

Advanced Automotive & Motive Power Fuel Cell Engines & Component Development

OBJECTIVES

This programme aims to engage both Tier 1 suppliers and vehicle manufacturers in the fuel cell system development process such that significant progress can be made towards meeting the cost and performance goals necessary for the commercialisation of the technology in road vehicles.

Intelligent Energy will develop PEM automotive fuel cell engines in the power range of 10kW and 50kW which will be evaluated and incorporated into on-road and off-road vehicles by PSA Peugeot Citroën and John Deere. Robert Bosch will also assess their performance for APU applications.

Prodrive will develop the fuel cell engine management systems tailored for this application and Bosch will supply automotive sensor technology. PSA Peugeot Citroën will play a leading role in setting the development targets and addressing the vehicle integration issues.

SUMMARY

As part of the development programme, a total of nine fuel cell engines will be designed and

built in four development phases (D1 - D4). The D1 - D3 engines will each have 10kW output, while the D4 engine will have an output of 50-75kW. The 10kW fuel cell engines will be delivered to PSA Peugeot Citroën, Bosch and John Deere for evaluation and design feedback.



10kW Fuel Cell Engine

Key vehicle test criteria will include:

- 60% efficiency at 25% load and 50% efficiency at full load.
- An engine specific power density of 300W/L and 300W/kg for D3 and 650W/L and 650 W/kg for D4.
- A transient capability from 10% to 90% load in <1 second.
- Start-up from -20°C in <30 seconds.
- Survivability from -40°C.
- Durability tests will be carried out by extrapolation of the

results from a test lasting at least 1000 hours.

CONTRACTOR

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COLLABORATORS

Prodrive Ltd

Non-UK Partners

PSA Peugeot Citroën
Robert Bosch GmbH
John Deere

COST

The cost of the UK part of the project is £3,910,117. The Department of Trade and Industry is contributing £1,642,000 with Intelligent Energy and Prodrive providing the balance.

DURATION

November 2004 to December 2007

For further information about renewable energy please visit the DTI website at www.dti.gov.uk/renewables.

To obtain renewable energy publications from the DTI either visit www.dti.gov.uk/publications or telephone 0845 015 0010.