

- To whom it may concern -

HyApproval

Handbook for Hydrogen Refuelling Station Approval

*Requirements for a further
maintenance of the Handbook*



List of Requirements for a Future Maintenance of the HyApproval Handbook

Suggested Structure and Tasks of a Handbook Maintenance Organisation

- An organisation for enabling service, support and maintenance of the Handbook should be nominated. This organisation preferably could have the capability to develop the Handbook together with the European Commission towards an EC regulation or directive at a later stage.
- One key task could be to develop a web-portal for the Handbook as has been done by the U.S. Department of Energy.
- The handbook web-portal should contain compiled helpful guidelines on where to find the latest technological information and lists of useful information sources for those who intend to review hydrogen facilities and issue permits. Permission to link such information sources should be harmonized to IEA, hydrogen implementation agreement, ISA working groups, ISO and other relevant working groups.
- Contact and co-operation with other key national organisations, e.g. DOE and ENAA should be formalised.
- The Handbook should be reviewed at least every 2 years.
- Establishing this activity as a "HRS Approval Industry Grouping" could be beneficial as positioning towards the future JTI activities.
- ISO has issued a first suggestion of hydrogen standards (e.g. ISO/PDTS 20012), restrictions and requirements in the handbook can be streamlined/ simplified by using these in cross-references and thus avoid mismatching/ contradicting information.
- In order to inform a broad group of stakeholders and local authorities at EU and Member State level collaboration with a European organisation active in the promotion of the use of hydrogen in transport applications is needed that could facilitate national and local dissemination of the Handbook. The European Hydrogen Association has offered to facilitate this dissemination in collaboration with HyApproval partner FAST and the Italian Hydrogen and Fuel Cell Association H2IT. This offer was accepted at the 5th General Assembly of HyApproval on 17 September 2007.

Background and Caveats of the Handbook

- The Handbook is based on knowledge and experiences in 2007.
- The design and system solutions presented in the Handbook is selected on the basis of practice prior to 2007 and should not be understood as mandatory
- Risk study results are based on knowledge in 2007 and results must not be considered mandatory

Consulting Group to the maintenance of the Handbook:

- Stakeholders not willing or able to make financial contributions and commitment. This group can contribute with valuable in-kind to the external review processes, e.g.:
 - "Fire Brigade representative, e.g. CTIF (the international association of fire and rescue services)
 - Other parties from Europe with practical HRS approval experience in e.g. Germany, Italy, Spain, Sweden, The Netherlands, UK or any other location where hydrogen refuelling stations have already been approved, preferably for public use and access.

- Research organisations e.g. coordinated by HySafe or a permanently installed European follow-up organisation
- Notified bodies, certification bodies and approval authorities; DNV has already offered to guard the Handbook maintenance process

Rationale for the Need to Start the HyApproval Handbook Maintenance Now:

Moves by the European Commission:

The European Commission intends to take two important decisions, which should increase the potential of hydrogen as an energy carrier in Europe.

The first is the creation of a multi-billion euro public/private partnership for research, a **Joint Technology Initiative**, to benefit the development of fuel cells and hydrogen. This will be the fifth such Joint Technology Initiative to be proposed by the Commission since the start of the 7th Research Framework Programme in 2007. It will start with an Interim Structure in fall 2007.

The second is a **Regulation on motor vehicles using liquid or compressed gaseous hydrogen**. This will lay down common rules on the construction of these vehicles to ensure the smooth functioning of the internal market, high levels of public safety and the possibility of greener forms of transport in the future.

Findings by the European Industry and Research Community:

The results of the HyWays project quantify the expected hydrogen vehicle and refuelling station penetration in the European market.

Source: <http://www.hyways.de/docs/deliverables.html>

The HyWays project in agreement with the European Hydrogen and Fuel Cell Technology Platform (HFP) comes to the conclusion that the following numbers of road vehicles will be expected by 2020 if policy support is provided:

- 1 million (with high policy support and fast learning)
- 5 million (with very high policy support and fast learning)

HyWays has identified the following low and high scenario numbers for hydrogen road vehicle for 2030:

- 15 million (with high policy support and fast learning)
- 50 million (with very high policy support and fast learning)

HyWays has identified the following numbers of hydrogen refuelling stations for Europe:

- for an introductory “lighthouse project” phase (2010-2015) some 400 stations in selected urban centres and some 500 stations on selected inter-connecting highways between these urban centres
- for the phase of developing demand (2015-2025) between 13,000 and 20,000 stations
- for the massive rollout phase after 2025 the same station patterns as today for conventional fuels will be reached

These background information and requirements for a further maintenance of the Handbook have been issued by:

HyApproval Project Partners active between 01OCT2005 and 30SEP2007

Air Products PLC, Air Liquide Division des Techniques Avancées, BP plc, Chinese Academy of Sciences - Technical Institute of Physics and Chemistry, Commissariat à l'Energie Atomique, National Center for Scientific Research Demokritos, Det Norske Veritas AS, EniTecnologie S.p.A., Forschungszentrum Karlsruhe GmbH, Adam Opel AG, Federazione delle Associazioni Scientifiche e Tecniche in collaboration with the Italian Hydrogen and Fuel Cell Association (H2IT), Norsk Hydro ASA, Icelandic New Energy Ltd., Institut National de l'Environnement Industriel et des Risques, Instituto Nacional de Técnica Aeroespacial, Joint Research Centre of the European Commission, Linde AG, Hydrogenics Europe N.V., Shell Hydrogen B.V., Netherlands Organisation for Applied Scientific Research, Total France, National Renewable Energy Laboratory, Health & Safety Laboratory on behalf of Health & Safety Executive, Engineering Advancement Association of Japan, Ludwig-Bölkow-Systemtechnik GmbH (*project coordinator*)

Acknowledgement

This project is financed by the HyApproval partners and by funds from the European Commission under FP6 Priority [1.6] contract number SES6 - 019813.



HyApproval likes to thank the EC that the European Hydrogen and Fuel Cell Technology Platform provides the appropriate framework for the discussion process, and the HyApproval partners for their continuous support.

Contact

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