

## OBJECTIVES

- to discharge the UK Participating Agency role in the first year of Task 18 of the IEA's Implementing Agreement on Hydrogen
- to review and identify candidate UK hydrogen demonstration projects
- to reach agreement in relation to one or more of these projects, in relation to their participation within the Task 18 project analysis framework

## SUMMARY

The International Energy Agency's (IEA's) programme of strategic R&D comprises various Implementing Agreements, including the current Hydrogen Implementing Agreement. Various projects, or Tasks, are performed within such individual Implementing Agreements, with sub-sets of the various member countries electing to participate in these.

The present summary describes the results of the first year of the UK's participation in Task 18 of the IEA's Hydrogen



*Location of Principal Hydrogen Related Demonstrations. © Crown Copyright 2005, Image reproduced with permission of Ordnance Survey and Ordnance Survey of Northern Ireland. AEAT Environment, licence no 100040905.*

Implementing Agreement, which is concerned with the evaluation of hydrogen demonstration systems. The work represents that completed during the first year of the Task, with further aspects to be addressed in the subsequent two years (2005 and 2006).

The Task 18 work programme itself is disaggregated into two principal sub-tasks, namely subtask A, responsible for the development of a hydrogen systems database and subtask B, responsible for the profiling of specific hydrogen systems demonstration projects.

The UK is participating in the subtask B activities of Task 18, which involves the collation and analysis of information and data in relation to specific demonstration projects.

The first year's work programme involved the identification of various candidate hydrogen related projects in the UK, followed by the initiation of direct dialogue with those likely to be of particular interest within the context of Task 18. The work was performed as an integral part of the overall Task 18 work programme and with EA Technology participating in the March and September 2004 Experts' Meetings, as UK Participating Agent.

The HARI, PURE and Hornchurch projects were identified as the three candidate UK demonstration projects suitable for inclusion in Task 18 and outline agreement has been reached with their respective key stakeholders, in relation to their participation.

The final part of the first year's work programme has established the basis of the project analysis framework, which is to be used for the consistent analysis of all projects across the Task, in the two years ahead.

## **CONTRACTOR**

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(Contract Number:  
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URN Number 05/904

## **COST**

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The total cost of the project, £48,950, is being met by the Department of Trade and Industry (DTI).

## **DURATION (Year One)**

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12 months –  
March 2004 to February 2005.

## **BACKGROUND**

The International Energy Agency (IEA) was established in the mid-1970s, in response to increasing concerns in relation to the developed Western world's dependency on petroleum fuels. Its membership comprises some 26 countries, drawn principally from the Organisation for Economic Co-operation and Development (OECD) member countries.

The IEA's programme of strategic R&D activities comprises various Implementing Agreements, including the

current Hydrogen Implementing Agreement. Various projects, or Tasks, are performed within such individual Implementing Agreements, with sub-sets of the various member countries electing to participate in these, under the overall co-ordination of an international Operating Agent.

The Hydrogen Implementing Agreement has initiated a new Task, termed Task 18, Demonstration Systems. Task 18 is led by a US DoE appointed Operating Agent. Twelve countries/entities are participating in Task 18, namely Canada, Denmark, the European Union, France, Iceland, Italy, Japan, Norway, Spain, Sweden, the UK and the US.

## **THE WORK PROGRAMME**

The work programme comprised a structured combination of desk research, literature review, telephone dialogue and direct meetings with a range of hydrogen project related developers and operators in the UK. The work was conducted as an integral part of the overall Task 18 work programme, with a series of twice yearly international Experts' Meetings serving as the principal information exchange mechanism for the Task. EA Technology therefore participated in the March and September 2004 Experts' Meetings, as part of its Participating Agent role.

The principal focus of the first year's work related to the identification of candidate UK hydrogen demonstration systems, suitable for analysis and review as part of the overall Task 18 work programme. The emphasis of this first year's work therefore reflected that of the Task itself, i.e. in relation to integrated hydrogen systems per se, with a further consideration relating to the likely availability of information and data during the three year currency of the Task.

One further consideration that applies in the UK context is not only to identify suitable projects that satisfy the criteria above, but that are also amenable to the exchange of project related data, within the context of the IEA framework. EA Technology's position here differs somewhat from a number of the other national participants, who effectively bring their own demonstration projects to the subtask.

The work programme succeeded in identifying a range of hydrogen related demonstration projects in the UK, ranging from technically simple hydrogen fuelled fuel cell installations, vehicle re-fuelling stations, through to integrated renewable energy/hydrogen systems. The status of these various demonstration projects ranges from projected or proposed, through those under construction, to commissioned and operational facilities. The principal hydrogen related

demonstration activities identified and described in the report are:-

- the CUTE re-fuelling station at Hornchurch
- the HARI project, Leics.
- the Hunterston Hydrogen Project
- the PURE Project, Unst
- the Tees Valley Hydrogen Project

complemented by associated developments in relation to the Fuel Cell House, the Hydrogen Office, INEOS Chlor, the London Hydrogen Partnership and the Wales Hydrogen Project.

Six of the above hydrogen related project developments are currently operational, albeit with only the HARI Project satisfying the Task 18 "integrated systems" requirement. However, other project developments identified and which are likely to be realised and to provide data within the three year currency of Task 18 are the Hornchurch CUTE re-fuelling station and the PURE project. These latter two projects are both scheduled for completion and commissioning, early 2005.

The three candidate UK demonstration projects identified for inclusion in the overall Task 18 workplan are therefore the HARI Project, the PURE Project and the Hornchurch CUTE re-fuelling station. Agreement has

been reached with the key stakeholders in these developments, in relation to their participation in the Subtask B demonstration project analysis framework.

## **CONCLUSIONS**

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- the work has identified a range of hydrogen related demonstration activities in the UK, either already operational, under construction or planned.
- compressed gaseous hydrogen fuelled fuel cell installations represent the majority of installations to date.
- The HARI project, at West Beacon Farm, Leics., represents the sole UK example of an integrated renewable energy/hydrogen system implemented to date.
- Anticipated developments, which are projected to be commissioned within the next six months, include the CUTE re-fuelling station in Essex and the PURE project, in Unst, Shetland.

## **POTENTIAL FOR FUTURE DEVELOPMENT**

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The programme of work described has succeeded in identifying a range of hydrogen related demonstration activities in the UK, either already operational, under construction

or planned. The HARI, PURE and Hornchurch projects, in particular, have been identified as eminently suitable candidates for inclusion in the Task 18 analysis framework programme, which is to be followed through in the second and third years of the Task (2005 and 2006). The analysis of these projects will take place alongside those of a series of complementary project developments from the other Participants, thereby providing the opportunity for the UK to learn from overseas best practice, as it further develops its own hydrogen related programme activities.

For further information about renewable energy please visit the DTI website at [www.dti.gov.uk/renewables](http://www.dti.gov.uk/renewables).

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