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LC Super Hybrid is BEEAs Green Product of the Year

The low carbon LC Super Hybrid automotive technology being developed by Controlled Power Technologies (CPT) - supported by the European Advanced Lead-Acid Battery Consortium (EALABC) - has been awarded Green Product of the Year at the British Engineering Excellence Awards (BEEAs). The judges said that the low voltage hybrid technology applicable to cars, trucks and buses provided an affordable transportation solution, which promised to cut the CO₂ emissions of a wide range of vehicles very significantly.

“We’re delighted to receive this recognition for all the hard work we’ve put into our technology since the company was formed in 2007,” said Nick Pascoe founder member and chief executive officer of CPT on behalf of the company’s 50 design, test and development engineers and support staff. “We are very excited by the numerous applications for our highly controllable motor-generator technology, particularly in the development of a new breed of super-efficient 48V hybrid vehicles, incorporating highly dynamic electric torque assist with near continuous kinetic and thermal energy recovery.”

“The LC Super Hybrid programme is a real world solution to one of the biggest global environmental issues: how to make clean electric motoring affordable and accessible,” said chairman of the judges Andrew Burrows, founder of i20 Water and winner of the 2009 BEEAs Grand Prix.

“Controlled Power Technologies is a prime example of what we do best in the UK,” said Graham Pitcher, another member of the jury and group editor of Findlay Media’s Engineering Design Division, which organises the awards. Commenting on how UK companies are moving into the fast lane to help the global automotive industry solve some of its challenges, he added: “Almost in stealth mode, the UK has become one of the design communities of choice for the world – and the automotive market is a leading example. It’s the world’s fifth largest manufacturing

economy, with the UK's design engineering sector also making a substantial contribution to the nation's GDP."

"Designing to be 'green' is fast becoming a central part of an engineer's job function," said another judge, Philippa Oldham, head of transport and manufacturing at the Institution of Mechanical Engineers. "Now, designs need not only to be made using appropriate materials, but also to be recyclable at the end of life. Throw in some consideration of the device's carbon footprint and the challenge grows."

"CPT has addressed the need for greener automotive technology applicable to car, bus and truck designs," said Dr Andy Sellars lead technologist with InnovateUK (Technology Strategy Board). "Its low carbon LC Super Hybrid programme is set to bring about a substantial reduction in CO₂ emissions for around one-tenth the price premium of a pure battery electric vehicle or high voltage plug-in hybrid."

"Vehicle legislation is now demanding major reduction in CO₂ emissions and less use of exotic materials," said Ashley Evans another judge, director of electronics at techUK and inaugural chair of the UK Electronic Alliance. "Currently, 95 per cent of electric motors produced for the auto industry use rare earth permanent magnets. In a high voltage hybrid, the traction motor alone needs at least 1kg of neodymium, raising issues of availability, price volatility and end of life recyclability. In switched reluctance machines, these magnets are replaced with electronic switches and software."

"These complementary switched-reluctance motor-generator and advanced lead-carbon technologies are now ready for high volume series production and the first vehicles featuring this 'intelligent electrification' of the powertrain are expected to make their showroom debut from 2016 onwards," said another judge Paul Fanning immediate past editor of Eureka magazine.

The LC Super Hybrid approach combines electric supercharger and motor-generator applications of CPT's switched-reluctance motor technology demonstrated in a large family saloon. The result enables aggressive downsizing and down-speeding of existing engine families, delivering CO₂ reduction and fuel economy improvement. Also under development for other projects is CPT's turbine integrated gas exhaust energy recovery system.

The LC Super Hybrid technology development programme represent the culmination of almost 15 years of research into switched-reluctance motors, and more than two decades of research and development by the international Advanced Lead-Acid Battery Consortium leading to the recent breakthrough of advanced lead-carbon batteries, suitable for the high rate partial state-of-charge (HRPSoC) requirements of a low voltage super hybrid vehicle.

“This cooperation with CPT has been highly successful,” said Allan Cooper project coordinator of the EALABC, “not just because of the many awards that have been won, but the fact that it has resulted in projects directly involving vehicle OEMs, suggesting that this low cost technology will reach the market place in the very near future.”

Controlled Power Technologies

CPT is an independent, clean-tech company, based at Laindon in Essex and Coventry in the West Midlands, specialising in the development of cost-effective CO₂ reduction measures for the global automotive industry that avoid major redesign of the powertrain or vehicle electrical system. Its core competencies include low voltage power electronics, advanced control software and the application of low voltage electrical machines to gasoline and diesel powertrains.

The business was established in 2007 to acquire Visteon’s advanced powertrain business. With asset and technology acquisitions from Visteon, and the signing of associated licensing and collaboration agreements with Switched Reluctance Drives Limited, now part of Nidec Corporation, CPT gained immediate access to a portfolio of near-term solutions to the problem of automotive CO₂ reduction – and has since developed the technology to a high level of application and manufacturing readiness.

Following the £30 million sale of its VTES electric supercharger business to Valeo for applications in cars and vans up to 3.5 tonnes gross vehicle weight, CPT is now focused on bringing its liquid-cooled COBRA, SpeedStart and TIGERS technology to mass market readiness.

COBRA is an electric supercharger for commercial vehicle and off highway applications. SpeedStart is an advanced motor-generator system, recently validated for two million stop-starts, offering significant additional functionality for 48V hybrid applications including torque assist for launch and low speed transient acceleration, optimised motorway cruise conditions with electric assist ‘load point moving’ and a leaner fuel calibration, in-gear coast-down and the ability to harvest significantly more kinetic energy from regenerative braking compared with 12V stop-start systems. The turbine integrated gas exhaust energy recovery system known as TIGERS is a complementary application of CPT’s switched reluctance technology providing cost-effective thermal energy recovery and a means of replacing an existing alternator.

Today, CPT retains a highly experienced team of automotive engineers (most of whom have shares or options in the company) and is backed by a number of prominent investors specialising in the energy and environmental sectors including Conduit Ventures, Entrepreneurs Fund, Low Carbon Innovation Fund, Mowinckel Management, National Technology Enterprises Company, Reformer Group, Target Ventures and Turquoise Capital. CPT’s technology

development partner, Nidec Corporation of Japan, is one of the world's leading suppliers of electric motors. Further information on CPT is available at www.cpowert.com.

European Advanced Lead-Acid Battery Consortium

The European Advanced Lead-Acid Battery Consortium (EALABC) is the London-based arm of the Advanced Lead Acid Battery Consortium (ALABC), an international research consortium formed in 1992, to advance the capabilities of the valve-regulated lead-acid battery in order to help hybrid electric vehicles become a reality. The research resources of the world-wide membership of ALABC are pooled to carry out a large program of research and development that would otherwise not be possible.

The ALABC is managed by the International Lead Zinc Research Organization based in North Carolina. ALABC membership currently stands at over 70 organisations. The European Consortium has been actively involved in vehicle demonstration of the progress made with the new generation of carbon-containing valve-regulated lead-acid (VRLA) batteries. For further information please visit www.alabc.org.

Ends

CPT/EALABC media contact: For a test drive of the LC Super Hybrid demonstrators or to request a media interview with Nick Pascoe (CPT) or Allan Cooper (EALABC), please contact Rob Palmer on +44 7768 242761 or rpalmer@palmerpr.com. High resolution files of the images below are available from Rob Palmer or can be downloaded at www.newspress.co.uk ...

BEEAs media contact: Ed Tranter executive director Findlay Media on +44 1322 62698 or etranter@findlay.co.uk



Pic 1 – CPT's Nick Pascoe (left) receives BEEAs Green Product of the Year award from Richard Roberts at National Instruments



Pic 2 -- Nick Pascoe (fourth from left centre row) chief executive CPT with other award winners at the British Engineering Excellence Awards 2014



Pic 3 -- Affordable low voltage 12V and 48V LC Super Hybrid technology applicable to cars, trucks and buses is demonstrated in these VW Passat 1.4-litre models providing better than 50mpg (imperial) fuel economy and 2-litre engine performance in a large family saloon for around one-tenth the price premium of a pure battery electric vehicle or high voltage plug-in hybrid.