



FIT-4-AMANDA

Future European Fuel Cell Technology: Fit for Automatic Manufacturing and Assembly

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Publishable Executive Summary

Fit-4-AMandA focuses on the industrialisation of PEMFC stack components and stack assembly to deliver large quantities of affordable fuel cell systems in order to answer the emerging market demand. This report contains a study of the business field and the possible use cases, carried out within the framework of the project. It further presents an analysis of potential customers for the developed products in order to optimise the exploitation of the project results.

This deliverable is structured in three parts:

- Part 1: Brief overview of market opportunities, characteristics and risks
- Part 2: analysis of potential customers
- Part 3: overview of hydrogen infrastructure, especially hydrogen refilling stations in Europe.

Firstly, this report presents **market opportunities**, both short and medium term along with motivation of the relevant project partners to bring the Fit-4-AMandA technologies to the market.

In concrete terms, this means how supporting infrastructure (refuelling stations and workshops or service providers for maintenance) must be built, enabling technology producers and suppliers to build sufficient trust to take the second step and consequently further expand their portfolio. Of course, this can also take place in reverse order or, as is currently the case in Europe, in parallel. Ultimately, sufficient incentives must be created so that the interest and needs of potential customers are awakened and a stable market can develop.

Secondly, this report presents the **analyses of application cases for potential customers** and, assessments of the opportunities and risks in the hydrogen economy. In addition to the consolidation of potential customers (local end users), like public transport and taxi associations the preconditions of potential fuel cell users was also considered. This includes an assessment of the current infrastructure and safety issues. In order to successfully place the developed products on the market, a business case analysis was carried out. The formulated use cases should serve as a modelling element for the presentation of customer requirements on a detailed level. Therefore, concrete medium and long- term goals for possible saleable units per year and use cases (small / medium / large vehicles – short / long distance vehicles – light / heavy transport vehicles) were considered.

The selected tabular representation as well as the simplified use case diagrams show complete functional range and can be understood by the potential customers. A project study has already resulted in an important and publicly visible application case. From the use case of the project partner UPS, FCE delivery vehicle requirements can be derived (playing an important role for public transport).

Thirdly, the report gives a brief **overview of the hydrogen refuelling stations within Europe**. With regard to the assessments of the infrastructure, the current stock and the planned expansion of refuelling stations are considered. Although there is a great step forward in the development and expansion of hydrogen refuelling stations the number of them (even in the pioneering countries and states such as Germany, Denmark, Japan and California) is far behind that of fossil refuelling stations. Expressed in figures, this currently means for Europe that 101 operation hydrogen stations are opposed to approximately 130,000 refuelling stations. Potential gasoline companies, like Shell, Total, Air Liquide, Daimler, Linde and OMV, are further interested to implement H₂-refueling-stations, but focussing on their use cases or potential customers.