£2.75 Million to Engineer Future Engines and Fuels

Posted on Wednesday 30th March 2011

The Universities of Birmingham and Warwick are launching a new facility today (30 March) that will help scientists to investigate the dynamic aspects of combustion of alternative fuels, as well as petrol and diesel, with the aim of reducing harmful vehicle exhaust emissions, particularly greenhouse gasses.

The facility, based at the University of Birmingham's School of Mechanical Engineering, includes a highly transient cold climate engine and powertrain test facility and a sophisticated clean combustion and alternative fuels research laboratory.

The new cold climate test chamber comprises a 260kW AC dynamometer (with possible extension to 370kW) so that large passenger vehicle engines and medium sized off-road car engines can be tested in controllable conditions similar to those on the road. With capability to freeze an engine, fuel and lubricant to temperatures of minus 20 degrees (Celsius), this leading-edge facility will enable understanding and evaluation of the effects of adverse climatic conditions on engine start-up and resulting emissions in very cold conditions.

Optical diagnostic equipment and ultra-high speed cameras that take photos up to a million frames a second will enable the scientists to advance optimisation of flow and combustion processes in an engine and improve system designs. One of the main applications optical diagnostic research is to improve the efficiency of combustion engines in order to reduce carbon dioxide emissions.

The laboratory houses advanced instrumentation for emissions diagnostics so that the physical and chemical properties of particulates and exhaust gases can be measured and fuels and lubricants characterised.

The new equipment will also allow the team to continue its work into on-board fuel reforming – reintroducing hydrogen from the exhaust gas into the engine to improve the combustion process of some fuels.

The Future Power Systems Group at the University of Birmingham already work closely with car and engine manufacturers including Jaguar Land Rover, Ford, Shell Global Solutions, Green Fuel and Johnson Matthey. Professor Miroslaw Wyszynski, lead investigator from the University's School of Mechanical Engineering, said, *'In our new laboratory we will be able to test different combinations of petrol and diesel as well as alternative fuels such as ethanol, tallow, various oil and tallow esters, DMF (2,5 dimethyl furan) and synthetic diesel, and gain a full picture of what is happening in an engine. This will help us to do more research into making engines cleaner and more efficient. We will also be able to research the most efficient modes of emissions aftertreatment aided by hydrogen from on-board fuel reforming.'*

The facilities and equipment for this research have been funded by the Science City Research Alliance (SCRA) Energy Efficiency Project. The Energy Efficiency Project is part of a larger investment by Advantage West Midlands and ERDF in the research infrastructure of the West Midlands region, which unites the University of Birmingham and the University of Warwick in a strategic partnership – SCRA – formed under the Birmingham Science City initiative.

Notes to Editors

1. Birmingham Science City is a region-wide partnership of public sector, businesses and the research base, which is facilitating the use of science and technology to improve the quality of life and prosperity of the West Midlands. Funded 50/50 by Advantage West Midlands and European Regional Development Fund, Birmingham Science City's aim is to create strategies to exploit centres of world-class scientific research by developing relevant activities for sustainable economic and social benefit.

www.birminghamsciencecity.co.uk (http://www.birminghamsciencecity.co.uk/)

2. The Future Power Systems Group is part of the Energy at Birmingham initiative. This is a University-wide collaboration to bring together the best minds in Birmingham and overseas to tackle the big challenges in energy. The initiative supports around 100 academics working in a variety of energy related fields from nuclear power and transport to society and economic policy.

3. The Science City Research Alliance project is part of a larger investment by Advantage West Midlands and ERDF in the research infrastructure of the West Midlands region, which unites the Universities of Birmingham and Warwick in a newly-formed Science City Research Alliance. For more information log on to

http://www2.warwick.ac.uk/fac/cross_fac/scra/themes/energyefficiency/ (http://www2.warwick.ac.uk/fac/cross_fac/scra/themes/energyefficiency/)

For further information

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