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Energy Systems

In a new energy framework, based on the concepts of sustainability, energy security using local resources, maximization of the exergy efficiency of the whole system, the use of renewable sources such as biogas and syngas coupled with high efficiency systems as fuel cells brings to sustainable plants based on renewable primary resources.

Nevertheless, some issues remain open, related to degradation by contaminants and effective management of the gas stream to optimize the overall efficiency of the plants.

The workshop will deal with biogas and syngas fed fuel cell systems with contributions on the laboratory testsm system analysis and demonstrative areas, like renewable fuel-based fuel cell plants.



WORKSHOP INFORMATION:

Participation to the event is free of charge.

Registration is mandatory, max. 150 participants.

For registration/information contact: massimo.santarelli@polito.it, anja.hanninen@aalto.fi, riitta.nyholm@vtt.fi

Information on the location will be sent to registered participants before the workshop.

Suggested hotel: RADISSON BLU HOTEL ESPOO - Otstranden 2, 02150 Espoo, Finland

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F

Future

FC systems fed by biogenous fuels: biogas and syngas



Workshop and keynote lectures from SOFCOM partners & invited speakers

8th May 2014

Espoo, Finland





Dr. Ing. Jürgen Karl

Program

9:30 – 9:50 am - Introduction: the SOFCOM Project - *Massimo Santarelli, Politecnico di Torino - Jari Kiviaho, VTT*

9:50 – 10:20 am - Design, development and test of the proof-of-concept plant 1 (Italy: SOFC CHP, WWTU biogas) - *Massimo Santarelli, Politecnico di Torino*

10:20 – 10:40 am - System analysis: Conceptual and Techno-economic study of combined waste water plant and SOFC system (50 kW – 1 MW) - *Marta Gandiglio, Politecnico di Torino*

10.40 - 11.00 am - Coffee break

11:00 – 11:10 am - The Erasmus Mundus/KIC-Inno-Energy MSc programme SELECT - *Thomas Nordgreen, KTH, Director of SELECT*

11:10 – 12:00 am - **INVITED LECTURE: Experience with Bio-Gas Fed High Temperature Fuel Cells**
Jack Brouwer, University of California, Irvine (UCI)

12:00 am – 1:00 pm - Experimental: influence of biogas contaminants on SOFC anodes and fuel processing - *Jan van Herle, EPFL - Andrea Lanzini, Politecnico di Torino - Matteo Lualdi, Topsoe Fuel Cells - Vitaliano Chiodo, CNR*

1.00 - 2.20 pm - Lunch break

2:20 – 2:50 pm - Overview of biomass gasification technologies - *Esa Kurkela, VTT*

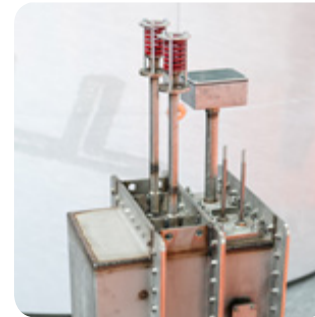
2:50 – 3:40 pm - INVITED LECTURE: Conversion of wood derived syngas in SOFC systems
Jürgen Karl, University of Erlangen-Nuremberg

3.40 - 4.00 pm - Coffee break

4:00 – 4:30 pm - Experimental: influence of syngas contaminants on SOFC anodes - *Jan van Herle, EPFL - Stephan Herrmann, TUM*

4:30 – 4:50 pm - Experimental: cleaning of biogenous gas streams for SOFC applications - *Pekka Simell, VTT*

4:50 – 5:00 pm - Wrap up, Q&A - *Massimo Santarelli, Politecnico di Torino*



Dr. Ing. Jack Brouwer

Career:

- Head of the Chair of Energy Process Engineering, University of Erlangen-Nuremberg
- Coordination of the EU-projects BioHPR, BioCellus, CO2freeSNG
- Evaluator of the 6th and 7th Framework Programme of the EU
- Member of the Technical Advisory Group TGC3 of the Research Fund Coal and Steel of the EU

Key Research Area:

- Energy from Biomass
- Combustion and gasification in fluidized beds
- Synthesis of methane und SOFC-fuel cells
- Carbon capture und sequestration

Career:

- Associate Professor, Mechanical and Aerospace Engineering
- Associate Director, NFCRC, National Fuel Cell Research Center

Key Research Area:

- Chemical and electrochemical reaction and heat transfer
- Steady-state and dynamic modeling of energy conversion devices such as fuel cells, electrolyzers, and gas turbine engines
- Fuel processing & integration
- Analyses of integrated energy systems comprising fuel cells, photovoltaics, fuel processing, gas turbines, and wind turbines
- Dynamic experimental analyses and model verification