

Ferrari F70 Hybrid

Ferrari says that the hybrid system carries the dual function of increasing power and decreasing emissions. It hasn't provided any output numbers, but rumors have it that the system will add up to 90 extra kW over the V-12's ~ 600kW. When accelerating, the main electric motor delivers extra power through the dual-clutch gearbox. When the driver hits the brakes, the motor turns into a generator, transforming brake energy into electricity to recharge the batteries and reduce CO2 output up to 40 per cent.

Although not a total EV "yet", just the fact that Ferrari are dabbling in electric drive systems means there is hope for the premier sports car producer in world to one day, soon I hope, come out with an all electric plug in.



Not to be outdone by other car manufacturers, Ferrari has been busy working on hybrid drive systems. The unit pictured above is from the new ENZO replacement the F70.

It's believed that Ferrari will debut the commercial version of the hybrid system on the F70 that should surface sometime early 2013, and the updated HY-KERS system shows how Ferrari will power the new flagship.

Like the Enzo before it, the F70 will carry its V-12 engine amidships, so Ferrari has embedded the Formula 1 based HY-KERS system within that framework. The new HY-KERS connects a V-12 engine and electric motor to a dual-clutch transmission. A second, non-powertrain electric motor mounted on the front of the engine is used for powering auxiliary electronics like power steering and air conditioning. Both motors receive power from a battery pack that comes in various sizes and can be mounted in a variety of ways, to be determined by the car's final layout.



EV Kit?

Although an available kit in Europe, Alex took to the basic assembly and lengthened it; added battery tunnels along both sides and constructed custom mounts for motor and transmission.

Drive comes from an AC Propulsion unit similar to the system in the Tesla.

Power is sourced from 3000 Lithium Ion Nano Phosphate cells from A123 Systems, configured as 30 packs. Total energy is 35kWh with a maximum current output of 1000amps, so getting the AC motor to its maximum 13,000RPM doesn't take very long at all; range, 240Km cruising or 150Km lead footing it.

Next challenge – Alex is hoping to obtain a set of A123 Prismatic cells (twice the energy density of the current units) and plug them into a K1 Carbon Fiber chassis powering 2 AC motors, for 4 wheel drive. All this adds up to a potential 500Kg, 340kW monster. Now this is one amazing EV conversion. Just need a benevolent benefactor with a spare \$1M to give it a try.

K1 Evelio



This newsletter I find myself reviewing a diverse group of extreme designed futuristic sports vehicles. Perhaps this is a sign of things to come – if the sports car fraternity get a taste for EV's, mainstream vehicles may not be too far behind.

To start with, here is a homemade beauty that became one of the stars of the show at 2011's Goodwood Festival of Speed, in England. The Evelio K1 marries killer looks with the promise of performance to match. It can sprint from 0-100kmh in 3.5 seconds and is capable of reaching speeds in excess of 270kmh.

However in its current guise, the K1 Evelio boasts a 170kW electric motor with 220Nm of torque producing an electronically-limited top speed of 95mph, but when owner/builder Alex Letteriello (a mechanic) from Hampshire, finishes fitting a modified 4 speed Toyota automatic gearbox, the aforementioned (and much more impressive) figures will be reached. The Slovakian built K1 engineering kit car, (the basis of the EV), features a tubular steel chassis, which helps keep weight down and increases rigidity.

2012 TT Zero



Seems the upcoming Isle of Mann TT Zero race has caught the interest of the big boys this year with 18 entries confirmed to run the 37 ¾ mile circuit from the 28th of May to the 8th of June.

This year Honda backed Team Mugen and Kawasaki will be amongst the specialised EV and University teams. Original competitors, MotoCzysz, Team Agni, University Team Ecotricity Kingston and India's Team Torq/Haiyin Racing will again be trying to beat the 100mph average speed. One team to watch is from Imperial College London – the group that ran the Trans American Highway by EV.

As a consequence of this "bigger players" interest, the calibre of the riders taking on the TT Zero has risen as well. With current and former TT race winners joining on for an electrifying blast around the Island.



Team Mugen Shinden Racer

ZecOO



From Japan comes this incredible looking Maxi Scooter (as the designer classified it). – The all electric ZecOO, The bike was created by Kota Nezu of Znuq Design and it appears that a limited production run is being planned due to the coverage that the Japanese press has given the machine. Propulsion is via a 20kW electric motor and 63Nm of torque, all of which is transferred to the rear wheel via a single speed belt drive transmission.



Front suspension is intriguing with dual one sided wishbones, single sided hub and huge single disc brake. Rearwards is the same configuration but with the enormous drive cog attached.

Performance is reputed to be quite satisfactory (with 63Nm – I'm not surprised). Top speed is 120kmh and a range of up to 130km. Recharge takes about 6 hours but it is a heavy beast tipping the scales at 245kg intriguingly the frame is made from a combination of laminated wood (like a Spitfire) and alloy. With styling that is not inhibited by an ICE and fuel tank the looks can be very radical indeed, but still maintain functionality. Will this be what the future for EV bikes could be?



No further details regarding specifications are currently available, however it is reputed that a production model would cost upward of ¥6million or \$70,000 (ouch)

The Shape of Things to Come??



Rimac Concept 1

Croatian company RIMAC Automobili has released information regarding their all electric supercar the Concept 1. Initially thought to be vaporware when first released in late 2011, Rimac has become a surprise addition to the growing range of EV supercars. As you can see above, there are multiple motors, four in all, connected to transaxles at front and rear. This combination provides a claimed output of 800kW and 3800Nm of torque; Rimac states that this combination is powerful enough to take the Concept One from 0-100km/h in just 2.8 seconds, and take the elegant coupe on to a top speed of 305km/h.

Power is sourced from a 92kWh battery pack, which is mounted under the rather sleek carbon fibre body. Invoking more sedate driving is expected to provide a range of around 600km. The company brought the Concept One to the Top Marques Monaco event in late April, where it officially opened its books for reservations and deposits. It didn't specify how much of their life savings buyers of the world's most outrageous electric supercar will have to part with, but media reports have had the price hovering around the US\$1 million mark. Deliveries are planned for a 2013 start, and Rimac will only make 88 vehicles, so get your order in now!

This Month's Q&A Technology Tip

Q: What is the best way to assure that battery connections do not vibrate loose?



A: Nord Lock washers are probably the best way to make certain that any critical systems remain tightly secured in even the most violent vibrating environments.

Nord Locks come in sizes from 3.2mm to 42.5mm inside diameter, in either zinc plated steel or 316 stainless steel.

Prices for 8.2mmID to suit battery connection bolts are \$2.50 a pair, for quantities of 50 or more, from smallparts.com.au. for more info on how these washers work see the following site.

<http://www.smallparts.com.au/store/partslst/washersnordlock/washers/wide/1/>