Hydrogen For Innovative Vehicles

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Project Coordinator: Simona Webb – Greater London Authority

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Authors

Simona Webb – Greater London Authority (Project Coordinator)

Josefine Jørgensen – Danish Partnership of Hydrogen and Fuel Cells (Copenhagen Cluster Coordination)

Michael Dolman – Element Energy (London Cluster Coordination)

Ingrid Spiess – IIT (Southern Cluster Coordination)

Ulrik Torp Svendsen – Danish Hydrogen Fuel (WP2 Lead)

Teresa Fickler – Daimler (WP3 Lead)

Alexander Stoffregen – Thinkstep (WP4 Lead)

Alex Stewart – Element Energy (WP5 Lead)

Dolly Oladini – Greater London Authority (WP6 Lead)

Note: Author printed in bold is the contact person for this document.

Glossary

FCEV *Fuel Cell Electric Vehicle*

FCH JU *Fuel Cells and Hydrogen Joint Undertaking*

HRS *Hydrogen Refuelling Station*

Public summary

Hydrogen **F**or **I**nnovative **Ve**hicles (HyFIVE) is an ambitious European project with 15 partners, part funded by the Fuel Cells and Hydrogen Joint Undertaking (FCH JU).

It will deploy 185 fuel cell electric vehicles (FCEVs) from the five global car manufacturers leading the commercialisation of FCEVs (BMW, Daimler, Honda, Hyundai and Toyota).

A network of hydrogen refuelling stations are being developed within three “clusters“ by deliviering six new stations to link with 12 existing ones supplied by Air Liquide, Air Products, Copenhagen Hydrogen Network, Danish Hydrogen Fuel, IIT, ITM Power, Linde and OMV.
The project’s scale and pan-European breadth allow it to tackle all of the technical and social issues which could prevent the commercial roll-out of FCEVs and refuelling infrastructure across Europe. It is moving key regions in Europe from a demonstration to a market-initiation phase through the delivery of advanced FCEVs.

The project‘s research activities are focused on the early market issues; it will ensure that these issues are analysed and that the outcome of the research is made available for the hydrogen community across Europe.
Communication activities are focused on preparing the market for a FCEV launch. The results of this project are being disseminated to opinion formers, decision makers and consumers across Europe to improve public readiness for the technology, prepare the market and encourage supportive policies and investment decisions.

Activities include:

- Demonstrating that the vehicles meet and exceed the technical performance and environmental expectations for FCEVs.
- Establishing best practices to support FCEVs in daily operations with real customers. This will require the development of new procedures for equipping maintenance facilities, training dealers, establishing a spare parts regime, agreeing on on-road support services and training first-responders required for this.
- Using the stations in the project to understand how best to solve outstanding technical issues for refuelling stations, which include rapid “rush-hour” fuelling, accurate metering, quality assurance for hydrogen purity and intelligent design of stations for different vehicle tank types.
- Investigating the challenges of using electrolysers at refuelling stations to generate renewable hydrogen. This investigation will include supporting local electrical grids to allow a direct link to remote renewable energy generators.

- Understanding the impact of running a network of refuelling stations operated by different suppliers, with different hydrogen supply modes, while highlighting the need to present a common appearance to the consumer.
- Understanding the buying characteristics of the potential earliest adopters of FCEVs, who will need to buy vehicles despite higher costs and limited infrastructure.
- Using the experience gained across the different EU Member States and diversity of vehicles / refuelling stations in the project to provide recommendations on the best practices for hydrogen regulations, codes and standards (RCS) in Europe.
- Linking with nationally funded projects in the UK, Sweden, Denmark, Germany, Italy, Austria, and with existing FCH JU funded projects, to maximise the impact of the project.
- Providing evidence on the likely route of FCEV commercialisation in Europe, which will be valuable to policy makers and investors across the continent.

The project is using the results of this demonstration to target opinion formers and decision makers across Europe to improve public readiness for the technology whilst encouraging supportive policies and investment decisions.

Project Participants

Participant number	Participant organisation full name	Short name
1 (Coordinator)	GREATER LONDON AUTHORITY	GLA
2	BAYERISCHE MOTOREN WERKE AKTIENGESELLSCHAFT	BMW
3	DAIMLER AG	DAI
4	HONDA R&D EUROPE (DEUTSCHLAND) GMBH	HRE-G
5	HYUNDAI MOTOR EUROPE GMBH	HME
6	TOYOTA MOTOR EUROPE	TME
7	AIR PRODUCTS PLC	AP
8	~~COPENHAGEN HYDROGEN NETWORK AS –~~until 31.03.2015	CHN
9	ITM POWER (TRADING) LIMITED	ITM
10	LINDE AG	LINDE
11	~~FORENINGEN HYDROGEN LINK DANMARK~~ until 31.12.2014	HLD
12	ISTITUTO PER INNOVAZIONI TECNOLOGICHE BOLZANO SCRL	IIT
13	ELEMENT ENERGY LIMITED	EE
14	~~PE INTERNATIONAL AG~~	PEI
15	OMV AKTIENGESELLSCHAFT	OMV
16	THINKSTEP	TS
17	DANISH PARTNERSHIP FOR HYDROGEN AND FUEL CELLS	DPHFC
18	DANISH HYDROGEN FUEL	DHF

The main project objectives addressed during the two and a half years of the project were:

- Identify and review potential locations that are able to feasibly install new refuelling stations within the Copenhagen, London and Southern clusters.

- Install stations in Innsbruck, Aarhus, Korsør and south-west London.
- Deploy FCEVs from BMW, Daimler, Hyundai and Toyota whilst starting activities for delivering Honda vehicles.
- Collect and analyse data from functioning refuelling stations and vehicles to establish after-sales and maintenance support for the vehicles.
- Develop strategies for targeting early FCEV users and capturing users' opinions within the cities where the vehicles are in service.
- Spread a positive, realistic and accurate message about the status of FCEV and refuelling station technology via a well-targeted communication strategy.