



HyFLEET:CUTE – Project Performance Update

Inside this issue

Performance Update P. 1

Focus on Hydrogen Infrastructure P. 2

FEATURE ARTICLES P. 3

Beijing, Perth & Reykjavik: HyFLEET:CUTE's outposts of progress

**News in Short
Events calendar
Project Partners P. 4**

By the beginning of November 2006, the 33 Hydrogen Fuel Cell Buses and the 2 Hydrogen Internal Combustion Engine (ICE) buses have covered a total distance of 417,560 kilometres since the start of HyFLEET:CUTE, (January 9th, 2006) and have operated for a total of 26,778 hours.

Some of the buses had also been operating in the previous CUTE (www.fuel-cell-bus-club.com) project. The total distance traveled since these buses commenced regular public transport service in 2004 is more than 1,500,000 kilometres representing more than 97,000 hours of operation.

The H2 ICE buses in Berlin are progressively

being introduced during the HyFLEET:CUTE Project. Bus 1 and 2 have been in operation since June, 2006. During the FIFA World Cup they transported journalists and VIPs within Berlin to strong 'critical acclaim'. As reported elsewhere in this Newsletter, buses 3 and 4 were introduced into operation in October 2006.



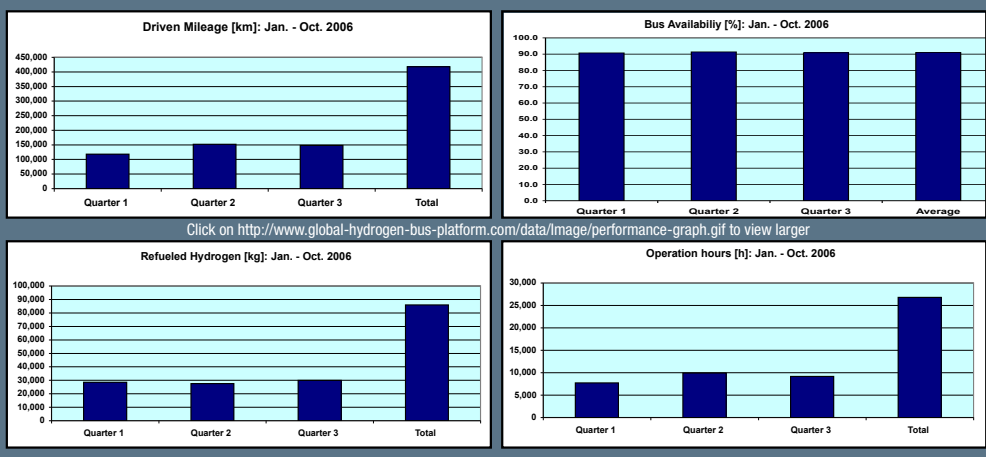
Project Co-ordinator Monika Kentzler addresses the Data Workshop, Yokohama

Since the commencement of HyFLEET:CUTE the hydrogen refueling infrastructure has safely dispensed 90,809 kgs of hydrogen. The safety record of HyFEET:CUTE is a very important element of the Project as it is imperative that the new technology not only is safe, but is seen by the community to be safe.

As is expected in such an ambitious research and demonstration project as HyFLEET:CUTE, technical problems continue to be encountered. Partners continue to put considerable effort into resolving issues with the bus and the refueling technology.

A prime example of this approach has been the improvement in the inverter performance on the buses. Similarly problems with refueling hoses and compressors – problems which appear to be widespread with refuelling in many hydrogen fuel cell projects around the world – are being discussed within the project and with component and technology suppliers.

PERFORMANCE GRAPHS



Collaborating for Progress - Data Exchange Between Projects

The 4th International Fuel Cell Bus Workshop was recently held in Yokohama, Japan. Representatives from HyFLEET:CUTE, and many projects and Government agencies in North America, Japan and China attended.

This has been a joint collaborative initiative of the European Commission and the United States Government.

The issue of exchanging data between different fuel cell bus projects around the world was the major topic for discussion. The Workshop reached some tentative agreements on which data sets might be exchanged, some

definitions of those data, and access to the data. These preliminary agreements are currently being explored with project partners and Government funding bodies.

HyFLEET:CUTE and the European Commission continue to be strong supporters of the principle of collaboration and equitable exchange of non-commercially sensitive data between projects. Exchanging data between different projects has the potential to benefit all contributors and accelerate developments in fuel cell and related technology.

FOCUS ON HYDROGEN INFRASTRUCTURE: London and Berlin

H2 Infrastructure London (Fueling Hydrogen Fuel Cell Buses in HyFLEET:CUTE)*

In 2005 BP opened the UK's first hydrogen demonstration refuelling station adjacent to the BP Connect site at Hornchurch, Essex. The station was developed in partnership with First Group, DaimlerChrysler, London Buses and the Energy Saving Trust. The technology used at the site is supplied by BOC. The plant is a prototype unit and is the only underground storage facility for liquid hydrogen of its kind in the world. Putting the 3.2 tonne hydrogen tank underground, reduces the area covered by the refuelling site.

Public perception has proved the most difficult hurdle to overcome. BP had to appeal after the local Council turned down a planning application for the site because

local residents were concerned about its visual impact on green belt land. After a review by an independent safety expert, the council was comfortable with the safety case; however BP still had to appeal on planning issues. Eventually the permit was granted and the site was

constructed. The site has operated without any accidents, damage to people or the environment. The thorough safety design that BP used and the tight operational procedures paid off. This confirms the safety measures put in place for hydrogen worked well and it proved to be no more dangerous than conventional fuels when the special requirements are complied with.

On average, the reliability of the various components has been good. However, the specific design and fuel consumption pattern by the buses resulted in significant hydrogen losses. Use of this type of technology in the future would require the facility to be designed in a modified way to prevent losses and improve economics. These are just examples of the many lessons learned. Setting up and operating the site has not come without many



BP Refueling Station, Hornchurch, UK



Mr Schnell (TOTAL), Mr Eberwein (BVG), & Mr Wypich (MAN) celebrate arrival of H2 ICE Buses 3 & 4

Hard on the heels of the announcement of the "Innovation programme for hydrogen and fuel-cell technology" by German Federal Minister of Transport Wolfgang Tiefensee in Berlin on 30th October 2006, the Berlin transport authority BVG has added H2 ICE vehicles No.3 and No.4 to its fleet.



Design of Hydrogen Refueling Station: Hornchurch

challenges along the way; however the work has been worthwhile and significant for BP, and the larger community.

** Article and Photo courtesy Vasso Tsatsami, BP Hydrogen.*

H2 Infrastructure Berlin (Fueling Hydrogen ICE Buses in HyFLEET:CUTE)*

The two stationary fuel cells (one manufactured by EPS, one by AXANE; each with an electrical power output of 5 KW) at the TOTAL Hydrogen filling station Heerstrasse in Berlin have been installed. They are fed with the 'boil off' from the Liquid Hydrogen (LH2) Storage-Tank and supply the filling-station's shop with electricity and heat. The installation will allow Vattenfall Europe and the Technical University, Berlin to undertake vital research.

The remodelling of the TOTAL Hydrogen Filling Station at Berlin/Heerstrasse has also been completed. The new LPG reformer with a max. GH2 output of 9 kg/hour has replaced the evaporation of LH2 as the primary way of producing gaseous Hydrogen.

Ensuing projects are already being considered e.g. absorbing the carbon dioxide resulting from reforming liquefied propane.



New LPG reformer ready for action at Heerstrasse, Berlin.

** Article and Photo courtesy of TOTAL, Berlin.*



HYFLEET:CUTE'S OUTPOSTS OF PROGRESS

Beijing Project Picks up Speed



Drivers and Bus Refuelling: Beijing

The 9th meeting of the Beijing Fuel Cell Bus Demonstration Steering Committee was held in October 2006. Chaired by Professor Lun Jingguang the meeting received reports on the progress to date of the three H2 Fuel Cell Buses operating as part of the HyFLEET: CUTE demonstration project. The meeting

was attended by all major partners* and marked the first meeting for Mr Bill Fitzharris in his new role as General Manager Hydrogen for BP worldwide.

Providing the H2 refueling infrastructure in Beijing has been challenging. However the meeting also celebrated the first refueling of the buses at the custom designed refueling station which is now in regular service.

Concurrently with the HyFLEET:CUTE project, Tsinghua University located in Beijing is trialling five FC buses.

For more information on the Beijing Demonstration project contact Mrs Wang: zzdwj@yahoo.com.cn

* Chinese Ministry of Science and Technology; Project Management Office; UNDP; Beijing Public Transport Company; Daimler Chrysler, BP, Ballard.

Perth Fuel Cell Buses Glide into HyFLEET: CUTE At Conference



W.A. Minister for Planning and Infrastructure, Alannah McTiernan shares her vision for Clean Transport with the Conference.

The Perth STEP project will continue for one more year as a full partner in HyFLEET: CUTE. The continuation was announced by the responsible Minister, Alannah McTiernan, at the Alternative Transport Energies Conference hosted by the Western Australian Government in September 2006.

Over 200 delegates attended the conference. A summary of the the key messages and conclusions arising from

the Alternative Transport Energies Conference can be found at www.dpi.wa.gov.au/mediaFiles/stepconf06_rapporteurpresentation.pdf

The Organising Committee partnered with GreenFleet Australia, who will plant more that 1500 trees in



Conference key note speaker, Dr Alan Lloyd in front of a prophetic exhibition stand.
(All photographs courtesy, Arno A Evers FairPR)

regional Western Australia to offset the estimated emissions from the international and national transport of delegates to and from the Conference and also the Conference operations.

For further information on the Conference, please email diane.biletic@dpi.wa.gov.au. Additional photographs from the Conference can be found at: www.fair-pr.com/meet-aae/greentransport2006/index.php

Iceland's FC Buses Are In Demand

The three hydrogen buses operating in Reykjavik have been kept very busy. On weekdays, the hydrogen FC buses are utilized on the city's normal public transport routes. On weekends the buses are now in regular use for special events. This is an important improvement resulting from an increase in the number of trained drivers. The increased demand for hydrogen from running the buses for longer periods has had benefits in boosting the efficiency of the refueling station by reducing necessary flushing operations during weekends.

Among the special events the buses have been involved in:

- Transporting the Scottish winners of the Shell International innovation competition on a visit to Iceland
- Transporting the United Nations Department of Economic and Social Affairs (UNDESA) representatives during a fact finding mission on renewable energy and hydrogen systems
- Transporting approximately 300 attendees at the National Energy Congress to the historical hot washing springs in Laugadalur.

Further information on the Iceland H2 Fuel Cell Bus Programme can be sought from Maria Maack at Icelandic New Energy or by visiting www.newenergy.is



School students and Shell Innovation winner get up close and personal with the FC Bus in Iceland.

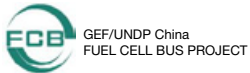


HyFLEET:CUTE's H2 Buses continue to unite continents and people....

Project Partners



Government Partners



Automotive Companies

DAIMLERCHRYSLER



Transport Companies



Energy Companies and Infrastructure Suppliers



Academic and Consulting



HyFLEET:CUTE's clean transport energy demonstration is both exciting interest from all sections of society and uniting communities across the world...

In the Netherlands, Crown Prince Willem Alexander took a ride on one of Amsterdam's FC Buses in October as part of his participation in the highly successful Amsterdam Conference on Sustainability and Reporting

At this year's Brussels H2 General Assembly, HyFLEET:CUTE's H2 buses were the centre piece of functioning H2 powered public transport at the Exhibition. For the 3 days of the assembly they transported VIP's, returned school



Hydrogen Powered ICE and FC Buses line up in front of Brussels' Atomium.

students to their schools and gave demonstration rides to the general public who attended the exhibition. A number of major cities also held a joint press conference where they signed a Memorandum of Understanding on the Procurement of Hydrogen Buses. For more information go to: www.global-hydrogen-bus-platform.com/InformationCentre/Downloads



Crown Prince Willem Alexander enjoys a ride on Amsterdam's FC BUS (Photo: Anko Stoffels)

UPCOMING EVENTS

"Sustainability Week" comes to Brussels

The first European Union Energy Week will be held Jan. 29th to Feb. 2nd, 2007. This is part of the Sustainable Energy Europe Campaign 2006-2008 which is aimed at inspiring Europeans to be smart in using energy. An Urban Transport, Energy and Vehicle Technology Day will be held in Brussels on Wednesday January 31st, 2007. Go to www.eusew.eu for more information.

"Preparing for a Hydrogen Future" – Targeted Workshops.

In late March 2007, HyFLEET:CUTE will take their message about Hydrogen as an alternative transport energy to new EU Member States. Two workshops will be held in Prague. Workshop 1 (proposed for the afternoon of the 28/3/2007) will target senior decision makers in Government Industry giving an overview of the project and focusing on policy and process issues. Workshop 2 (proposed for the 29/3/2007) will provide more detailed technical information for operators and technicians. Watch www.global-hydrogen-bus-platform.com for more information.