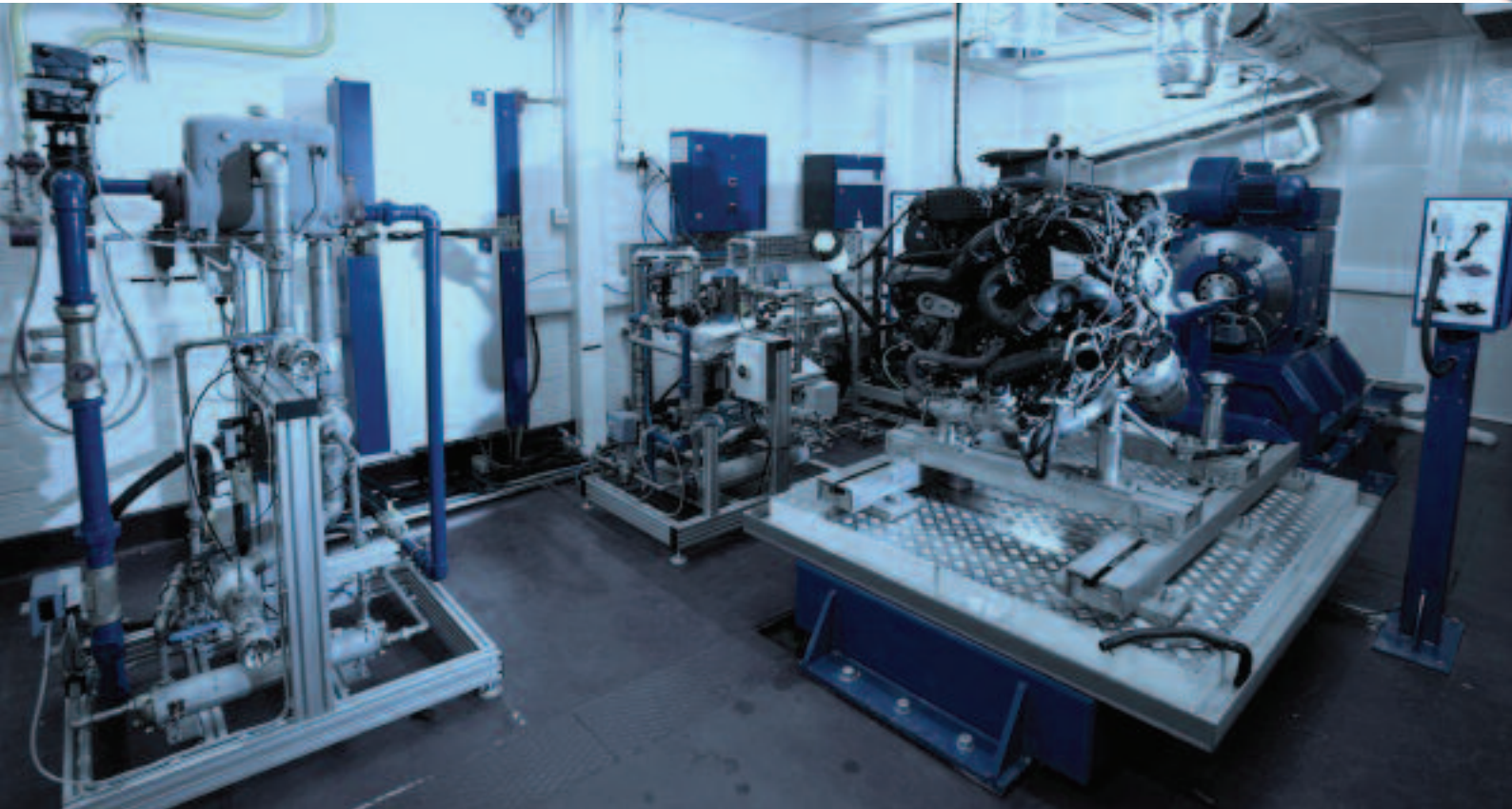


SCIENCE CITY RESEARCH ALLIANCE

UNIVERSITY OF
BIRMINGHAM

THE UNIVERSITY OF
WARWICK



FUTURE ENGINES AND FUELS RESEARCH

The Highly Transient Cold Climate Engine/Powertrain Testing Rig

This facility, based at the University of Birmingham, can test large passenger vehicle engines and medium size off-road engines in fast-changing transients and extreme climatic conditions, including cold starts down from as low as -20°C . The facility also has the ability to perform the full cold New European Driving Cycle at -7°C .

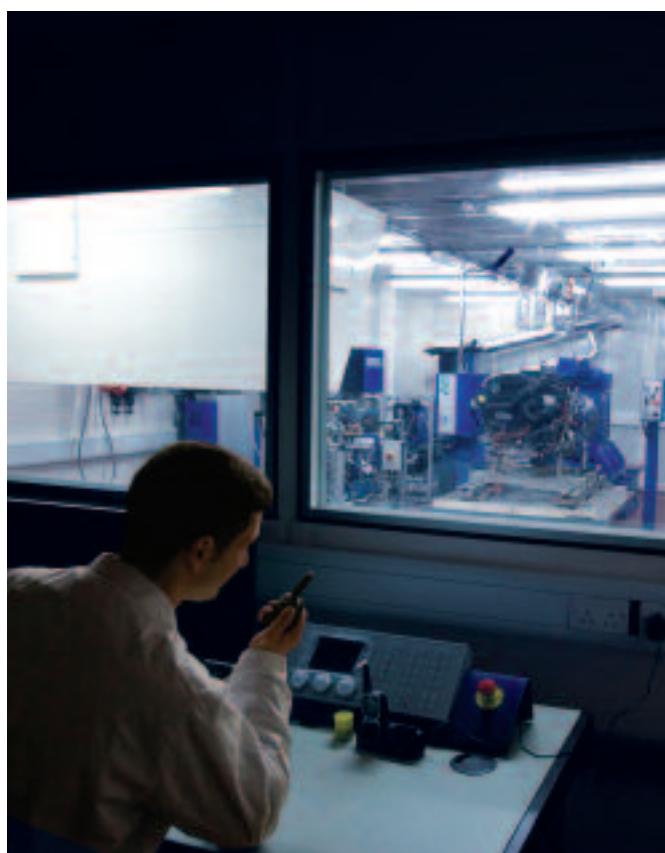
KEY FEATURES AND TECHNICAL SPECIFICATIONS

- AVL cold start fast transient engine testing rig with AC dynamometers (initially up to 260kW, with possible extension to 370kW) with millisecond controls, drive cabinet, frames and intermediate adapters, mounting, engine and dynamometer control in-cell equipment;
- AVL dynamometer control software that can emulate any configuration of powertrain (including hybrids) and vehicle inertia as seen at the engine shaft. The software can provide negative dynamometer torque for start-stop modes which is also supplemented by a mechanical clutch;
- transient fuel meter;
- fuel and lubricant conditioning to -20°C;
- acoustic enclosures with air conditioning;
- large capacity electricity supply and soak facility;
- chilling facilities for system soak and cold starts from -20°C;
- combustion air conditioning unit with combustion air delivered from -20°C
- capacity for a full cold NEDC at -7°C; and
- state-of-the art combustion and emissions monitoring equipment including emissions measurement in transients and comprehensive particulate emissions analysis capacity.

TYPICAL USAGE

- Effects of very cold conditions on start-up behaviour and first minutes of work with very cold combustion air and fuel supplied, and/or full cold NEDC cycle that can be emulated on the transient dynamometer.
- Work can include development and testing of new fuels, backed by the extensive fuel development facilities of The Future Engines and Fuels Laboratory.
- A full range of standard temperature highly transient testing and development can be undertaken for the purpose of researching new combustion systems and new hybrid arrangements (as seen at the engine shaft).
- Work can be undertaken on large light duty engines (up to 360kW/850Nm) and medium size off-road machinery engines (most likely on the high torque engines below 100kW).

Applications of on-board fuel reforming are one of the main areas of activity and expertise in The Future Engines and Fuels Laboratory.



For further information and enquiries, including proposals for research collaboration and consultancy:

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WARWICK

Birmingham Science City

ideasforlife



investing
in your future
European Regional Development Fund
European Union



The Highly Transient Cold Climate Engine/Powertrain Testing Rig is part of the Science City Energy Efficiency and Demand project funded by Advantage West Midlands and the European Regional Development Fund. The project is part of a wider investment in research infrastructure of the West Midlands region, which unites the Universities of Birmingham and Warwick in the newly-formed Science City Research Alliance.