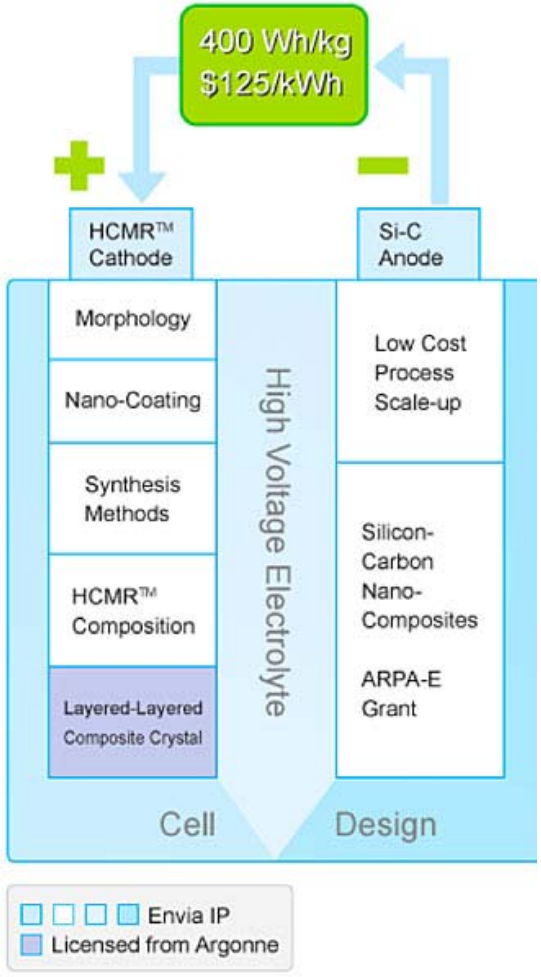
Lithium Manganese Composite / Silicon Carbon Nanocomposite Cells

Envia Systems HCMR Battery

Envia's technology is a new cathode design for lithium-Ion batteries which the company calls the High Capacity Manganese Rich (HCMR) cathode. It's claimed the design has excellent stability, long lifetime in charge cycles, and a high per cell voltage. The company has also designed anode and electrolyte materials required to build complete batteries.

The result is a battery that stores 400 watt-hours of electricity per kilogram, compared to the 100-200 watt-hours/kilogram for todays lithium-ion batteries. Envia says its battery cell costs could be as low as $125 per kilowatt-hour. That equates to an average 30kWh EV pack would cost $2500 and weigh 75Kg. Together this means Envia has achieved a breakthrough of over twice the energy density of today's batteries, at 1/4 or less the cost and 1/2 the weight.

Envia's cells have undergone Verification & Validation testing by the US Naval Service Warfare Center, Crane Division verifying the cells have a capacity of 46 amp-hours and an energy density of 400 watt-hours/Kilogram.



High Capacity Manganese Rich cathode

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Volt

- features a lithium-ion battery pack and an electric drive unit that gives a range of up to 87km. A 1.4-litre petrol engine acts as a generator to extend the Volt's range. It recharges the battery to continue powering the electric motor, giving the Volt a potential range of more 600km depending on conditions.

Three driving modes can be selected: Normal, Sport and Hold. Sport mode is designed to maximise driving enjoyment by sharpening response times and feedback, while Hold mode conserves power in the battery and maintains an electric charge from the petrol generator.

The 161 components of the Volt's lithium-ion battery, its charging and thermal-management systems and components of its electric drive system are covered by an eight-year/160,000km warranty, which is transferable to all vehicle owners.

The first four scheduled services are fixed at $185 for the first three years or 60,000km – whichever comes first.

Volt Pricing Released

The Holden Volt will be priced from $59,990 when it goes on sale later this year, making the five-door four-seat hatchback $8450 more expensive than its key alternative-energy rival, the recently launched all-electric Nissan Leaf.

To offset its premium pricing, the Cruze-sized extended-range electric Volt will feature a comprehensive standard equipment list, including innovative safety systems and high-tech infotainment features not even offered in the similarly priced luxury Caprice.

Forward collision alert employs sensors on the windscreen to warn drivers with an audible alarm if they are travelling too close to the vehicle in front, while lane departure warning uses a windscreen-based camera to detect if the driver swerves or veers out of a marked lane without indicating. Both of these features are a first for Holden.

The Volt also features eight airbags (dual front, side, curtain, and knee bags); a full-colour LCD screen also displays the Volt's satellite navigation, DVD playback, Bluetooth with voice recognition, and USB connectivity with iPod integration. A 30GB hard drive allows owners to store their own music on-board and play it back.

BMW C Evolution

Select visitors of the London Olympics will get to test ride the new BMW C Evolution electric scooter as the Germany motor company looks to expand its two-wheeler appeal.

In an effort to give the new C Evolution as much exposure as possible during the London Olympics, BMW plans to offer the scooters to journalists covering the games as well as unspecified VIPs and carmaker's employees. BMW has deployed its own charging stations for the scooters across London.

The scooters have been rated to perform 120 km on a single charge and are capable of achieving a top-speed of 120 km per hour. Based on a hybrid composite design, the scooter has an all-electric motor and has been rated to perform on par with 600cc scooters. The C Evolution can be fully charged in 3 hours.

Price; 2840 euros in Germany, with the rest of the world having to wait until mid 2013 for availability.

Long EZ Electric Plane

Infinite-range electric aerospace company Flight of the Century, Inc. (www.flightofthecentury.com) announced today that their all-electric Long-ESA achieved a speed of 202.6-MPH during its second ever test flight on July 19.

Purchased by Flight of the Century (FOTC) in April, 2012 as an R&D plane for development of the company's patented mid-air recharging technology, the highly modified Rutan Long-EZ (now "Long-ESA" for Electric Speed & Altitude) underwent a complete restoration and conversion from hydrocarbon power to all-electric power in just two months at FOTC headquarters.

The unprecedented test program then moved to FOTC's Inyokern Airport facility, with a first taxi test July 14th, first runway test July 16th, first flight July 18th, and world record flight July 19th. FOTC is engaged in a cooperative relationship with the Naval Air Weapons Station China Lake, who deployed high speed telemetry, radar and tracking cameras to capture Yates' historic flight adjacent to their restricted airspace.

After the flight, officials from China Lake visited the FOTC hangar at Inyokern Airport to corroborate the flight data, which will be presented at the recent Oshkosh air show.

Military and special operations interest in FOTC's unique high speed, long/infinite range electric manned and UAV technology is piqued because radar has difficulty locking onto the composite structure and infrared cameras struggle to find any measurable heat signature from the all-electric powerplant to track to.

Following Oshkosh, the company intends to equip the Long-ESA with a custom designed lithium-ion series of battery packs and a front-mounted recharging probe to test mid-air tethering and battery jettison & rebalance technologies. The company expects a top speed of 230-250 MPH with the full-size battery pack in place in September. Attempts at world records for altitude will follow.

The Shape of Things Now!!

Audi R8 e-tron Record

Audi's R8 e-tron has set a world record for an electric drive production vehicle on the famous 20.8km Nurburgring Nordschleife or Northern Loop circuit.

The all-electric R8 e-tron recorded a time of 8:09.099mins, less than a minute off the current combustion-engined production car record of 7:11.57 set by a 515kW V8 Gumpert Apollo Sport. The R8's two electric motors, each generating 280kW of power and 820Nm of torque, will push the e-tron from 0-100km/h in 4.6 seconds and onto a limited top speed of 200km/h, unleashed the e-tron topped 250km/h for the record-setting lap. The R8 'T'-shaped rechargeable lithium-ion battery, located in the centre tunnel and between the passenger compartment and rear axle, should support a range of about 215 kilometers and gathers charge through energy recovery while coasting and braking. While the Audi R8 e-tron tips the scales at 1780kg, 220kg heavier than the Audi R8 V8, the primarily aluminium body and carbon fibre reinforced plastic (CFRP) components ensure performance is not sacrificed at the expense of the car's heavy battery.

This Month's Q&A Technology Tip

Q: Is it possible to use traction pack cable other than orange welding cable?

A: Although preferred, orange welding cable is not the only option. Cable must be dual sheathed (nylon inner and polyethylene outer (no PVC) but does not have to be orange.

The way to overcome the orange cable requirement is to place the cable into orange corrugated conduit. You will need 32mm or 40mm diameter conduit, fortunately those sizes are readily available from electrical supply stores, but can up to $15 per meter. To save your wallet EBay stores in Australia supply the same produce at $8.60 per metre including delivery.