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Workshop on

Monitoring, Diagnostics and Control for SOFC systems

Improving SOFC-based CHP performance through innovative diagnosis and control

Hosted by 2015 European Fuel Cell Conference & Exhibition

Hotel Royal Continental – Naples (I) – December 16th, 2015

The event focuses on the most recent advances and the current research on monitoring, diagnostics and control for SOFC systems. It is organized in the frame of the project DIAMOND* (Diagnosis-aided control for SOFC power systems).

DIAMOND aims at a substantial improvement of the current performance of SOFC systems for CHP applications in order to boost their diffusion into broad commercial use. Advanced monitoring models are developed to integrate diagnostic 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 the stack and BoP components enables advanced management and provides a comprehensive solution to the problem of achieving improved performance, maintenance scheduling, higher reliability and thus increased lifetime of the system.

The objective of the workshop is to present the DIAMOND approach and the recent project results for CHP systems equipped with both conventional stacks and integrated modules. The exploitation potential and a comprehensive overview of the project achievements are offered to the interested stakeholders and users at various academia, industry and public levels.

First an overview of the project is provided, then three technical presentations report on the experimental activity and on the modelling approaches for monitoring, diagnostics and advanced control. Guests from the industry and research sectors will bring their experiences to help DIAMOND in steering its activity for further advancements towards the development of prognostics tools for SOFC lifetime estimation.

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* The project DIAMOND (Diagnosis-aided control for SOFC power systems) has received funding from the European Union's Seventh Framework Programme (FP7/2007-2013) for the Fuel Cells and Hydrogen Joint Technology Initiative under grant agreement n° 621208.

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14.30 – 14.50 – DIAMOND Project overview (R. Makkus – Hygear)

14.50 – 15.10 – Models for monitoring & diagnostics of SOFC (M. Sorrentino – University of Salerno)

15.10 – 15.30 – Supervisory control for SOFC (D. Vrecko – Institute Jožef Stefan)

15.30 – 15.50 – Evaluation of Total Harmonic Distorsion Analysis tool for SOFC diagnostics (B. Morel – CEA)

15.50 – 16.10 – Coffee Break

16.10 – 16.30 – ENDURANCE Project overview (P. Piccardo – University of Genova)

16.30 – 16.50 – Benefits of advanced control, diagnostics and monitoring to enhance operations and market penetration of SOFC (K. Åström – Convion)

16.50 – 17.10 – Total Harmonic Distorsion Analysis-based diagnostics for PEMFC (S. Pofahl – AVL)

17.10 – 17.30 – EIS of PEMFC via pseudo-random binary sequence perturbations (Đ. Juricic - Institute Jožef Stefan)

17.30 – 17.50 – On-field EIS-based diagnostic tool for PEMFC (P. Polverino – University of Salerno)

17.50 – 18.30 – Discussion

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