

Latest Lithium Battery Offerings!

Printed Lithium Batteries!

Conventional lithium-ion battery manufacturing requires that the two halves of a battery be made in two separate steps, and then combined together in a third step – each step adding cost that contributes to high product price. PARC's Printed Integral Battery deposits the entire battery cell – cathode, separator, anode – in one single pass. PARC's CoEx technology allows multiple materials to be deposited simultaneously while still maintaining fine features in the finished product. The Project will be executed with partner Lawrence Berkeley National Laboratory. Over the next twelve months, the team will develop high-viscosity battery material inks capable of co-extrusion at high-speed; a three-dimensional print-head configuration simultaneously prints structured layers of cathode, separator, and anode; and process details to ensure a reliable manufacturing capability. PARC will then print batteries and document performance in order to foster investment and adoption by manufacturers. Single pass printing of the three layers will reduce costs in deposition, calendaring, laminating, and yield loss. Because it inherently incorporates CoEx technology, the structured electrodes can simultaneously increase energy density, or deliver equivalent energy density with less active material to reduce the overall cost even further.



PARC Launches ARPA-E Funded Printed EV Battery Project

PARC, a Xerox company, has launched a project with the U.S. Department of Energy's Advanced Research Projects Agency-Energy (ARPA-E) under the 2012 Open Funding Opportunity. The Printed Integral Battery Project will leverage a PARC invented co-extrusion (CoEx) technology to demonstrate a lithium-ion battery manufacturing process that deposits the entire functional battery in a single pass. This innovative approach can dramatically reduce cost while simultaneously improving battery performance, helping make high performance and affordable electric vehicles (EV) a reality. The Printed Integral Battery Project is part of a portfolio of research within the PARC Energy Technology Program aimed at developing practical solutions to make clean and abundant energy available across a wide range of applications.

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The Power of the Sun!!



Although Solar Impulse is only a single seat aircraft it has some impressive dimensions, with its huge wingspan equal to that of an Airbus A340, and its proportionally tiny weight – that of an average car.

- Power - 4 8kW brushless motors
- Energy Source - 200m², 11,628 solar cells.
- Wing Span – 63.4 metres
- Length 21.85 meters
- Height 6.4 meters
- Weight 1,600kg
- Cruise Speed 70kmh
- Take Off Speed 44kmh
- Altitude 27900ft

Will have to keep an eye on the progress of this impressive EV.

Solar Impulse



Solar Impulse is a Swiss long-range solar powered aircraft project being undertaken at the École Polytechnique Fédérale de Lausanne. The project eventually hopes to achieve the first circumnavigation of the Earth in 2015 by a piloted fixed-wing aircraft using only solar power. The project is led by Swiss psychiatrist and aeronaut Bertrand Piccard, who co-piloted the first balloon to circle the world non-stop, and Swiss businessman André Borschberg. The aircraft, registered HB-SIA, is a single-seater monoplane, capable of taking off under its own power, and intended to remain airborne up to 36 hours. Currently the Impulse is undergoing flight testing in San Francisco in preparation for its Trans America flight starting on the 3rd of May. The flight itinerary is from San Francisco (California) to Phoenix (Arizona), to Dallas (Texas) to Saint Louis (Missouri) or Atlanta (Georgia) ending in Washington D.C. and New York City.

SuperCapacitors

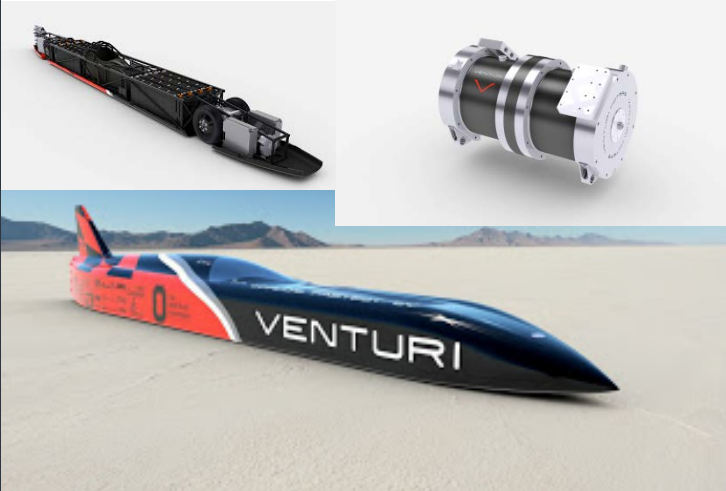
In a revision of the super capacitor aid to conventional EV battery systems, Imperial College London is working on new material Activated Carbon Fibre that allow supercapacitor storage units to be inbuilt into a vehicles structure.

Obviously the body work, being the largest single component of a car, could be the supercapacitor that provides the instantaneous current required by EV's to get under way, thus offloading the heavy current drain from the battery pack.

The material is formed from polymer gel electrolytes as the ion conducting phase, glass fibres as the insulator layers and sol-gel derived porous silica as further structural reinforcement. Ultimately, they expect that there SC material could make EV's lighter, more compact and more energy efficient, enabling drivers to travel for longer distances before needing to recharge their cars and extend the life of the batteries by de-stressing the heavy cycle loads.

Additionally, SC material could potentially be used for the casings of many everyday objects such as mobile phones and laptops; this has the potential of completely doing away with a separate battery making such devices smaller, more lightweight and even more portable.

Venturi VBB-3 aiming to set EV World Record @ 600 km/h



Venturi and Ohio State University have teamed up to create the VBB-3 which will attempt to set a new world speed record for electric vehicles. With 3,000 HP, the 3rd generation Venturi Buckeye Bullet will be the most powerful electric car ever built. Roger Schroer, test driver at the Transportation Research Center (Ohio) and current holder of the FIA world record (which he achieved in 2010 aboard the VENTURI VBB-2.5 - reaching a top speed of 495 km/h (307.58 mph)), is planning to hit 600 km/h (372.82 mph) in 2013, followed by 700 km/h (434.96 mph) in 2014 before pushing the limits still further in 2015. The 1st public unveiling of the VBB-3 will take place on the Bonneville Salt Flats, where it will take part in the SPEEDWEEK on August 10-16, 2013. The FIA record attempts will take place on September 12 and 18, 2013

Because the VBB-3 doubles as a test bed for electric power systems subjected to extreme conditions and environments, this new records attempt program amounts to a strategic R&D initiative for VENTURI. Giorgio Rizzoni, Director of the Ohio State Center for Automotive Research (CAR) explains that. "This program presents our students with a unique experience to extend their engineering education. It is the culmination of 20 years of Electric Vehicle racing at Ohio State – we do not know of any other program that has embraced e-motorsports continuously for two decades, and we are grateful to Venturi for giving us the opportunity to seek ever higher challenges in electric racing. We'll be watching with interest for the results of SPEEDWEEK in August (see September's issue!)

Look Where EV's Are Going Now!!



TOYOTA Racing's 2013-specification TS030 HYBRID will make its race debut in this weekend's Six Hours of Spa-Francorchamps, the second round of the FIA World Endurance Championship, earlier this month 2012 spec cars came 3rd & 4th at Silverstone. The TOYOTA HYBRID System - Racing powertrain uses a unique super capacitor to deliver 300hp of boost automatically, on top of the 530hp generated by a 3.4litre, normally-aspirated V8 petrol engine. The updated TS030 HYBRID features modifications to chassis and powertrain, with increased performance, reliability and serviceability as priorities. A revised aerodynamic package, including an updated monocoque, delivers improved performance whilst minimising the impact of updated regulations in 2013 which increase the minimum weight for manufacturer LMP1 cars by 15kg. Toyota seemingly wants to keep ahead of the pack where hybrid technology is concerned – recently the marque notched up its 5 millionth hybrid road car sale.

This Month's Q&A Technology Tip



Q. There is a lot of wiring that needs to be done to get my EV functioning, is there a neat way to finish the wiring that doesn't cost the earth?

A. eBay can come to the rescue here; out of Honk Kong comes a range of military style multi-pin connectors that can handle 12, 14, 18 or 24 wires in a single unit at a maximum of 10 Amps per contact. Now they are not small at 70mm X 40mm for the 24 wire unit but their screw together structure and bolt on to the case base unit are very robust and potentially long lived! Now the important part, the price \$11.34 for the plug socket combination, delivered to your door; not bad at all!!