



# Hydrogen Europe: European Hydrogen & Fuel cell Project Database

## Project NEXPEL

Next-Generation PEM Electrolyser for Sustainable Hydrogen Production

The main objective of the NEXPEL project, a successful demonstration of an efficient PEM electrolyser integrated with Renewable Energy Sources, supports the overall vision to establish hydrogen as an energy carrier in a large range of applications in the near future. The very ambitious objectives in the call will be addressed by a top class European consortium which is carefully balanced between leading R&D organisations and major industrial actors from 4 member states. An iterative approach between system, sub systems and components will be applied to define its cost, performance and ecological targets. This will be accompanied by a design to cost exercise as part of the life cycle analysis. Efficiency greater than 75% will be achieved by - developing more effective electrodes - adapting highly conductive new membrane materials - increasing the operating temperature for increased kinetics - lowering the hydrogen cross over using denser membranes - increasing the system pressure to reduce pump losses A stack life time towards 40 000 h will be achieved by - reducing hydrogen cross over reducing chemical degradation by peroxides - developing more stable catalysts, porous current collectors and bipolar plates - designing stack which minimizes temperature and mechanical stress gradients - developing high efficient advanced power electronic minimising load stress for the electrolyser Reducing system costs to EURO 5,000/Nm<sup>3</sup> is a major driving force and will be addressed by - replacing/reducing of expensive materials (PFSA membrane, Pt loading, titanium) - increasing the performance of components and sub-systems - simplifying the system - developing components suitable for mass production The consortium is confident that the dissemination and exploitation of the project will create considerable impact especially in terms of Europe's energy security, reducing greenhouse gas emission and increasing Europe's competitiveness.

## Project Information

**Type of project :** Research

**Timing :** 01/01/2010 > 31/12/2012

**Project Budget :** 3.068.183 €

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## Funding

European Union through FCH JU: [Grant agreement 245262 - CORDIS link](#)

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## Project partners

**Coordinator :**

Stiftelsen SINTEF

**Partners :**

CEA - Commissariat à l'énergie atomique et aux énergies alternatives

Fraunhofer ICT-IMM Fraunhofer Institute for Chemical Technology ICT, Branch IMM

AREVA Energy Storage

THE UNIVERSITY OF READING

FUMATECH BWT GMBH

STATOIL ASA

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Sub project(s)

Sub project 1

**Country:** Norway

**Address:**

Strindveien 4 7465 TRONDHEIM

**Sub project categories**

Research

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Project Id: 1055

This project datasheet was last updated on : 21.11.2017

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