



Development of electrolysis technologies in FME HYDROGENi

Marie-Laure Fontaine*, Didrik Småbråten, Ragnar Strandbakke, Einar Vøllestad
Department of Sustainable Energy Technology, SINTEF, Oslo, Norway
* marie-laure.fontaine@sintef.no

Abstract

HYDROGENi (<https://hydrogeni.no/>) is a Centre for Environment-friendly Energy Research (FME), which seeks to develop expertise and promote innovation through focus on long-term research in selected areas of environment-friendly energy. The HYDROGENi centre aims to build a sustainable hydrogen economy with focus on four main research areas: Cost-efficient and scalable production of hydrogen and ammonia; transport and storage in Norway and Europe; end-use technologies; safety and material integrity. HYDROGENi's activities are a collaborative effort from over 50 Norwegian and European partners from both research and industry covering the entire H₂ value chain. In addition, HYDROGENi will have the largest ever academic research programme in an FME and aims to educate 35 PhD/postdoc students and over 100 MSc/BSc candidates. The presentation will cover activities promoting a technology-neutral approach to clean H₂ and NH₃ production and scaling-up of production capacity needed for domestic use and export. Hence, several electrolyser technologies operating at low temperature and high temperature are integrated in the centre and represented by technology developers and users. The work encompasses research on materials and manufacturing for optimum performance and durability, efficiency and dynamic behaviour of electrolysers, and design, operation and process integration of large-scale electrolysers.

In this presentation, we will briefly present the Centre targets and main activities revolving around green hydrogen production. We will give emphasis on the work carried out towards the development of solid oxide-based electrolysis technologies focusing on materials research and steam electrode development.

FME HYDROGENi is financed by the Norwegian government through the Norwegian Research Council's Centres for Environment-friendly Energy Research program.