

Efficient Hydrogen compression for Large Scale Mobility Applications

The EU-funded project COSMHYC XL is developing innovative compression solutions for high-performance hydrogen refueling stations.

Hydrogen mobility contributes to the energy transition by reducing greenhouse gas emissions. Thanks to the long range and the short refueling time of fuel-cell vehicles, hydrogen is of high interest especially for large-scale mobility applications, such as heavy-duty vehicles or large-scale fleets of light duty vehicles with a high utilisation rate, such as taxis.

A critical point in the transition from fossil fuels to low-emission hydrogen is the refueling infrastructure. Challenges related to costs reductions and scale-up for providing high hydrogen flow rates still have to be met.

The EU-funded project COSMHYC (GA 736122) has achieved significant progress in the development of an optimised hydrogen compression solution. COSMHYC XL will build on this innovative compression concept and develop the process for large-scale mobility applications to be able to refuel several vehicles in a short period of time, with large quantities of fuel.



Figure 1: COSMHYC XL Key Visual ©Goetzinger&Komplizen

The COSMHYC XL project started in January 2019 and will end in December 2021. MAHYTEC SAS (FR), NEL HYDROGEN AS (DK), Ludwig-Boelkow-Systemtechnik GmbH (DE), Steinbeis 2i GmbH (DE) under the coordination of EIFER (DE) will develop a novel compression solution for high-performance hydrogen filling stations based on two existing compression technologies: Metal hydride compression and mechanical compression. Specific combinations of these two technologies enable to increase the capacity, flow rate and reliability of the hydrogen filling stations. In order to maximise the benefits of the project, the developed process will be modular and scalable enabling to refuel a wide range of vehicle types.

More details about the innovative compression solution worked on in COSMHYC XL are available on www.cosmhyc.eu. The website serves as a joint communication platform for the highly interlinked projects COSMHYC and COSMHYC XL. Besides general information on hydrogen mobility and refueling stations, two dedicated webpages present details of each project.

COSMHYC (Grant Agreement No 736122) and COSMHYC XL (Grant Agreement No 826182) are coordinated by the European Institute For Energy Research (EIFER) in Karlsruhe, in cooperation with four other partners from France, Denmark and Germany: MAHYTEC SARL (FR), NEL HYDROGEN AS (DK), Ludwig-Boelkow-Systemtechnik GmbH (DE), Steinbeis 2i GmbH (DE). Steinbeis 2i GmbH supports EIFER in project management and is responsible for communication, dissemination and exploitation of the project results.

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