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Press release

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Anette Mack

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Balance of Plant components for Fuel Cell Electric Vehicles on their way into the European market

INN-BALANCE project extended until October 2021 to complete the final assessment of BoP components. The EU funded research and innovation project focuses on the Balance of Plant components, developing new features for the supply of hydrogen and air to the stack and improved concepts for the thermal management and advanced control architecture of the fuel cell system.

Fuel cells are a mature technology ready for scale-up in the automotive market. It is now about advancing manufacturing through reducing costs of production, while increasing the overall efficiency and reliability of fuel cell systems in cars. These are the goals of INN-BALANCE. The EU funded research and innovation project focuses on the Balance of Plant components, developing new features for the supply of hydrogen and air to the stack and improved concepts for the thermal management and advanced control architecture of the fuel cell system.

The INN-BALANCE project has been slowed down by the COVID-19 virus in 2020. The assembling and testing of BoP components were delayed, due to missing components that could not be shipped to Swedish partner PowerCell in time because of travel restrictions.
Furthermore, unexpected integration challenges caused additional delays, which led the project team to launch an amendment request. A 9-months project extension was granted by the European Commission. The testing and final assessment of the INN-BALANCE are currently in progress in Sweden and once the commissioning in a test bed at Powercell laboratories are concluded, the hydrogen fuel cell system will be integrated into a vehicle by partner CEVT to carry out the final vehicle tests.

Fortunately, the desk research based activities were not affected by the pandemic and could be continued as planned. The project leaflet was updated to consider the latest developments and training materials were made available on the project webpage to interested organizations which would like to use them for inhouse workshops or e-learning modules. Partners also participated in several online conferences to share the results with the general public and the wider scientific community. Furthermore, partner Ayesa is working on an open access simulation tool to assess the potential for cost reduction of BoP components through better manufacturing design.

Final evaluation of BoP components in progress in Sweden

Assembly and testing activities are currently underway in Powercell's laboratories. One of the main challenges is to integrate the different hardware and software modules. Some adaptations are necessary to ensure the interoperability of the different components. This commissioning is carried out by all partners responsible for the development of the different modules and components of the fuel cell system. Compared to the initial plan, which envisaged that the partners would travel to support the commissioning on site, most of the support is now provided online.

Once the tests at PowerCell are completed, the hydrogen fuel cell system will be integrated into a vehicle powertrain by CEVT to perform tests under automotive operating conditions. A unique test method, specially developed for INN-BALANCE, will be implemented to assess the performance and driving characteristics of the fuel cell vehicle.

Open access tool for cost optimization of components to be released soon

To facilitate the rapid adoption of the results of INN-BALANCE by market players, a study on the improvement of manufacturing processes and cost reduction is currently underway. Indeed, the automotive manufacturing process has a great impact on costs and the scalability of production. The deployment of FCEVs is therefore highly dependent on the progress made in this area.

“A comprehensive optimization framework has been developed, which considers both manufacturing, supply chains and fuel cell performance to reduce system costs. In addition, a tool is being developed to analyse cost improvements derived from manufacturing-oriented design or/and optimal selection of system´s components, based on the outputs of the optimization framework. To share the results of the cost assessment with the general public, a dedicated website will be launched to show the improvements in manufacturing-oriented design and mass production.”, explains coordinator Consuelo Mora Gonzalez.

Results of the vehicle testing, as well as main project findings will be presented at the final conference that will take place towards project end in fall 2021. This event will be public and further information will be communicated on our social media channels and project webpage in the next months.

Contact: INN-BALANCE Communication & Dissemination Office
Paul Haering, Steinbeis 2i GmbH
E-Mail: paul.haering@steinbeis-europa.de

INN-BALANCE is coordinated by Fundacion Ayesa in cooperation with 8 partners: Brose Fahrzeugteile SE & Co. KG, Würzburg; AVL List GmbH; China Euro Vehicle Technology AB; Powercell Sweden AB; Deutsches Zentrum fuer Luft- und Raumfahrt e.V. (German Aerospace Center); Universitat Politecnica de Catalunya; Celeroton AG and Steinbeis 2i GmbH.
Project duration: 01/2017 – 10/2021
Participating countries: Austria, Germany, Spain, Sweden and Switzerland

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contact for scientific information:
Fundacion Ayesa, Sevilla, Spain, Cosuelo Mora Gonzalez, info@ayesa.com