



Hydrogen Europe: European Hydrogen & Fuel cell Project Database

Project COSMHYC

COmbined hybrid Solution of Metal HYdride and mechanical Compressors for decentralised energy storage and refueling stations

The COSMHYC project aims at answering the needs identified by the MAWP of the FCH2 JU of increasing the energy efficiency of hydrogen production while reducing operating and capital costs, in order to make hydrogen a competitive fuel for transport applications. COSMHYC will develop and test an innovative compression solution from 1 to 1000 based on a hybrid concept, combining a metal hydride compressor and a mechanical diaphragm compressor, for hydrogen refueling stations and decentralized energy storage. The aim is to reduce the overall compression costs, by reducing investments down to less than 2000 €/((kg*day), reducing energy consumption by optimizing the interactions between both compression technologies. Maintenance will be reduced to <50% compared to mechanical compressors and life time will be improved, by decreasing the degradation down to <1% per year, thanks to the use of technologies with no moving parts and the implementation of appropriate remote control devices and corrective algorithms. In addition, the system will be significantly less noisy than a mechanical compressor (less than 60 dB at 5 meters). LBST will perform an analysis of the market requirements and define the main critical parameters, which will be used as an input for the research and development activities. MAHYTEC and EIFER will develop and test the metal hydride tanks and the metal hydride compressor, while H2 Logic will develop the mechanical compressor, with the support of EIFER regarding the thermal integration. The partners will jointly install, connect and test the hybrid compressor in a test facility of H2 Logic in Denmark during 9 months. At each stage of the developments and tests, the results will be used to perform a technical economic assessment of the solution compared to competitors with LBST. In parallel, Steinbeis will accompany the partners in organizing and managing the communication around the project, disseminating the results and preparing their exploitation.

Project Information

Type of project : Research

Timing : 01/01/2017 > 30/09/2020

Project Budget : 2.496.830 €

Funding

European Union through FCH JU: [Grant agreement 736122 - CORDIS link](#)

Project partners

Coordinator :

Ludwig-Boelkow-Systemtechnik GmbH
MAHYTEC SARL
NEL HYDROGEN AS
STEINBEIS 2I GMBH
STEINBEIS INNOVATION GGMBH

Sub project(s)

Sub project 1

Country: Germany

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Sub project categories

Research

Project Id: 937

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