



INN·BALANCE

AUTOMOTIVE FUEL CELL

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INN-BALANCE: Progress in engineering fuel cell auxiliary components for the next generation of FCEVs

During the first year of the FCH JU funded project, the INN-BALANCE partners made significant progress, specifying the fuel cell auxiliary components' main parameters, interfaces and consolidating the overall fuel cell system design. The integrated hydrogen injector/ejector solution e.g. as well as several other innovative features conceived by INN-BALANCE are taking shape.

Auxiliary components, also subsumed under the term Balance of Plant (BoP), are vital for the functioning of the fuel cell, as they regulate the system and manage the supply of hydrogen and air to the stack. INN-BALANCE seeks to engineer various improvements at the Balance of Plant level with a special focus on manufacturing-oriented design. The aim is to lower the costs for the industrial production of fuel cell systems, making the project an ambitious endeavor in the quest for cost-effective zero-emission hydrogen mobility.

After one year of project activities important milestones have been reached regarding the definition of interfaces between components and the fuel cell stack as well as the design of the stack housing, and the anode, cathode and the cooling modules.

Among the BoP components the cooling module has the most complex interfaces. "The cooling module is responsible for the thermal management of the stack, which has significant influence on the water management and is critical in terms of performance and life time. Also, the Balance of Plant components have to be kept at optimal temperature and heat has to be supplied to the passenger cabin as needed", explains Joerg Weiss-Ungethuem from the German Aerospace Centre (DLR), who is in charge of developing the cooling system.

For the anode module INN-BALANCE develops an enhanced purge strategy, proposing an integrated *injector/ejector* solution that will maximize the power output from the stack, while minimizing hydrogen losses. The compact solution will take up little space and be able to operate without an energy-consuming mechanical recirculation pump.

The next significant steps will be the testing of a new air compressor prototype and the integration of all data in a comprehensive model for cost optimization.

For more on the INN-BALANCE BoP architecture and design specifications, please read the corresponding Deliverable D1.4, available for download on the project's webpage <https://www.innbalance-fch-project.eu/downloads-links/>



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For more information please visit the project homepage www.innbalance-fch-project.eu

And follow INN-BALANCE on Twitter: https://twitter.com/INNBALANCE_FCH

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