



Hydrogen Europe: European Hydrogen & Fuel cell Project Database

Project MATHRYCE

Material Testing and Recommendations for Hydrogen Components under fatigue

The deployment of a large hydrogen infrastructure with societal acceptance relies on the development of appropriate codes and standards to ensure safety. While hydrogen infrastructures are gradually being built all over the world, there exist no international standard to properly ensure fitness for service of pressure vessels subject to hydrogen enhanced fatigue. For example, high pressure compressors and pressure buffers in FCV refuelling stations experience cyclic loading due to pressure variation. The MATHRYCE project aims to develop and provide an easy to implement vessel design and service life assessment methodology based on lab-scale tests under hydrogen gas. This methodology will be based on selection and further development of the most appropriate, reliable and easy to handle lab-scale test under hydrogen pressure to quantify the hydrogen induced fatigue of a material. The results shall be transferable, allowing to design a component and to assess its lifetime without full scale tests. At least three types of lab-scale tests will be carried out and carefully analysed to address the fatigue of pressure vessel steels without and under hydrogen pressure. The proposed rationale will be finally validated by means of fatigue tests under hydrogen pressure on full scale components. The obtained results and conclusions will allow prioritized recommendations to support ongoing or new RCS initiatives at the international level. Indeed, this project will provide data and methodology necessary to improve European and International standards on high-pressure components exposed to hydrogen-enhanced fatigue. The project aims to support and speed up the build of a safe and harmonised Hydrogen supply network in Europe.

Project Information

Type of project : Research

Timing : 01/10/2012 > 30/09/2015

Project website: <http://www.mathryce.eu/>

Project Budget : 2.446.372 €

Funding

European Union through FCH JU: Grant agreement 303422 - [CORDIS link](#)

Project partners

Coordinator :

[CEA - Commissariat à l'énergie atomique et aux énergies alternatives](#)

Partners :

[L'AIR LIQUIDE S.A](#)

[Teknologian tutkimuskeskus VTT Oy](#)

[CCS Global Group Ltd.](#)

JRC - JOINT RESEARCH CENTRE- EUROPEAN COMMISSION

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Sub project(s)

Sub project 1

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Sub project categories

Research

Project Id: 1041

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