1. Demonstration projects

1. Fuel Cells UK's position

1.1 Fuel Cells UK believes that:

a. Demonstration programmes are an essential tool to accelerate the development of emerging energy technologies and solutions. They offer benefits both in terms of product development and investor confidence, as well as assisting with the creation of supply chains and reduction of production costs.
b. There is a clear need for firm commitment from the Government for ongoing support, for the existing Hydrogen, Fuel Cell and Carbon Abatement Technology (HFCCAT) Programme, to build investor confidence and ensure that the UK industry continues to expand.
c. Whilst Fuel Cells UK welcomed the HFCCAT Programme as a first step in supporting demonstration in the UK, it needs to be part of an ongoing strategy of support. In order for the UK to compete effectively, we believe a minimum figure of £100 – £150 million over five years from 2011 is required.
d. Demonstration programmes are a key support tool in the funding landscape along with forward commitment and regulatory support. It is vital that they are well designed and tailored to the needs of the industry, and that different support mechanisms dove-tail to provide access to funds at all stages of development, ensuring that the risks of investment are rewarded.
e. The Government should learn from successful programmes and strategies adopted overseas.

2. Demonstration programmes – rationale

2.1 Demonstration programmes are an essential tool for providing new emerging technologies that convey some kind of societal benefit and which might otherwise struggle to find funding, with the funds needed to develop products and analyse how they perform in a real-life situations.

2.2 The justification for demonstration programmes lies in the benefits of the technology for society. It is those technologies that offer non-exclusive benefits (i.e. wider benefits than those simply derived by the purchaser); such as improved air quality or greater energy security, that are most suitable for support.

2.3 Demonstration projects are a key element of the financial support mechanism, helping to bring high cost, high risk and high benefit products to market. They assist with the shift from Research and Development (R&D) to commercialisation. Once the technology has been proven at the large scale demonstration level, other financial mechanisms such as Forward Commitment to Buy (FCB), see position paper x, can come into play to help with production scale up.

2.4 Demonstration programmes play an important role, not just in product development, but also as a means to attracting future investment and building confidence in the product and organisation.

3. UK support

3.1 There are a number of possible funding sources for demonstration projects in the UK. Although historically Government support for the fuel cell industry has been poor in comparison with some other EU countries, this situation is improving and a good base of funding organisations is developing.

3.2 Fuel Cells UK welcomed the launch of the Government's Hydrogen and Fuel Cell Carbon Abatement Technology (HFCCAT) programme in 2006. If the benefits of such investment are to be realised and progress capitalised upon, there needs to be a longer term commitment by the UK Government to provide support. This will help engender confidence in the industry and encourage investment in technologies and infrastructure that might otherwise go elsewhere.

3.3 In addition, with the number of funding bodies in the UK increasing, it is crucial that there is good communication between funding bodies and with industry to ensure that future programmes are designed to meet the needs of the industry and that there is a joined up network of support available for all stages of demonstration activity.

4. International Experience

4.1 The world leaders in terms of national and regional support for fuel cells are Japan, Germany and the USA, all of which have wide ranging support programmes for the development of fuel cell technologies.

4.2 Japan's support for large scale demonstration projects for fuel cell microgeneration has significantly increased the uptake of home-use microgeneration. Under the scheme[1], successful applicants can receive a subsidy from the Japanese Government for each CHP unit installed, with the value of the supporting subsidy decreasing as the number of installed units increases. The value of the subsidy in 2006 was approximately £23k, supporting 777 demonstrators, while in 2008, the value of the subsidy had dropped to £16k, supporting a total of 1120 demonstrators. Participants in the scheme are required to submit data on the operation of the devices for two years. The scheme has led to the deployment of more than 1,250 installations, compared with a handful at present in the UK. It is estimated that by 2009, the cost of each unit could be less than £6,000.

4.3 Germany has recently developed the National Program for Hydrogen and Fuel Cell Technology (NPHFCT)[2]. This Government – industry partnership will collectively make €1 billion available to promote hydrogen and fuel cell technology, particularly to strengthen application orientated research with a view to accelerating the deployment of fuel cells through large demonstration programmes such as the Clean Energy Partnership (CEP) project in Berlin. This project is the largest and most complex demonstration project for hydrogen powered transport applications in the world and consists of a fleet of 17 vehicles, two hydrogen filling stations, three different hydrogen propulsion systems and three different hydrogen production methods. As far as is possible the hydrogen used in the programme is produced from renewable energy sources and the ultimate aim is to gain better understanding of the technical and financial requirements for large scale expansion.

4.4 The USA has also demonstrated strong support for fuel cell technologies. As part of the President's Hydrogen Fuel Initiative (HFI)[3], (which forms an integral part of the President's Advanced Energy Initiative which aims to reduce the country's dependence on oil by investing in clean, efficient new energy technologies), the Department of the Environment (DoE) recently committed $100 million to fund 25 hydrogen research projects, including stationary fuel cell demonstration projects. This has been more recently backed up by the Energy Independence Security Act 2007, which makes specific provisions to allocate $50 million dollars over the next ten years to a range of fuel cell research, development and demonstration.

5. Summary

5.1 Alongside the commercial benefits which fuel cells offer (fuel efficiency, reliability etc.), many applications also offer significant social and environmental benefits - CO_2 reduction, increased energy security, improved quality of life (through noise minimisation, reduction of pollutants such as NO_X and PM_{10}). Fuel cells have the potential to deliver against a number of key Government policy objectives.

5.2 As such, Government support through demonstration is fully justifiable.

5.3 There is a need for firm commitment from the Government for ongoing demonstration support, beyond the current HFCCAT programme.

5.4 It is vital that support is well designed and tailored to the needs of the industry, and that different support mechanisms dove-tail to provide access to funds at all stages of development. Failure to provide support close to market realisation will in effect negate the successes achieved from investment early on. Financial risk is often greatest at advanced stages of development and it is here where Government support can be most needed.

5.5 Lessons should be learnt from successful programmes overseas.

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[1] An emerging market in fuel cells? Residential combined heat and power in four countries, James Broan et al, Energy Policy, Vol 35, Issue 4, 2007

[2] http://www.nkj-ptj.de/datapool/page/3/NIP-en.pdf

[3] http://www1.eere.energy.gov/hydrogenandfuelcells/pdfs/mfg_wkshp_plenary.pdf