



Hydrogen Europe: European Hydrogen & Fuel cell Project Database

Project STAYERS

STAYERS

Stationary PEM fuel cells with lifetimes beyond five years

Economical use of PEM fuel cell power for stationary applications demands a lifetime of the fuel cells of at least 5 years, or more than 40,000 hours of continuous operation. The prospect of large scale application for automotive use has focused PEM research on low cost production techniques with practical lifetimes of the fuel cells of 5,000 hours. For the stationary use, especially in the chemical industry and in remote areas, robustness, reliability, and longevity are often more important than the cost of the initial investment. For stationary generators the yearly cost of maintenance and overhaul are expected to be much larger than for intermittent applications such as automotive- and back-up power. To reach the high goals of the project, basic material research is given maximum attention. The durability of all components of a stack of PEM fuel cells, especially that of the Membrane Electrode Assembly (MEA), rims and seals, cell (bipolar) plates, and flow field is of paramount importance for a stationary power generator. Project STAYERS is dedicated to the goal of obtaining 40,000 hours of PEM fuel cell lifetime employing the best technological and scientific means. Apart from materials research it also requires a detailed investigation of degradation mechanisms and their mitigation during continuous operation. Factors relevant for the balance of plant (BOP) will also be addressed. These are the operating temperature, degree of humidification of fuel and air, and the excess ratio with respect to the stoichiometry of the supplied gases. The effect of possible contaminants should be taken into account. A lifetime of 40,000 hours, if defined as the time elapsed until 10 % of the initial voltage is lost, is equivalent with an average voltage decay rate of $1.5\mu\text{V/h}$. To establish this lifetime within the 26,000 hours of a three years project advanced materials research and development will be combined with models and accelerated tests.

Project Information

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Project Budget : 4.305.717 €

Funding

European Union through FCH JU: [Grant agreement 256721 - CORDIS link](#)

Project partners

Coordinator :

[Nedstack fuel cell technology B.V.](#)

Partners :

[Stiftelsen SINTEF](#)

SOLVICORE GMBH & CO KG

SOLVAY SPECIALTY POLYMERS ITALY S.P.A.

JRC -JOINT RESEARCH CENTRE- EUROPEAN COMMISSION

[Sub project\(s\)](#)

Sub project 1

Country: Netherlands

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Sub project categories

Research

Project Id: 1099

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