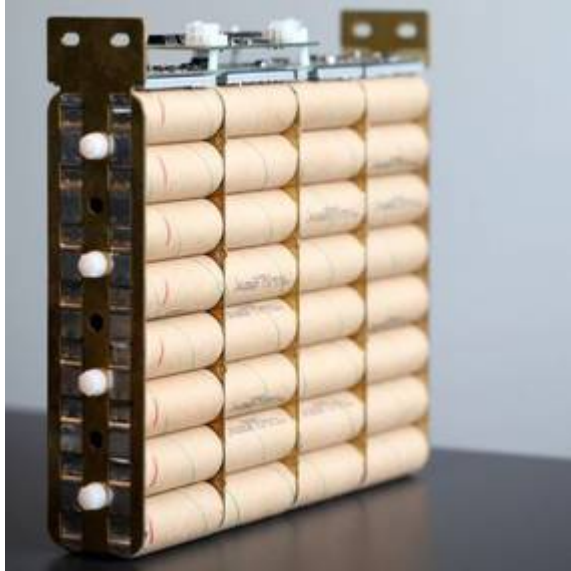


What's in the Pack?

Voltabox develops battery systems based on two different types of cell-technology. Both technologies – **iron-phosphate** and **nickel-manganese-cobalt-oxide-based** – each offer their own distinct advantages, when it comes to the corresponding applications.

Full attention has also been paid to the safety-relevant functions involved. Operating safety is maximised in all battery systems developed by Voltabox. All packs come with an integrated battery-management system that permanently monitors each cell voltage and temperature, while balancing differences in voltage potential.

The cells themselves are sourced from A123 systems and K2 Energy for the 26650 size LiFePO4 chemistry units. Interestingly Voltabox claim 4000 cycles at 80% DOD and 292Wh/l power density. For the Lithium-Nickel Manganese Cobalt Prismatic cells 5000 cycles to 80% DOD and identical power density (292Wh/l) is claimed. These cells originate from Samsung. Standard packs are 13.2V, 790Wh and 9.8Kg.



Voltabox

Located in Germany and the USA (Texas), Voltabox produce various configurations of Lithium battery packs to suit EV's through to stationary power storage.

Their range includes large kWh packs for public transport, busses/trolley busses and light rail systems. HEV and EV commercial vehicles are also catered for with airport ground support vehicles, including aircraft tugs and lightweight apron transportation cars. Footpath sweeping carts and forklifts from 250kg to 15tonne lifting capacity are also catered for.

Voltabox's primary goal is to provide dedicated power packs to suit OEM HEV and EV vehicles for the industrial market.

Asterion LPI910-4

Instead of using a conventional four-wheel drive system like other Lamborghinis, the Asterion drives the rear wheels with its V10 while two of the electric motors take care of the front wheels, adding torque vectoring into the bargain. The third motor is tucked away in the seven-speed dual clutch gearbox. The transaxle design of this positions it behind the engine, leaving what would usually be the transmission tunnel in a conventional four-wheel drive car free to provide storage for a lithium ion battery pack.

The weight of the hybrid drivetrain – some 250kg – is offset by the extensive use of carbon fibre. This includes the entire monocoque and the wheels, which are 20 inches in diameter at the front, 21 inches at the rear. Active cooling via part-titanium grids over the front air intakes further improves efficiency. Asterion has just 2 seats, with a three spoke steering wheel with driving mode buttons – Zero for electric only, I for Ibrido (Hybrid) and T for Thermico – Combustion power.



Lamborghini

At the recent Paris motor show Lamborghini unveiled its hybrid prototype the Asterion. The plug in hybrid is, according to Lamborghini “a technological demonstrator representing a Lamborghini model that could be realistically produced today, using technologies currently available and drawing on Lamborghini's own expertise.” I think there trying to keep arm's length from owners Volkswagen and Porsche. Anyway, the LPI 910-4 is quite a beast, the LPI references to Longitudinal Posterior – referencing the location of the gas burner the 910 is the power rating in PS (Pferdestärke) German for horsepower and equal to about 900bhp. Power is supplied by a 5.2 litre V10 with 602bhp from the Huracan LP610-4. The three electric motors make up the remaining 296bhp, and together this very modern combo is capable of 0-62mph in 3.0 seconds. Top speed is 199mph.

Lamborghini claims 98mph is possible on electricity alone. The usual eccentricities of official fuel economy testing means the Asterion would homologate at a frankly ludicrous 67.3mpg. That's equivalent to 98g/km CO2, therefore making it the world's first road tax-exempt Lamborghini (for the UK market).

Formula E Race 2



November 22nd saw the second of the FIA Formula E races run at Putrajaya, Malaysia. Once again the action came on thick and fast with numerous collisions and nudging into the barriers. The 31 lap event was won by Virgin Racing's Sam Bird, with a time of 51:11.979.

Overall standings has Lucas di Grassi from Audi Sport ABT (winner in China and second in this race) leading the standings on 43 points just 3 points ahead of Sam Bird. In 3rd with 18 points each, is Franck Montagny for Andretti racing, Nicholas Prost e.dams Renault, Jerome D'Ambrosio Dragon Racing, and Karun Chadhok Mahindra Racing.

Of note this round was the start, where unlike most FIA races there was no warmup lap. The extra power drain was not considered wise with the 31 laps of the 2.56km circuit potentially on the limit of the cars racing range. The side effect of this was the lack of grip, (cold tyres) for the first lap or two. This put several contenders into the barriers or aided in putting other cars into the barriers. Next race Dec 13th Punta Del Este, Uruguay!

Daimler's €100M Li Plant



Daimler plans to invest around €100 million (\$125 million) to expand production capacity for lithium-ion batteries at its Deutsche ACCUmotive subsidiary. A new building is under construction in Kamenz, Germany, and when it is completed in mid-2015, Deutsche ACCUmotive will have nearly 20,000 square meters of production and logistics space.

"Deutsche ACCUmotive will be producing the lithium-ion batteries for the upcoming electric versions of the smart fortwo and for four from 2016 as well as for future hybrid models of Mercedes-Benz," said Frank Blome, Managing Director of Deutsche ACCUmotive. "The development and production of our lithium-ion batteries is competitive in every respect. We are in the black."

The Daimler subsidiary has delivered more than 50,000 lithium-ion batteries to date, and sees additional growth opportunities in the stationary storage field. "We have already concluded the first customer contracts. With our systems we can make an important contribution to the energy turnaround," said Blome. Now this enterprise is extremely interesting, as less than a month ago Daimler subsidiary Li-Tec announced it was to stop producing Li-ion battery cells in December, closing the only German factory currently producing cells for EVs. However its 280 employees were to be transferred to ACCUmotive where cells from LG Chem are being used in the production of the EV packs. Anyone got shares in LG Chem?

The *SHAPE* of Things to Come??



Supernova EV SNEV-1 or is it a Purvis Eureka?

Out of India comes the Golden Arrow Wireless Supernova EV-1. Developed by Shashi Vyas the SNEV-1 has been sent for international road rule approval. Developed at the company's facility in Ahmedabad, the electric sports car is available in three different versions and can attain a top speed of 150 kmh. The car is powered by three different batteries including conventional lead acid batteries, lithium ion batteries and super capacitors. The lead acid batteries weigh 300kg and can be completely recharged in 8 hours, whereas the lithium ion batteries weigh about 120kg and take around 2 hours to recharge. The super capacitors however weigh just 20kg and can be recharged in 5 minutes. Range is realistically around 250km (although 1000km is claimed – (km's must be shorter in India). Motor 78hp and 150Nm torque; 0-100kmh is 9.9 seconds and weight is 925kg. Price \$25,000 to \$40,000 (I still think it's a Purvis Eureka)



This Month's Technology Review

Manzanita Micro has been busy coming up with some new products. This Level 2 J1772 charging unit is designed to fulfill the best of both worlds; it is wall mountable with just two bolts holding its mounting plate. But it can be unclipped from this plate to become a portable charging unit when you require your EV to go for a road trip. The P3 is supplied with a NEMA 6-50 plug for the input connection. A 6 meter output cord, input current is 30 amps and it can supply 7.2kW of output /charge power. Case NEMA rating 3R

Outdoor, Snow, Rain OK. Price US\$750.00 see <http://www.manzanitamicro.com/>