia cells allows a fast charge time of 25 minutes (100 kW DC) or 33 minutes (50 kW DC). Full recharge time, depending on power source, takes up to five hours (via a 6.6 kW AC charger).

Kia SOUL EV



This week's Chicago Motor Show say Kia debut its Soul EV, the electric version of Kia's boxy little hatchback SUV thing. The standard Soul model received a major update for the 2014 model year. The Soul EV will be Kia's first electric car.

As one of Kia's more distinctive models, the Soul seems a good choice on which to base an electric vehicle. It will go up against cars such as the Chevy Spark EV, Fiat 500e, and the veteran Nissan Leaf.

In that crucial measure of EV performance, range, the Soul EV offers no surprises. Kia cites figures of 130 to 160 km on a full charge.

Using its J1772 standard charging port, Kia notes that it will take 5 hours to charge the battery from a 240 volt source. For fast charging, the Soul EV also sports a CHAdeMo standard port, requiring only 33

minutes to bring the battery up to 80 percent charge.

Kia packed the Soul's 27 kilowatt-hour battery pack under the floor, helping maintain weight balance between front and rear wheels and lowering the car's center of gravity versus the petrol version. The battery pack consists of 96 lithium-ion polymer cells using air cooling and ceramic separators to guard against heat overrun. The battery pack powers an 81kw electric motor driving the front wheels, which takes about 12 s to bring the Soul EV from zero to 100kmh.

A motor braking setting on the shifter increases braking regeneration. To maximize climate control energy saving, Kia includes a driver-only setting, which shuts off vent flow to all but the driver seat area.

The Shape Of Things to Come!!



E-volo recently celebrated the maiden launch of its electric two-passenger, 18-rotor VC200 "Volocopter," touting the vehicle's safety and simplicity after an indoor flight inside the dm-arena in Karlsruhe, Germany. Six arms extend from the central part of the rotor ring and split into twelve more arms, with rotors placed at each junction.

For power, six battery blocks power the rotor drives for about twenty minutes of emission-free flight time, with an hour anticipated in the near future. Additionally, range extenders are envisioned for the final design. The team is aiming for a cruising speed of at least 54 knots (100 km/h) and a flight altitude of 6,500 ft for the production version.

E-volo emphasizes the redundancies in the battery system. Each rotor arm is powered by three batteries, so two nonadjacent batteries could fail and the Volocopter could still land safely. In even more dire straits, a ballistic separation system deploys a parachute. Volocopter has 20 independent computer systems that can each fly the machine. Nice!

This Month's Technology Review



Now here's a steamy bit of kit. High Performance Electric Vehicle Systems (HPEVS) has released a twin rotor 3 phase motor that comes as a kit with two Curtis 1239-8501 controllers, wiring harness, contactor and display. It's actually two AC35 motors built into the same can and on the same shaft driven by two 144v 500A controllers delivering a peak of 257Nm with a peak power of 123Kw and up to 5000rpm. \$10,500 from EVWorks