Hydrogen Mobility Europe










Emerging Conclusions

5. Summary of H2ME projects achievements and emerging conclusions

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Emerging Conclusions
Detailed contents overview

Hydrogen Mobility Europe

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This document provides an interim summary of H2ME results

- The H2ME initiative is a **flagship European project**, deploying hundreds of fuel cell hydrogen cars, vans and trucks and the associated refuelling infrastructure, across 8 countries in Europe.
- It will **create the first truly pan-European network, and the world's largest network of hydrogen refuelling stations.**
- The project is made up of two phases, H2ME, which started in 2015, and H2ME-2, which will end in 2022. Over the course of these two phases, **more than 1400 vehicles and 45+ hydrogen refuelling stations** will be deployed.
- The project is being supported by the European Union through the Fuel Cells and Hydrogen Joint Undertaking (FCH 2 JU) but is driven by the **continuous engagement of the industry.**
- This documents provides a **summary of the project status, highlights key achievements and also suggests some of the emerging issues** which need to be tackled by the fuel cell vehicle sector as it moves towards a commercially viable mass market proposition.
- This is a living document that will be updated as the project progresses. It is intended to:
  - Give first hand information to stakeholders, policy-makers etc.;
  - Align H2ME partners on the common themes emerging from the early demonstration results;
  - Serve as a basis for additional dissemination materials.

Achievements
Cross cutting activities

H_2 mobility rollout strategies

Increasing convergence with regards to key elements as a result of project analysis e.g.

- Colocation of vehicles and HRS
- Developing viable clusters of stations in key locations
- Using mixed vehicle types and high demand applications to help sustain the early network

Identification of sweet spots for early adoption of FCEVs

Improving utilisation rates (again reflecting outcomes of project analysis)

- Through loading of stations with mixed vehicle types, with a focus on heavy duty vehicles e.g. buses and trucks
- Via high mileage applications e.g. taxi fleets

Grid balancing

Initial analysis suggests that grid balancing revenues and electricity price optimisation could lead to reduced hydrogen prices, thus improving the economic case of hydrogen mobility

Early remarks on the project and the status of FCEVs

- Though the project is currently in a relatively early stage and more results are expected as the project develops, we are already seeing some conclusions coming out of the project.
- Today's rate of **OEM hydrogen vehicle roll-out** is constrained by production limitations, cost, and limited infrastructure coverage.
- However **attractive ownership models are starting to emerge** which can overcome these issues. Using these models, it has been possible to make commercial sales to real customers (see Symbio, Toyota, Honda, Daimler, and Hyundai deployments).
- Though the number of FCEVs on the road today is limited, **the reliability and durability of vehicles** currently on the market is highlighted by several high intensity, long-distance trips made by FCEVs in recent years. **In H2ME, over 3 000 000 km have been driven** over 3 years, in a wide range of use cases, with **1 390 000 km accumulated by the STEP taxi fleet alone** since August 2017.
- Daily usage patterns from private users in Germany show that FCEVs are being used in the same way as conventional vehicles, thus giving users an **equivalent experience to diesel and petrol driving whilst producing zero tail-pipe emissions.**
- **In certain applications and operational needs, FCEVs provide the only viable zero-emissions mobility solution.**
- Improving the communications around the vehicles and **creating an aspirational element** as well as **clarity over the value case** is a key priority.

Early remarks on the project and the status of the deployment of HRS

- **Despite limited infrastructure coverage, the pace of station deployments in Europe is increasing** – this means some countries (e.g. Denmark, Norway, Germany) and cities (London, Paris) already have a **first plausible hydrogen network.**
- Though progress in reducing HRS installation periods has been made (e.g. 24 months down to 16 months in Germany, precedent set for forecourt-integrated refuelling stations in the UK), the installation process can still be very slow.
  - The main cause of ***delays in HRS installation is the permitting process*** – there is as yet no close European commonality in the processes and regulations, codes, and standards involved in HRS installation.
  - ***A relatively centralised decision making system which allows established precedent and experience gained through HRS installation to be applied to each future proposed installation is recommended***
- **Station availability is improving**, though there is still a need for this improvement to be sustained. This is a key factor in customer acceptance. Once resolved other customer related issues need to be resolved.
- The HRS supply chain is still relatively immature - **further research and development is required** to address this e.g. development of metering technology, increased number and quality of spare parts, etc.

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