



IPHE Country Update

Member	United Kingdom
Name	Dr. Stephen De Souza
Contact Information	Stephen.DeSouza@berr.gsi.gov.uk
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1. New Policy Initiatives on Hydrogen and Fuel Cells

- As previously reported, there have been some changes to the machinery of government following the change of Prime Minister. The responsibilities of the former Department of Trade and Industry have been split between two new Government Departments. The Department of Innovation, Universities and Skills (DIUS) will provide a strong, voice across Government for effective investment in research, science and skills at all levels. The new Department for Business, Enterprise and Regulatory Reform (BERR) will promote productivity, enterprise, competition, trade and better regulation. BERR also has responsibility for energy policy, including the development of emerging energy technologies.
- The Energy White Paper “Meeting the Energy Challenge” was published on 23 May 2007. It sets out the Government’s international and domestic energy strategy to respond to the challenges of tackling climate change by reducing carbon dioxide emissions both within the UK and abroad; and ensuring secure, clean and affordable energy as we become increasingly dependent on imported fuel. It shows how we are implementing the measures set out in the Energy Review Report in 2006, as well as those announced since, including in the Pre-Budget Report in 2006 and the Budget in 2007.
<http://www.berr.gov.uk/energy/whitepaper/page39534.html>
- The 2006 Energy Review announced the establishment of an Energy Technologies Institute (ETI), a public-private partnership with a potential 10 year budget of up to £1bn. The ETI is being hosted by Loughborough University (representing the East Midlands consortium) and its Director is Dr David Clarke who was previously Head of Technology Strategy at Rolls-Royce plc. The ETI has already launched programmes for offshore wind and marine, tidal and wave technology. There is currently a call for Expressions of Interest for distributed energy technologies (closes 23rd May 2008).
<http://www.energytechnologies.co.uk/>
- There have been no significant changes to the UK policy on hydrogen set out in the Government’s response to the UK Strategic Framework Report (June 2005). Hydrogen is seen as an important long term energy option for the UK, particularly for transport.

- The new Low Carbon Vehicles Innovation Platform – which seeks to position the UK's automotive sector to benefit from growing public and private sector demand for lower carbon vehicles - was launched by the Technology Strategy Board and the Department for Transport (DfT) on 21 September 2007 to support low carbon vehicle research, development & demonstration (R, D&D) projects. The first competition, worth around £22m focuses on bringing forward relatively near market low carbon vehicle technologies, whether for private or public service vehicles, that could be viable candidates for commercialisation or fleet procurement initiatives over the next 5-7 years. A second call worth around £40m aimed at more radical solutions is in the planning stage
- Part 1 of the King Review of low-carbon cars was published on 9 October 2007. It highlighted the potential for CO₂ reduction from road transport, by means of fuels, vehicle technologies and consumer choice. Part II was published alongside Budget 2008 and included policy recommendations. In the long term, virtually complete decarbonisation of road transport fuel will be required. The options are either novel battery technologies (coupled with decarbonisation of electricity generation) or hydrogen vehicles (with low carbon hydrogen production).
http://www.hm-treasury.gov.uk/budget/budget_08/reviews/bud_bud08_king.cfm

2. Hydrogen and Fuel Cell R&D Update

A UK consortium comprising Johnson Matthey, Technical Fibre Products, Intellicoat, Primasil Silicones and MAST Carbon has completed a major project (total cost £6M) to tackle cost reduction of membrane electrode assemblies for PEM fuel cells. . It was estimated that the MEA materials costs had been reduced from \$200-300 kW⁻¹ for the benchmark MEA to below \$50 kW⁻¹ for the final MEA developed in this programme. This is well on the way to the ultimate goal of \$10 kW⁻¹ for the MEA in a future mature fuel cell automotive engine market.

Intelligent Energy and Johnson Matthey also completed a £5.1M project to develop advanced PEMFC stack technology. A 336-cell, 600cm² stack using etched plate technology was successfully and tested. The unit was demonstrated as capable of delivering 70kW with volumetric power density of >1.4 kW/l, exceeding the programme target (of 50 kW) by 40%.

A consortium led by Ilika Technologies Ltd involving Oxford University, Johnson Matthey and CCLRC Rutherford Appleton Laboratory is presently conducting a 36 month project to synthesise and evaluate hundreds of novel metal hydrides which have not yet been reported in the literature, and then scale-up the most promising candidates. This £1.6M project brings together some of the UK's leading researchers in the field of hydrogen storage and builds on research results from the UK Sustainable Hydrogen Energy Consortium.

The Morgan LifeCar has just completed. The approach is one of whole system design in which the architecture is generated from the characteristics of the fuel cell, in a light-

weight vehicle coupled with a high hybridization level. This combination aims to minimize the fuel cell cost and provide the fuel economy for a 200 mile range. An objective of the project is to lower the entry barriers for a vehicle powered by a hydrogen fuel cell. With a total cost of £1.9m, partners include Oscar Automotive, Cranfield University, QinetiQ, Oxford University, Linde AG and Morgan Motor Company. A concept vehicle was unveiled at the 2008 Geneva Motor Show – www.morgan-motor.co.uk/lifecar/lifecar.html .

Further information can be found by accessing the UK’s Low Carbon and Fuel Cells Knowledge Transfer Network hosted by Cenex – www.cenex.co.uk/ktn.asp .

3. Demonstration Project Update

Five projects with total BERR funding of approximately £5m are being supported under the Hydrogen, Fuel Cells and Carbon Abatement Technologies Demonstration Programme (HFCCAT). They include two transport projects in London involving 10 buses and up to 60 other vehicles, using both fuel cells and modified internal combustion engines. An announcement regarding a second call will be made in due course. <http://www.hfccat-demo.org/>

The UK’s first hydrogen refueling station for cars was opened at the University of Birmingham on 17th April 2008. The station has been provided by Air Products, and will be capable of refueling up to six vehicles per day. The hydrogen is being supplied by Green Gases Ltd which uses a biomass process, so production and use in fuel cell vehicles should result in no net carbon emissions.

4. Events and Solicitation

The 10th Grove Fuel Cell Symposium took place in London between 25 – 27th September 2007.

5. Government Hydrogen and Fuel Cell R, D&D Funding

Provide recent government funding for hydrogen and fuel cell R, D&D (in U.S. dollars.)

2004	\$N/A	2005	\$ 14.3M	2006	\$ 14.7M	2007	\$ 20M
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* These are estimates for government funding directly related to hydrogen and fuel cell R, D&D under the following programmes: DTI Technology Programme, EPSRC responsive mode; EPSRC SUPERGEN Hydrogen and Fuel Cells Consortia, Carbon Trust Open –call R&D Programme, and the Hydrogen, Fuel Cells and Carbon Abatement Technologies Demonstration Programme (2007 only)