



Hydrogen Europe: European Hydrogen & Fuel cell Project Database

Project DIAMOND

Diagnosis-aided control for SOFC power systems

The DIAMOND project aims at improving the performance of solid oxide fuel cells (SOFCs) for CHP applications by implementing innovative strategies for on-board diagnosis and control. Advanced monitoring models will be developed to integrate diagnosis and control functions with the objective of having meaningful information on the actual state-of-the-health of the entire system. A holistic view over stack and BoP components can guarantee an advanced management and a comprehensive solution to the problem of achieving improved performance, maintenance scheduling, higher reliability and thus increased lifetime of the system. The underlying idea is to improve the analytical capability of current diagnosis and control algorithms, which are nowadays developed for reference prototypes without accounting systematically for production non-homogeneity, drift, wear and degradation. The analytical work and the testing activity will exploit advanced methodologies successfully applied in other advanced industrial sectors. Two SOFC systems will be considered, namely an integrated stack module (HoTbox©) and a middle-scale CHP with conventional layout. Extensive testing will be performed to validate the diagnosis and control strategies and evaluate their effectiveness in improving management actions aimed at optimizing operating conditions and increasing lifetime. The outcomes of the project will guarantee an increase of the SOFC system lifetime and performance. The results of DIAMOND will consolidate several modeling approaches that are the first step towards the development of prognostics tools for SOFC lifetime estimation. At industrial level, the proposed methodologies can be scaled up as the production increases without affecting manufacturing organization and costs. A well-balanced consortium brings together a group of research institutions and industries with different experience and capabilities to apply advanced monitoring, diagnosis and control concepts to SOFC.

Project Information

Type of project : Research

Timing : 01/04/2014 > 30/09/2017

Project website: <http://www.diamond-sofc-project.eu/about/>

Project Budget : 3.613.490 €

Funding

European Union through FCH JU: **Grant agreement 621208 - CORDIS link**

Project partners

Coordinator :

HyGear B.V.

Partners :

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

Teknologian tutkimuskeskus VTT Oy

University of Perugia

INEA

HTceramix SA

INSTITUT JOZEF STEFAN

Sub project(s)

Sub project 1

Country: Netherlands

Address:

Westervoortsedijk 73 6827 AV Arnhem

Sub project categories

Research

Project Id: 948

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