Handbook for Approval of Hydrogen Refuelling Stations

Sprawozdania

Informacje na temat projektu

HYAPPROVAL

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Final Report Summary - HYAPPROVAL (Handbook for Approval of Hydrogen Refuelling Stations)

Hydrogen is an energy carrier with zero carbon content, which can be produced from all energy resources and can be converted to power and heat with high efficiency and zero emissions. Among its various applications is its use as a vehicles fuel. In spite of the continuous increase in HRS numbers, the relevant regulatory framework remains rather vague. HYAPPROVAL aimed to fill this gap through the development of a handbook (HB) for the approval of hydrogen refuelling stations (HRS).

The uncertainties that are currently involved in licensing HRS impose difficulties in the expansion of the network of stations which is necessary for successfully introducing hydrogen fuelled vehicles. As such, the European Union ought to develop a regulatory framework to establish a uniform permitting process. However, until such a framework is fully established, guidance and support should be provided to the stakeholders. Providing this type of guidance was a key objective of the HYAPPROVAL. The project also aimed, apart from developing the HB, to finalise technical HRS guidelines and to contribute to international standards development.

The HB was based on best practices collected or developed from other projects experience. It also included the flexibility to allow for new technologies and design introduction at a later stage, thus becoming a living document.

The project activities were structured in different, well connected, work packages (WPs), which addressed the following issues:

1. Definition of a generic HRS which could be certified in any European country. However, this task proved nearly impossible due to the regulatory and philosophy differences among the various countries. As a result three different HRS sizes were defined. Among the significant achievements of this WP was the analysis and definition of the most basic safety equipment and safety distances resulting from the equipment itself, regardless of the countries regulations. The produced outcome reflected adequately the current HRS landscape.

2. HB compilation and existing guidelines finalisation. The two objectives were integrated during the

project into a single document which had to be stand-alone, easy-to-read and as complete as possible while avoiding repetitions. Data to fill the various HB paragraphs were collected after the finalisation of its contents.

3. Identification of the authorities requests in the selected countries in order to create a constant HRS pattern which could be licensed in the member states. The target was reached through identification of the responsible authorities which were then questioned in a unified manner. The produced draft was then evaluated by the same authorities, so that their comments could be employed for the finalised edition.

4. Development of a uniform approach in order to provide guidance to developers and authorities regarding safety issues during HRS design, construction and operation. Risk assessment workshops and accident scenarios simulations were employed in order to meet the target. The collaboration and data exchange between the various project participants generated the recommended practice for the safe implementation of HRS.

5. HB dissemination and raise of public awareness. A database of venues to present the project was established to help towards this direction. Previous dissemination activities served as examples for the definition of the most efficient dissemination policy, and collaboration was established with various committees and associations in order for the HB to become widely known. European countries which did not participate in the initial project showed their interest towards a HYAPPROVAL presentation and such activities were organised after the project completion. A dissemination model was developed, which ought to be updated regularly and which could be helpful for the expansion of the dissemination activities in both national and international levels.

6. Identification of the requirements for refuelling stations related to the services provided to the vehicles owners. Given that finalised standards were not available it was decided to establish technical information reports (TIRs). The parameters examined were related to the vehicle receptacle geometry, which was already standardised, the data exchange between the vehicle and the HRS, the refuelling process and the safety during refuelling. A manual for the drivers instruction was developed, which met international success. Several vehicle producers participated in the process and the deliverables preparation.

The impacts of HYAPPROVAL on the industry and research sectors were numerous and covered a broad band of subjects. First of all standardised HRS were defined for the approval process. HB was expected to influence significantly the progress in its field; however, this influence was not clearly defined at the end of the project. It was proven that the only way towards the unification of the various countries' safety demands was the standardisation of the technologies and the safety requirements. Best practices concerning safety issues were defined and included in the final document to serve as a reference. In addition, the importance of best safety practices for regulatory approval and widespread acceptance of hydrogen technologies was highlighted. Finally, a refuelling specification which should be followed by all HRS because of the different thermal behaviour of different vessel types was developed and published.

The developed HB was divided in two parts, the 'Guidelines for design, operation and maintenance of an HRS' and the 'Permitting process'. The design and system solutions contained in the document were selected on the basis of practice prior to 2007 and should not be understood as mandatory. The HB could

only be considered as a first step towards the establishment of a common European policy, which would be feasible through the development of a European regulation. National authorities ought to be encouraged to adopt a similarly structured permitting process until such a framework is fully established.

Powiązane dokumenty

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