



Advanced Lead-Acid Battery Technology: Introducing the LC Super Hybrid

Low Cost

Mild hybrid performance at micro-hybrid prices

Low Consumption

Lower fuel usage without loss of performance

Low CO₂

Lower harmful emissions to help protect the environment

Lead Carbon

Utilizes new negative plate chemistry for good battery performance and life

Life Changing

Continue to enjoy your driving at a lower cost while still lowering your carbon footprint

The Path to Low Cost Hybridisation

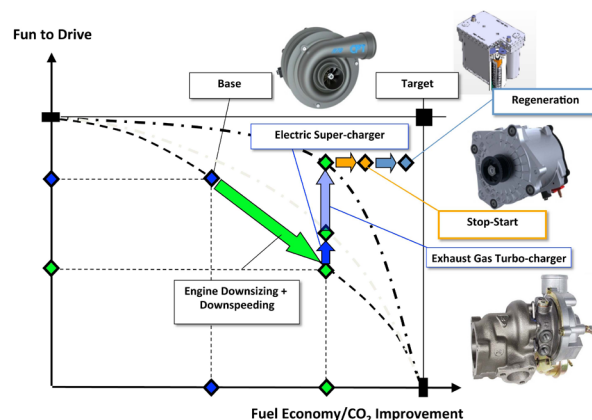
The challenge facing the automotive industry is the urgent need to deliver an investment-efficient, CO₂ reduction technology roadmap, compatible with consumer price expectations and legislative demands. An alternative low-voltage way of achieving mild hybrid performance that would meet the projected next level of CO₂ regulations at a fraction of the cost of systems that use an integrated motor assist with a high-voltage NiMH, or potentially a Li-Ion, battery, has been promoted by UK-based Controlled Power Technologies Ltd (CPT) and Valeo Air Management UK Ltd.



Principles and Methodology

The approach presented in this concept is to combine synergistically Valeo's electric super-charger and CPT's SpeedStart® integrated starter generator technologies to bridge the gap between micro and mild hybrid segments to create an innovative, high-value, yet low-cost micro/mild approach to low-voltage

hybridisation. The result is to enable aggressive yet near-term down-sizing and down-speeding of existing engine families, delivering proven CO₂ reduction and fuel economy improvement, without the usual dynamic compromises that typically limit market acceptance. When this low-voltage combination is applied to a downsized 1.4l turbocharged direct injection gasoline engine, there is potential to take this concept to an even higher level of capability, where it can offer a cost-effective alternative to high-voltage mild hybrid solutions. The demonstrator has been commissioned by the Advanced Lead Acid Battery Consortium (ALABC) at AVL Schrick in Germany with strong support from CPT, Valeo, Provector and Mubea.



Getting More from Less

The new system will operate with advanced lead-acid batteries at 12V (and later 48V) with a higher Ah capacity than is used at present. It also provides an opportunity for low-voltage advanced valve-regulated lead-acid (VRLA) battery technology to be at the leading edge of low-cost hybrid development, rather than trying to play catch-up, as with the high voltage systems.

Provisional Performance Comparisons

	Passat 1.4 litre TSI	Passat 1.8 litre TSI	LC Super Hybrid (1.4 litre)	Volvo S40 2.0 litre
Power (PS)	122*	160*	142**	145*
Torque (Nm)	200*	250*	275**	185*
Acceleration (0-62 mph) (Seconds)	11.1**	8.5*	8.7**	9.5*
Fuel Consumption mpg/litre per 100km (Combined)	45.6/6.2**	40.9/6.9*	50.5/5.6**	37.2/7.5*
CO ₂ Emissions g/km	140**	160*	130**	176*
Weight (kg)	1451*	1505*	~1480	1370*

* Manufacturer's figures ** Measured by AVL



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