Automotive consortium showcases
Flywheel Hybrid System for Premium Vehicles

Technology Strategy Board research project targets 20% cut in CO_2 emissions using flywheel-CVT system

September 15 2010... A consortium of UK automotive companies will showcase a prototype flywheel hybrid system for premium vehicles (FHSPV) at the Low Carbon Vehicle event at Millbrook on 15 September. The system adds up to 82PS (60kW) of recovered energy and is predicted to demonstrate fuel economy gains of 20% relative to the current production model. Testing work is already underway.

Compared to conventional hybrid systems, flywheel hybrids reduce the number of energy conversions onboard the vehicle, improving the efficiency of the regenerative braking system. Instead of converting kinetic energy into electricity for storage in a battery, a small continuously variable transmission (CVT) connected to the car's rear differential transfers the energy directly into a compact, high-speed flywheel. When the driver reapplies the accelerator, the CVT smoothly transfers the energy back to the wheels.

The FHSPV project brings together some of the UK's most respected names in automotive engineering to determine the viability of flywheel hybrids for production and cost-effective modular application. Part-funded by the UK's Technology Strategy Board, FHSPV's industrial partners include: Jaguar Land Rover, Flybrid Systems, Ford, engineering consultancies Prodrive and Ricardo, and transmission experts Torotrak and Xtrac.

"The UK's automotive industry is playing a central role in the development of low-carbon technologies," says Pete Richings, Chief Engineer at lead partner Jaguar Land Rover. "This research project explores the potential for more efficient and cost-competitive hybrid drivetrains that improve fuel economy while enhancing standards of vehicle refinement and performance. We have investigated the base technology, built the prototype and will be testing it in the next few months to see if it lives up to its potential."

The flywheel-CVT system uses a flywheel developed by Flybrid Systems. Spinning at speeds of up to 60,000rpm, enables the flywheel to achieve a high energy density, making it

smaller and easier to package. The CVT, which manages the flywheel's speed and the flow of kinetic energy, has been built by motorsport firm Xtrac using Torotrak's innovative traction drive technology.

Automotive consultancy Prodrive is responsible for the system's configuration and integration into the vehicle. The company is also developing the system's sophisticated control software and electronics.

Ricardo is providing independent analysis on the potential for alternative technologies within the system. Ford Motor Company is examining the potential for secondary applications for flywheel-CVT systems.

ABOUT THE TECHNOLOGY STRATEGY BOARD:

The Technology Strategy Board is a business-led executive non-departmental public body, established by the government. Its role 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 Business, Innovation and Skills (BIS). For further information please visit www.innovateuk.org

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