

8 May 2008

## **LOW CARBON VEHICLE DEVELOPMENT TO RECEIVE MAJOR BOOST WITH £90 MILLION NEW GOVERNMENT INVESTMENT**

- **16 innovative development projects, worth over £52 million, to receive £23 million government investment through the Low Carbon Vehicles Innovation Platform.**
- **Low Carbon Vehicles Integrated Delivery Programme to be developed, speeding up the introduction of low carbon vehicle technology, with further £70 million government investment.**

New low carbon vehicles could be on Britain's roads within 5 to 7 years following the decision, announced today, to invest £23 million of Government funding in sixteen innovative new projects. The investment, which is being made available by the Technology Strategy Board and the Department for Transport through the Low Carbon Vehicles Innovation Platform, will assist companies to take forward research, development and demonstration projects in the UK. Including investments by the companies involved, the total value of the development projects will be £52 million.

And, in a related development, the Technology Strategy Board today announced its intention to launch in the Autumn 2008 a Low Carbon Vehicles Integrated Delivery Programme – stimulated by a further £70 million of government investment. This programme will co-ordinate low carbon vehicle activity from initial research through to future procurement opportunities, speeding up the time it takes to get low carbon vehicle technologies into the market place.

The sixteen new research, development and demonstration projects represent the first investment by the Low Carbon Vehicles Innovation Platform since it was established in the autumn of 2007, and follows an open competition launched in September. The key objectives of the platform are to:

- accelerate the market introduction of low carbon road transport vehicles over what would be achieved by global market forces alone, and
- maximise the benefit to UK business of that accelerated market penetration.

The projects to receive funding will be led by a wide range of organisations from major manufacturers through to small and medium sized companies and University spin-outs. The research and development will cover technologies such as lightweighting, ICE (Internal Combustion Engine) developments, Fuel Cells, Energy Storage and Aerodynamics.

The aim of the Low Carbon Vehicles Integrated Delivery Programme is to fully map the UK's technological capability in the area and, using the full range of Technology Strategy Board interventions, make the business connections needed to develop an automotive sector capable of delivering the required low carbon products and services required within the medium to long term.

The Technology Strategy Board will manage the programme through its Low Carbon Vehicles Innovation Platform. The Department for Transport, the Engineering and

Physical Sciences Research Council (EPSRC) and Advantage West Midlands have agreed to invest in the programme, while further support will be sought from other Regional Development Authorities and the Devolved Assemblies.

The Low Carbon Vehicles Integrated Delivery Programme is being developed in close partnership with UK-based companies and academic institutions, and it is strongly anticipated that the Government's £70 million investment in the Programme will be matched by funding from industry.

Supporting today's announcements, Science and Innovation Minister Ian Pearson said: "These investments will provide a great opportunity for British companies to mobilise innovation to respond to global climate change challenges and to meet demanding new CO2 standards for new vehicles. They will also help position British companies to benefit from the growing domestic and international demand for lower carbon vehicles."

Transport Minister Jim Fitzpatrick said: "Developing cleaner and more efficient vehicles is vitally important in our efforts to combat climate change. Road transport contributes heavily to the UK's total emissions, which is why we are investing in low-carbon technology through the Low Carbon Vehicles Innovation Platform. I hope that this will stimulate further growth in the market and that low carbon vehicles will soon be a common sight on our roads, so that we can continue to push forward reductions in carbon emissions"

"The EPSRC support will provide the activities of the Integrated Delivery Programme with a base of high quality, relevant research", said Catherine Coates, the EPSRC Director of Business Innovation. "Working in partnership with the other funders will ensure a spectrum of government funding for innovation activities within the Integrated Delivery Programme"

## 1. Notes to Editors

1. The **Low Carbon Vehicles Innovation Platform** was launched by the Technology Strategy Board in 2007 with the aim of accelerating the market introduction of low carbon road vehicles and maximising the benefit to UK business, thereby responding to the societal and business challenge posed by the need to reduce transport CO2 emissions. It brings together and enhances Government support mechanisms for technology development within the wider market transformation context of the Low Carbon Transport Innovation Strategy.
2. Please see Annex A for further details of the sixteen new research and development projects to be funded by the Low Carbon Vehicles Innovation Platform.
3. The **Low Carbon Vehicles Integrated Delivery Programme** is jointly supported by the Technology Strategy Board, Department for Transport and EPSRC. It will provide greater co-ordination of activities from University research to future potential procurement opportunities, speeding up the time it takes to get low carbon vehicle technologies into the market place. Complementary funding to

enhance the scope of the demonstration activity is under discussion with Regional Development Agencies & Devolved Administrations with Advantage West Midlands board having already agreed in principle to invest in this initiative dependent on the regional economic benefits. With matching funding from industry, it is anticipated that the Programme's budget for its first 5 years will be in the region of £140 million.

4. The Technology Strategy Board is a business-led executive non-departmental public body, established by the government. Its mission is to promote and support research into, and development and exploitation of, technology and innovation for the benefit of UK business, in order to increase economic growth and improve the quality of life. It is sponsored by the Department for Innovation, Universities and Skills (DIUS). For further information please visit [www.innovateuk.org](http://www.innovateuk.org).
5. Thirteen projects are listed at the annex attached with this release. These represent projects confirmed at the time of going to press. A further 3 projects will confirm shortly.

## **LOW CARBON VEHICLE DEVELOPMENT TO RECEIVE MAJOR BOOST WITH £90 MILLION NEW GOVERNMENT INVESTMENT**

### **Annex to press release - Project Details**

#### **Axon 60 : A structural carbon fibre car with plug-in hybrid option**

##### **Project Abstract**

Unique vehicle structures technology will be productionised for the first time. The Axon 60 is a vehicle for the very low CO2/km fleets of the future delivering 100+ mpg whilst meeting EU vehicle legislation. It is light weight (less than 500kg), low drag and is powered by a best practice 500cc engine and Infinitely Variable Transmission (IVT). The vehicle structure will use a globally patented structural carbon beam technology. A plug-in hybrid system will be used to explore the bounds of PHEV in light vehicle applications

**Lead Organisation** Axon Automotive

**Consortium members** University of Warwick, Powertrain Technologies Ltd, Scott Bader Company Limited

#### **Hybrid Electric Technology for Transit Buses**

##### **Project Abstract**

Accelerated UK market entry of Hybrid Electric Drive (HED) technology by building and developing a UK capability and supply chain. This will accelerate the production of a UK HED transit bus application and rapidly develop a UK centre of excellence for HED application engineering in UK.

**Lead Organisation**

BAE Systems

**Consortium members**

Alexander Dennis Ltd, University College London

#### **Li-ion Batteries for Plug-In HEVs**

### **Project Abstract**

The development and demonstration of a high efficiency, low cost, and ultra-safe Li-ion cell for Hybrid Electric Vehicles (HEVs) & Plug-In Hybrid Electric Vehicles (PHEVs). The project aims to improve the energy density of the low cost, very safe titanate/manganate Li-ion system by incrementally increasing the capacity of the active electrode materials whilst preserving their other characteristics.

### **2. Lead Organisation**

FiFe Batteries Limited

### **Consortium members**

ABSL Power Solutions Limited

### **Engine optimisation for reduced parasitic losses**

#### **Project Abstract**

The project will investigate the application of various new technologies which seek to lower the losses due to internal friction of the engine plus other engine and gearbox related parasitic losses. The aim is to demonstrate an overall fuel economy improvement and thus CO2 reduction of between 5 and 10% on the European drive cycle.

#### **Lead Organisation**

Ford Motor Company Ltd

#### **Consortium members**

MAHLE Powertrain Ltd, BP

### **Commercial vehicle fuel & carbon reduction by the use of 'aerospace aero' devices.**

#### **Project Abstract**

Provide a device fitted to commercial vehicles to significantly reduce fuel consumption and consequently carbon dioxide pollution. The intention is for the device to build on current systems and technology and move this forward into a new dimension that further utilizes developments from the aeronautical industries.

#### **Lead Organisation**

Hatcher Components Limited

#### **Consortium members**

Mercedes Benz UK Ltd, Cranfield University

### **Zero Emission London Taxi Commercialisation**

#### **Project Abstract**

Initiate and accelerate introduction of commercial fleets of zero emission fuel cell hybrid taxis primarily for London, by 2012 and for other cities, by 2014. The project will develop and integrate robust, high efficiency, Proton Exchange Membrane (PEM) fuel cell hybrid powertrains into LTI TX4 taxis. The arduous duty cycle of the London taxi will be utilised to provide a platform for accelerated fuel cell vehicle lifecycle testing

#### **Lead Organisation**

Intelligent Energy

#### **Consortium members**

Lotus Cars Ltd, LTI Ltd, TRW Conekt

### **Flywheel Hybrid System for Premium Vehicles**

#### **Project Abstract**

Design and development of a mechanical hybrid (flywheel and variable drive system), kinetic energy recovery system for use in a premium segment passenger vehicle as an alternative, cost competitive solution to other hybrid systems. The project will demonstrate this within an existing vehicle platform to prove its effectiveness and viability for production and suitability for modular application

**Lead Organisation**

Jaguar Cars Limited

**Consortium members**

Flybrid Systems, Ford Motor Company Limited, Prodrive, Ricardo UK Ltd, Torotrak plc, Xtrac Ltd.

**Limo-Green****Project Abstract**

The Jaguar executive saloons have class leading lightweight aluminium body structures. The objective is to use these vehicles as a basis for proving out the concept of a large luxury vehicle with an advanced hybrid electric driveline, consisting of an advanced drive motor, small battery pack and a small auxiliary power generator for sustained cruising. The project aim is to demonstrate a vehicle with sub 120g/km whilst maintaining the "premiumness" of the vehicle.

**Lead Organisation**

Jaguar Cars Ltd

**Consortium members**

MIRA Ltd, Lotus Engineering, Caparo Vehicle Technologies

**Lower Cost, Light Weight Vehicles by Increasing the Use of Post Consumer Aluminium Scrap****Project Abstract**

Demonstrate the feasibility of manufacture within five years of a mass producible lightweight car based on a body in white (BIW) structure built using sustainable aluminium sheet derived in part from low cost energy efficient recycled post consumer scrap. This will be a key enabler for the mass production in the UK of low CO<sub>2</sub>/km premium cars. The sheet manufacture will be based on world leading continuous casting technology and melt conditioning technology using high performance, low cost sheet cast from melts containing up to 75% of recycled

**Lead Organisation**

JLR

**Consortium members**

Novelis Inc, Zyomax, Norton Aluminium, Innoval Technology, Brunel University, Stadco Ltd

**Range Extended Electric Vehicle REHEV****Project Abstract**

Develop a modular electric & electric/diesel powertrain, suitable for several different vehicle types. This will be tested on a large premium sport utility platform delivering 120 to 130 g/km and zero emissions range of at least 12 miles. The project will also investigate range extension and plug-in charging and installation/commissioning of local recharging facilities for vehicle trials within the EON fleet

**Lead Organisation**

Land Rover

**Consortium members**

Amberjac Projects Ltd, Ricardo UK Ltd, E.ON UK PLC

**High torque density electric drive for commercial vehicles (HiTED)****Project Abstract**

A highly novel brushless permanent magnet electrical machine incorporating integral magnetic gearing to be developed for traction use with hybrid trucks, buses and construction vehicles. The recently invented pseudo-direct-drive (PDD) has the highest torque density of any known electrical machine and has improved energy efficiency, requires only natural air cooling, and is more compact with low manufacturing cost. The project will provide and evaluate two demonstrators.

**Lead Organisation**

Magnomatics Limited  
**Consortium members**  
Kollmorgen Corporation, Magnet Applications Ltd, Volvo Group

### **2/4CAR 2/4-Stroke Switching Carbon Reduction Vehicle**

#### **Project Abstract**

The project will deliver a global premium vehicle demonstrating a 25 - 30% reduction in carbon dioxide emissions with no loss of performance using an innovative, highly-downsized gasoline engine with two-stroke/four-stroke switching technology. Laboratory work has shown that torque output more typical of an engine of twice the capacity is achievable. The engine design incorporates a cycle-switching valvetrain, an advanced boosting and control system, and will demonstrate powertrain integration and driveable control strategies.

#### **Lead Organisation**

Ricardo UK Ltd

#### **Consortium members**

University of Brighton, DENSO Sales UK Ltd, Jaguar Cars Ltd

### **DESERVE, Develop high Energy battery + high power Supercaps for all Electric Range**

#### **Project Abstract**

Integrate, within a 3.5t electric delivery van, the two leading, available electrical energy storage technologies - high energy (Zebra battery) and high power (supercapacitors). The project will look to maximise the respective energy and power capabilities of the two systems. A power electronic interface controller to optimise the performance of the combined storage system will also be developed. The project will also integrate the storage system within the vehicle and optimise vehicle performance. The targets being range 250 km, top speed 100 km/h, acceleration to 80 km/h in 18 sec.

#### **Lead Organisation**

Tanfield Group plc

#### **3. Consortium members**

Beta Research and Development Ltd, The University of Manchester, ENERGY TECHNOLOGY SERVICES

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