



European Fuel Cell
Conference & Exhibition

EUROPEAN FUEL CELL FINAL PROGRAM

12-15 december 2017 / **NAPLES**



europeanfuelcell.it



UNIVERSITÀ
DEGLI STUDI
DI PERUGIA



UNIVERSITÀ
DEGLI STUDI
DI NAPOLI
"PARTHENOPE"



EUROPEAN FUEL CELL FINAL PROGRAM

To Piero Lunghi. We miss you a lot.
To you our gratitude for ever.

This book is dedicated to the memory of Piero Lunghi, creator of the European Fuel Cell Technology and Applications Conference, dear friend and colleague, who prematurely passed away in a car accident on damned November 9, 2007.

Piero made significant contributions in the field of fuel cells in the course of his too short career. He was the leading figure in the formation of the fuel cell research group at the University of Perugia and several activities and research projects initiated by him are still ongoing. This means that, thanks to Piero, many young people are working in this exciting research field and are coming to Naples to present their results. Therefore, Piero's memory is in the conference name but Piero's contribution is still in the contents of this book.

The memory of our friend Piero, his great personal generosity and energy, survives in our hearts, his contribution and his tenacity survive in the work of young people who carry on his vision throughout the world.

This year three best paper awards have been established in memory of Piero Lunghi, following his ideas and his actions "Plan as if you should live forever and work as if you should die tomorrow". The prize that has been made possible by his parents and his sister, Paola, aims to be a message to young researchers everywhere: your ideas, your projects can change the world.

Give them your passion, your strength, and make all necessary effort to realize them. There is no greater satisfaction than seeing one's ideas become reality and become part of the future of our world. Piero strongly desired this, and constantly followed this through with conviction, passion and dedication.

For a better future, we need young researchers of this kind.



European Fuel Cell

Conference & Exhibition

12-15 december 2017 / **NAPLES**



Supporting Institutions



Regione Umbria



Supported by:



FUEL CELL LAB

Sistemi innovativi e tecnologie ad alta efficienza per la poligenerazione BANDO MIUR PON03PE_00109_1/F12



SMART GENERATION

Sistemi e tecnologie sostenibili per la generazione di energia BANDO MIUR PON03PE_00157_1/F19

LOCAL COMMITTEE

CHAIRMAN

Angelo **MORENO**

ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development) - Italy

TECHNICAL PROGRAM MANAGER AND AUTHOR INFORMATION

Viviana **CIGOLOTTI**

ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development) - Italy

Stephen **McPHAIL**

ENEA (Italian National Agency for New Technologies, Energy and Sustainable Economic Development) - Italy

Elio **JANNELLI**

Dept. of Engineering - University of Naples "Parthenope" - ATENA Scarl Italy

Adele **PIANESE**

Dept. of Engineering - University of Naples "Parthenope" - ATENA Scarl Italy

Ludovica **COSENTINO**

ATENA Scarl, Italy

ORGANIZING COMMITTEE

CHINA

Hongmei Yu, Dalian Institute of Chemical Physics

FINLAND

Jari Kiviaho, VTT Technical Research Center of Finland

FRANCE

Laurent Antoni, CEA and President of the New European Research Grouping on fuel cells and Hydrogend

GERMANY

Detlef Stolten, Forschungszentrum Jülich (FZJ)

Christian Sattler, DLR - German Aerospace Center, Vice-President of N.ERGHY

Olaf Jedicke, Karlsruhe Institut of Technology (KIT)

ITALY

Alberto Ravagni, SOFCPower Spa

Gianni Bidini, Università degli Studi di Perugia

Stefano Ubertini, Università degli Studi della Toscana

Marcello Baricco, Università degli Studi di Torino

Luigi Crema, Fondazione Bruno Kessler

Salvatore Freni, Director of CNR ITAE

JAPAN

Takao Watanabe, Central Research Institute of Electric Power Industry (CRIEPI)

Kenchi Ota, Yokohama National University

NETHERLANDS

Marc Steen, Head of Unit Cleaner Energy, Institute for Energy, Joint Research Centre, European Commission

ROMANIA

Eden Mamut, University of Costanza

SPAIN

Fernando Palacin, Director at the Foundation for Hydrogen in Aragon

Iñaki Azkarate, Tecnalia Corporación Tecnológica

SOUTH KOREA

Tae-Hoon Lim, Korea Institute of Science & Technology (KIST)

SWEDEN

Bengt Ridell, Sweco Energuide AB

USA

Subhash Singhal, Pacific Northwest National Laboratory (PNNL)

SCIENTIFIC COMMITTEE

BULGARIA

Daria Vladikova, IEES

CROATIA

Franco Barbir, FESB - University of Split

DENMARK

John Bögild Hansen, Haldor Topsøe

FINLAND

Tiina Koljonen, Technical Research Center of Finland (VTT)

FRANCE

Michel Cassir, Chimie Paris Tech (ENSCP)

Deborah Jones, Université Montpellier

GERMANY

Alexander Michaelis, Fraunhofer-Institut für Keramische Technologien und Systeme - IKTS Dresden

Thomas Pfeifer, Fraunhofer-Institut für Keramische Technologien und Systeme - IKTS Dresden

Ludwig Jörissen, Centrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg - ZSW

GREECE

Tsiakaras Panagiotis, University of Thessaly

Thanos Stubos, National Center for Scientific Research

«Demokritos»

ITALY

Mauro Scagliotti, R.S.E. Spa - Ricerca sul Sistema Energetico

Aristide Massardo, Università degli Studi di Genova

Maria Giovanna Minutillo, Università degli Studi di Napoli "Parthenope"

Alessandra Perna, Università degli Studi di Cassino

Umberto Desideri, Università degli Studi di Pisa

Angelo Basile, ITM-CNR - Istituto per la Tecnologia delle Membrane del Consiglio Nazionale delle Ricerche

Sergio Ulgiati, Università degli Studi di Napoli "Parthenope"

Vincenzo Palma, Università degli Studi di Salerno

Cesare Pianese, Università degli Studi di Salerno

Barbara Bosio, Università degli Studi di Genova

Rodolfo Taccani, Università degli Studi di Trieste

Pierluigi Leone, Politecnico di Torino

Nicola Massarotti, Università degli Studi di Napoli "Parthenope"

Luca Andreassi, Università degli Studi di Roma "Tor Vergata"

Andrea Casalegno, Politecnico di Milano

Massimo Santarelli, Politecnico di Torino

Vito Di Noto, Università degli Studi di Padova

Domenico Borello, Università di Roma "La Sapienza"

Pierangela Cristiani, RSE - Ricerca sul Sistema Energetico S.P.A.

Linda Barelli, Università degli Studi di Perugia

Marcello Romagnoli, Università degli Studi di Modena e

Reggio Emilia

Antonino Aricò, CNR ITAE

Gaetano Squarito, CNR ITAE

Stefano Campanari, Politecnico di Milano

JAPAN

Koichi Eguchi, Kyoto University

NETHERLANDS

Kas Hemmes, Delft University of Technology - TU Delft

P.V. Aravind, Delft University of Technology - TU Delft

PORTUGAL

Carmen Rangel, LNEG - National Laboratory of Energy and Geology

ROMANIA

Vasile Stanciu, The National R-D Institute for Cryogenics and Isotopes Technologies - ICIT

lordache Ioan, Institutul Național de Cercetare-Dezvoltare pentru Tehnologii Criogenice și Izotopice - ICSI Rm. Vâlcea

SLOVENIA

Stanko Hocevar, National Institute of Chemistry of Slovenia

SOUTH KOREA

Suk Woo Nam, Korea Institute of Science & Technology (KIST)

Jonghee Han, Korea Institute of Science & Technology (KIST)

Sung Pil Yoon, Korea Institute of Science & Technology (KIST)

Jaeyoung Lee, GIST

SPAIN

Javier Brey Sanchez, H2B2

Garcia Luis Alberto, Tecnalia Corporación Tecnológica

David Sanchez, University of Sevilla

Antonio García-Conde, Spanish Hydrogen Association - IEA HIA

SWEDEN

Bin Zhu, Royal Institute of Technology

Carina Lagergren, KTH

SWITZERLAND

Olivier Bucheli, Solid Power

TURKEY

Cigdem Karadag, TUBITAK Marmara Research Center

Atila Ersoz, TUBITAK Marmara Research Center

Isil Isik Gulsac, TUBITAK Marmara Research Center

Fehmi Akgun, TUBITAK Marmara Research Center

UK

Vladimir Molkow, University of Ulster

Robert Steinberger-Wilckens, University of Birmingham

Ioannis A. Ieropoulos, University of the West of England, Bristol

USA

Abdelkader Hilmi, Fuel Cell Energy

Whitney Colella, Gaia Energy Research Institute

J. Robert Selman, Illinois Institute of Technology

TRACK MANAGER

Martin Andersson

Steven Beale

Manuel Bianco

Domenico Borello

Giovanni Cinti

Remi Costa

Pierangela Cristiani

Nicola Di Giulio

Andrea Facci

Kas Hemmes

Ioannis Ieropoulos

Carina Lagergren

Pierluigi Leone

Loredana Magistri

Nicola Massarotti

Stephen McPhail

Mariagiovanna Minutillo

Alessandra Perna

David Sánchez

Massimo Santarelli

Rodolfo Taccani

Francesco Trasino

Alberto Traverso



European Fuel Cell

EXHIBITOR



Located in the Science Park of the Swiss federal institute of technology (EPFL) in Lausanne, Fiaxell is manufacturing components for SOFC and SOEC research such as the Open Flanges test Set-Up™, short stack, gold, crofer 22H and nickel M_Grid™, Cell-Connex™ for current collection and gas diffusion. We are also retailer for H2 generator, potentiostat/galvanostat/EIS analyzer and mass flow controller.

SPONSOR



The Institute for Advanced Energy Technologies "Nicola Giordano" (hereinafter ITAE) is an Italian research centre founded in 1980 and belonging to the National Research Council (CNR) that is distributed all over Italy through a network of institutes aiming at promoting a wide diffusion of its competences throughout the national territory and at facilitating contacts and cooperation with local firms and organizations.

ITAIE is one of European leading research centre in the fuel cells and renewable energy fields and a full member of the Fuel Cells and Hydrogen Joint Technology Initiative of the European Community.

The research activity is organized in 4 sectors:

- 1 – Direct production of electric energy technologies
- 2 – Hydrogen and clean fuels production
- 3 – Energy transformation and storage technologies
- 4 – Integration of new energy technologies and renewable

Beside these four lines of research, there are three support activities that cut across all research lines and are: socio-economic impact analysis of cutting-edge energy technologies; study about the regulations governing the application and use of energy technologies; technology transfer and exploitation of R&D results.

The institute is provided with 19 equipped laboratories for preparative and characterization of materials and components, energy systems and for the construction and testing of devices and prototypes.

These laboratories are located in a building which is on three levels with a total area of 4800 square meters, and includes laboratories, offices, a conference room, a library, a guest quarters and the canteen.

Moreover, the ITAE has, in an area close to its headquarters, a "Center for new energetic technology testing, innovation and industrial promotion", that is a testing center supplying technical and scientific support to companies operating in the production of innovative energy systems



The Bioelectrochemical Society (BES) is an international scientific association founded by Giulio Milazzo in 1979 to promote understanding and cooperation among scientists interested in the application of electrochemical concepts and techniques to the fundamental or applied study of living systems.

BES is a non-profit making organization. The Society is composed of individuals and corporate members in the following categories: regular, honorary.

BES pursues its objective using various means, including:

- organising scientific meetings;
- publishing scientific works in periodicals or other forms;
- editing specialized periodicals;
- contributing to the development of a common language among scientists of the different disciplines involved in the (scientific, technical and applied) development of bioelectrochemistry, especially among the diverse groups interested in such aspects as energetics, pharmacology, medicine, etc.;
- stimulating the establishment, among its members, of co-operative programs on particular subjects, especially interdisciplinary, and, if the need arises, assuring the management of international programmes of study or research.
- attributing awards in the field of the Bioelectrochemistry.

BES is administered by a Council elected during BES biannual symposium for a term of four years by the General Assembly. Members of the BES Council may be chosen from all the categories of membership in the Assembly. There shall be a new Council every two years formed by the replacement of half of the members.



FUNDING FUEL CELLS AND HYDROGEN TECHNOLOGY DEVELOPMENTS ACROSS EUROPE

The Fuel Cells and Hydrogen Joint Undertaking (FCH JU) finances Research & Development (R&D) and Demonstration projects on fuel cells and hydrogen. It is a unique public-private partnership between the European Commission, Europe's fuel cell and hydrogen industry and research organisations. A public-private partnership model works as an effective way for European intervention to coordinate R&D activities by pooling financial resources together.

The European Union is committed to changing its transport and energy systems in pursuing a future low carbon economy. Fuel Cells and Hydrogen (FCH) technologies hold great promise for energy and transport applications from the perspective of meeting Europe's energy, environmental and economic challenges.

Hydrogen can be produced using renewable energy sources, offering a clean fuel for road transportation. Moreover, hydrogen offers the ability to store electricity, addressing the intermittent character of renewable energy. When coupled with highly efficient, silent and clean fuel cells as energy converters, hydrogen opens up new horizons for decreasing Europe's dependency on imported fossil fuels.

The aim of the FCH JU is to accelerate the market introduction of these technologies, realising their potential as an instrument in achieving a carbon-lean energy system.

Established in 2008, the FCH JU has supported 169 projects to date. Its second phase was approved by the Council of the European Union in May 2014 under the Horizon 2020 EU funding programme, with a total budget of €1.33 billion as FCH 2 JU. This marks Europe's continued confidence and support for fuel cells and hydrogen as key technologies for decarbonising our energy system, and creating a secure sustainable energy supply capable of generating new jobs.

The FCH JU programme is structured around two research and innovation pillars dedicated to **Transportation and Energy Systems**, complemented by a set of **Cross-Cutting** research activities.

ENERGY

- Fuel cells for power and combined heat & power generation
- Hydrogen production and distribution
- Hydrogen for renewable energy storage (incl. blending in natural gas grid)

CROSS-CUTTING ISSUES

(e.g. standards, consumer awareness, manufacturing methods, studies)

TRANSPORT

- Road vehicles
- Non-road mobile vehicles and machinery
- Refuelling infrastructure
- Maritime, rail and aviation applications

EFC17 EUROPEAN HYDROGEN TOUR

from Brussels to Naples

The EFC17 European Hydrogen tour has two main goals. We intend to let European citizens, but above all Italian citizens, know that the electric Hydrogen and fuel cell vehicles are ready to enter the market. These vehicles together with battery electric ones and with all other electric vehicles based on the combination of battery and hydrogen fed fuel cells are the future of zero emissions transport. They are the answer to pollution problems and to improve the quality of our life. Another goal, which is more peculiar for Italy, is to highlight how late Italy is in the deployment of hydrogen infrastructures and in the promotion, in general, of the research and development of hydrogen and fuel cells technologies. We would like to make Italian politician aware of the importance of these technologies for our economy, for creation of new employments, for enhancing our competitiveness.



During the first part of the trip two hydrogen cars, supplied by FCH-JU, a Hyundai IX35 and a Toyota Mirai, will cross Belgium, Germany and Austria to reach Bolzano (Italy). In this case we won't have any problem because we will be able to fill the cars with Hydrogen in public HRS we will find along the trip just using the application H2.Live in our Smartphone. We are going to face many problems in the second part of the tour, i.e. from Bolzano to Naples. There are no public HRS we will be obliged to refill hydrogen in facilities where Hydrogen is produce and/or stored.



MEDIA PARTNERS



Fuel Cell & Hydrogen Energy Association (FCHEA) is the trade association for the fuel cell and hydrogen energy industry, dedicated to the commercialization of fuel cells and hydrogen energy technologies. FCHEA members represent the full global supply chain, including fuel cell materials, components and systems manufacturers, hydrogen producers and fuel distributors, government laboratories and agencies, trade associations, utilities, and other end users.



Fuel Cells Bulletin is the leading monthly newsletter dedicated to reporting and analysing business and technology developments in the global fuel cell sector. The newsletter – published as a Digital Edition – contains a mix of news on automotive and mobile, small and large stationary, portable and micro, hydrogen fuelling and energy storage, commercialisation and research activities and demonstrations. Each issue has a feature article on a specific company, project, technology or topic of interest, as well as an extensive summary of new US patents, and a comprehensive events calendar.



Renewable Energy Focus magazine and its website provide a forum for debate and dialogue between research, industry, financial organisations and government bodies worldwide. With in-depth coverage and incisive editorial on all areas of renewable energy, Renewable Energy Focus takes an objective look at bioenergy, energy efficiency, energy infrastructure, energy storage (including fuel cells), geothermal, green buildings, hydro power, photovoltaic (PV), solar heating and cooling, solar thermal, wave and tidal energy, and wind power.



Shmuel De-Leon Energy, Ltd. is a leading company in the field of power sources knowledge. The company provides comprehensive collection of power sources knowledge tools and services:

- Consulting services
- Market research reports
- Batteries , Fuel cells and EV seminars and conferences
- Batteries, FC & EV Weekly newsletter
- Energy Sources On-Line web DataBase (batteries, fuel cells, capacitors and more..)
- Power sources solutions
- Representing Energy Storage testing and research equipment companies in Israel

MEDIA PARTNERS



The mission of **The Electrochemical Society** is to advance theory and practice at the forefront of electrochemical and solid state science and technology, and allied subjects. To encourage research, discussion, critical assessment, and dissemination of knowledge in these fields, the Society holds meetings, publishes scientific papers, fosters training and education of scientists and engineers, and cooperates with other organizations to promote science and technology in the public interest. The vision of ECS is to be recognized as the steward of electrochemical & solid state science and technology. By creating uninhibited availability of the science through open access, ECS can Free the Science, and accelerate scientific discovery and innovation, leading the community as the advocate, guardian, and facilitator of our technical domain.



American Elements is the world leader in the industrial application of materials science. It has also been a key source for academic and corporate research, advancement and new product development in SOFC and PEM fuel cell materials and has been a decade long participant in the materials development component of the U.S. Dept. of Energy's SECA program. Our fundamental expertise in the properties, applications and cost-effective manufacturing of advanced and engineered materials, including ultra high purity refining (99,9999%) and nanotechnology (Mono Atomic Elements) scales allows us to meet the needs of thousands of global manufacturers (including over 30% of the Fortune 50), all U.S. and many foreign national laboratories, universities throughout the world, and our customers in a wide variety of industry groups, including energy, electronics, aerospace, defense, automotive, optics/photovoltaics, green technologies and pharma/cosmetics. The company provides both technical guidance and manufactured products in its 10,850 page online catalogue which includes over 3,000 elemental metal, metallic compound, ceramic and crystalline stock items. American Elements also produces numerous customer proprietary formulations from our network of production facilities strategically placed throughout the world.



Fast a not for profit private organization founded in 1897, represents 32 Italian scientific and technical associations covering the most important and priority European industrial sectors. Thanks to the competencies and expertise of the associations belonging to FAST network, the Federation is able to address significant stakeholders at regional and national level and to guarantee a permanent liaison with the most relevant EU industrial and research networks. FAST has a long standing relationship with different regional and local authorities providing them support in shaping and programming their policies with regards to innovation, research (FAST is a member of the Enterprise Europe Network, manages the Hyer secretariat -HyER - in Brussels), education and training and technical assistance to SMES.



H2IT is an independent and non-profit organization, launched in 2004 to formalize the activities of the working groups of the Italian Hydrogen Taskforce and promote the creation of an infrastructure for the use of hydrogen. The goal is to stimulate and develop the market for the use of hydrogen, to create a strong industry voice of companies and institutes involved in the sector, and to secure a leading role for Italy in the world market.

EUROPEAN FUEL CELL FINAL PROGRAM



European Fuel Cell

Conference & Exhibition

12-15 december 2017 / **NAPLES**

STATI GENERALI IDROGENO E CELLE A COMBUSTIBILE

LOCATION: **Teatro di Corte / THE ROYAL PALACE OF NAPLES**

12TH
D E C E M B E R

8:30 + REGISTRAZIONE DEI PARTECIPANTI

9:00 + APERTURA LAVORI

Fabio ORECCHINI / Università G. Marconi / Moderatore

Alberto CAROTENUTO / Rettore Università degli Studi di Napoli Parthenope

Luigi DE MAGISTRIS / Sindaco Città di Napoli

9:15 **Alicia MIGNONE** / Committee on Energy Research and Technology (CERT) della International Energy Agency (IEA)
La visione del CERT - IEA per le applicazioni delle tecnologie dell'idrogeno e delle celle a combustibile

9:30 **Jose FERNANDEZ GARCIA** / Direzione Generali Trasporti (DG MOVE) - Commissione Europea
La risposta degli Stati Membri alla Direttiva Europea 2014/94/UE e il nuovo "Mobility Package":
azioni introdotte e prospettive di finanziamento

9:45 **Carlos NAVAS** / Fuel Cells and Hydrogen Joint Undertaking - (FCH JU)
Lo stato dell'arte a dieci anni dal lancio della FCHJU. Stato sul memorandum relativo all'iniziativa sulle regioni Europee

10:00 **Ministero dello Sviluppo Economico**
La Strategia Energetica Nazionale: obiettivi e misure per rendere il sistema energetico
più competitivo, sostenibile e sicuro.

10:15 **Ministero Ambiente e della Tutela del Territorio e del Mare**
La Strategia Energetica Nazionale: obiettivi ambientali e di de-carbonizzazione definiti a livello europeo,
in linea con i futuri traguardi stabiliti nella COP21

10:30 **Ennio CASCETTA** / Ministero delle Infrastrutture e dei Trasporti
Il Piano Generale dei Trasporti e della Logistica: obiettivi e strategie per la mobilità sostenibile - Focus su PNS
Mobilità sostenibile: quali risorse quali opportunità per BEV e FCEV

10:45 **Oscar PASQUALI** / Ministero dell'Università e della Ricerca Scientifica
Il Piano Nazionale della Ricerca 2015-2020 - Programmi e risorse nelle aree tecnologiche prioritarie:
mobilità sostenibile

11:00 **Antonio ODDATI** / Regione Campania
Il POR Campania FESR 2014-2020: misure ed investimenti per la decarbonizzazione dei sistemi di trasporto.
La mobilità sostenibile e la programmazione degli interventi in attuazione del piano nazionale PNIRE

11:15 + COFFEE BREAK

11:30 **Antonella GALDI** / Associazione Nazionale Comuni Italiani (ANCI)
Piani urbani di mobilità sostenibile: linee guida UE

11:45 **Mario CALABRESE** / Assessorato alla Mobilità Infrastrutture e Lavori Pubblici, Comune di Napoli
Modelli di mobilità in una visione di sistema: il PUMS e gli strumenti di pianificazione dei trasporti
per la mobilità a impatto zero ed il trasporto collettivo.

12:00 **Fabrizio CICALA e Aldo PARIBELLI** / Azienda Napoletana Mobilità (ANM)
Prospettive ed opportunità delle Utilities nella città metropolitana di Napoli. Programmi operativi
per i veicoli ZEV e tecnologie AVM

12:15 **Stefano RAMPINI** / Industria Italiana Autobus
Investimenti e programmi dell'industria italiana autobus per il trasporto pubblico sostenibile

12:30 **Paolo SCUDIERI** / Adler Plastic Group
Materiali e tecnologie innovative per la costruzione di veicoli sostenibili

12:45 **Alberto DOSSI** / Gruppo Sapio - Mobilità Idrogeno Italia (MH2IT)
Investimenti nelle tecnologie a idrogeno e possibili scenari. Focus stazioni di rifornimento idrogeno,
prospettive di mercato e costi

13:00 **Alberto RAVAGNI** / Solid Power
Sistemi innovativi con Fuel Cell ad alto rendimento per la ricarica di veicoli elettrici

13:15 **Elio JANNELLI** / Atena scarl-Distretto Alta Tecnologia ENERGIA Ambiente
Veicoli leggeri per la mobilità sostenibile

13:30 **Angelo MORENO** / Associazione italiana idrogeno e celle a combustibile (H2IT)

CHIUSURA LAVORI

13:45 **COLAZIONE DI LAVORO** / Ambulacro antistante il Teatro di Corte del Palazzo Reale

15:00 **INFODESK, PRESENTAZIONE E TEST DRIVE DI VEICOLI A IDROGENO:**
Toyota Mirai, Hyundai IX35, Atena HyScooter, Atena HyBike

PLENARY SESSION

LOCATION: **Teatrino di Corte, THE ROYAL PALACE OF NAPLES**

13TH
D E C E M B E R

STRATEGIES AND LONG TERM PLANS FOR THE DEPLOYMENT OF HYDROGEN AND FUEL CELL TECHNOLOGIES

The world is moving forward: the Paris agreement entered into force very rapidly, most of the world wide countries started to accelerate actions for climate mitigation ("greening" incumbent technologies) and for reduction of harmful pollution (cleaner technologies and fuels)

- 08:30 | REGISTRATION
- 09:00 | WELCOME AND OPENING CERIMONY
Angelo MORENO / President of H2IT – Italian Hydrogen and Fuel Cell Association and EFC17 Chairman
Vincenzo DE LUCA / President of Campania Region
- 09:15 | **PIERO LUNGI BEST PAPER AWARDS CERIMONY**
- 09:45 | **Bart BIEBUYCK** / Executive Director FCH2 JU - Fuel Cells and Hydrogen 2 Joint Undertaking
Achievements of FCH2 JU, priorities and future perspectives towards the 9th Framework Programme
- 10:00 | **Carlos NAVAS** / Project Manager FCH2 JU - Fuel Cells and Hydrogen 2 Joint Undertaking
Status of the European Regions Initiatives
- 10:15 | **Jose FERNANDEZ GARCIA** / DG MOVE, European Commission
Status of art of AFI Directive 2014/94/UE, the role of H2&FC in the 2nd Mobility Package and new funding instruments for sustainable transport systems
- 10:30 | **Tim KARLSSON** / Executive Director IPHE – International Partnership for Hydrogen and Fuel Cells in the Economy
Worldwide strategies and visions from IPHE perspective
- 10:45 | **Alicia MIGNONE** / Committee on Energy Research and Technology (CERT) della International Energy Agency (IEA)
Worldwide strategies and visions for Fuel Cells and Hydrogen applications from CERT – IEA perspective
- 11:00 | **COFFEE BREAK**
- 11:30 | **Mary-Rose DE VALLADARES** / IEA Hydrogen Technology Collaboration Programme (TCP)
IEA Hydrogen Vision and R,D&D: Current perspectives, future prospects
- 11:45 | **Angelo MORENO** / MH2IT: Mobilità Idrogeno Italia
The status of the National Hydrogen Implementation Plan
- 12:00 | **Valeria FASCIONE** / Councilor Campania region, Start up innovation and internationalization
The Memorandum of Understanding (MOU) between FCH JU and European Regions to integrate fuel cell and hydrogen technologies into their path towards decarbonisation: the position of Campania Region
- 12:15 | **Klaus BONHOFF** / Director of NOW - Germany
The German National Implementation Plan: achievements and future perspectives
- 12:30 | **Jonghee HAN** / Director of National Agenda Research Division, KIST, South Korea
Strategies and long term plans for the deployment of hydrogen and fuel cell technologies in Korea
- 12:45 | **Eiji OHIRA** / Director of Fuel Cell and Hydrogen Technology Group, New Energy Technology Dept., NEDO, Japan
Strategies and long term plans for the deployment of hydrogen and fuel cell technologies in Japan
- 13:00 | **Tyson ECKERLE** (invited) / Government of California
Strategies and long term plans for the deployment of hydrogen and fuel cell technologies in California and greater US
- 13:15 | **Angelo MORENO**
Round table and conclusions
- 13:30 | **LUNCH**
- 15:00 | **PRIVATE GUIDED TOUR IN THE MUSEUM OF THE ROYAL PALACE OF NAPLES**

PARALLEL SESSION #1

LOCATION: **HOTEL ROYAL CONTINENTAL**

14TH
D E C E M B E R

SESSION 1a / Catalysis

LOCATION: MIRABILIS I

- | | | |
|---------------|---|---|
| 09:00 > 09:20 | + | EFC17238 / Cho Jinwon
Role of Strain and Ligand Effect in H ₂ Production from HCOOH Decomposition on Bimetallic Pd/M (M Late Transition FCC Metals) Alloys |
| 09:20 > 09:40 | + | EFC17052 / Vita Antonio
Intensifying N-Dodecane Steam Reforming Unit With Monolith Catalyst |
| 09:40 > 10:00 | + | EFC17229 / Michel Vilasi
Investigation Of The Surface Reactivity Of Inconel 625 Prepared By Additive Manufacturing |
| 10:00 > 10:20 | + | EFC17039 / Ruocco Concetta
Oxidative Steam Reforming of ethanol in a fluidized bed over CeO ₂ -SiO ₂ supported catalysts |

SESSION 1b / European Fuel Cells & Hydrogen Projects I

LOCATION: MIRABILIS II

- | | | |
|---------------|---|--|
| 09:00 > 09:20 | + | EFC17186 / Antoni Laurent
Fuel Cells & Hydrogen Research in Europe |
| 09:20 > 09:40 | + | EFC17148 / Gandiglio Marta
DEMOSOFC Project: Results From an Industrial-Size Biogas-Fed SOFC |
| 09:40 > 10:00 | + | EFC17069 / Campanari Stefano
DEMCOPEM-2MW cogenerative PEM fuel cell unit for hydrogen recovery from chlor-alkali industry in China: first months of operation and preliminary data analysis |
| 10:00 > 10:20 | + | EFC17143 / Valentine Willmann
Fuel Cell Electric buses in Europe: From demonstration to large scale deployment: Results of the HighVLOcity – 3Emotion projects |

SESSION 1c / Modelling PEM I

LOCATION: SANTA LUCIA

- | | | |
|---------------|---|--|
| 09:00 > 09:20 | + | EFC17235 / Beale Steven
Analytical and experimental validation of a polymer electrolyte fuel cell computational model |
| 09:20 > 09:40 | + | EFC17267 / Andersson Martin
Multiscale multiphase simulations at the gas channel/gas diffusion layer interface inside polymer electrolyte fuel cells |
| 09:40 > 10:00 | + | EFC17058 / Baricci Andrea
Modelling analysis of degradation in low Platinum Polymer Electrolyte Membrane Fuel Cells |
| 10:00 > 10:20 | + | EFC17142 / Guarnieri Massimo
A Stochastic Approach for facing PEMFC material identification |
| 10:20 > 10:40 | + | COFFEE BREAK |

PARALLEL SESSION #2

LOCATION: **HOTEL ROYAL CONTINENTAL**

14TH
D E C E M B E R

SESSION 2a / Fuel Cell Testing I

LOCATION: MIRABILIS I

- | | |
|---------------|--|
| 10:40 > 11:00 | EFC17008 / Vladikova Daria
Advanced Testing and Analysis of SOFC Degradation |
| 11:00 > 11:20 | EFC17152 / Ploner Alexandra
Steam - Stressor For Accelerated Lifetime Testing Of Sofcs |
| 11:20 > 11:40 | EFC17175 / Piccardo Paolo
Electrochemical performances and post-operational characterization of a segmented SOFC operated under load for 15k hours |
| 11:40 > 12:00 | EFC17261 / Silva Mosqueda Dulce Maria
Performance And Degradation Phenomena Of A Planar It-SoFc Under Critical Operating Conditions |

SESSION 2b / European Fuel Cells & Hydrogen Projects II

LOCATION: MIRABILIS II

- | | |
|---------------|--|
| 10:40 > 11:00 | EFC17056 / CLeites Keno
SchIBZ – large fuel cell hybrid systems SchIBZ – large fuel cell hybrid systems |
| 11:00 > 11:20 | EFC17045 / Aricò Antonino Salvatore
High Performance PEM Electrolyser for Cost-effective Grid Balancing Applications - HPEM2GAS |
| 11:20 > 11:40 | EFC17221 / Mulone Vincenzo
FCPowered RBS: a Demonstration Project to Supply Telecom Stations through FC Technology.
Data Analysis of Remote Sites and System Optimization |
| 11:40 > 12:00 | EFC17283 / Ubertini Stefano
Automotive Derivative Energy System: 2 Years In |

SESSION 2c / Modelling PEM II

LOCATION: SANTA LUCIA

- | | |
|---------------|---|
| 10:40 > 11:00 | EFC17047 / Santamaria Anthony
Metal Foam Filled Cooling Channels in Polymer-Electrolyte Fuel Cell Systems |
| 11:00 > 11:20 | EFC17040 / Messaggi Mirko
Modeling analysis of flow field geometrical features in polymer electrolyte fuel cells porous media |
| 11:20 > 11:40 | EFC17010 / Li Shian
Effect of the gas diffusion layer deformation on the transport processes and performance of a PEM fuel cell with interdigitated flow channels |
| 11:40 > 12:00 | EFC17244 / Aydın Özgür
Concentration Gradient of Reactants Extending from Reaction Sites Inward the Inlet Periphery |

PARALLEL SESSION #3

LOCATION: **HOTEL ROYAL CONTINENTAL**

14TH
D E C E M B E R

SESSION 3a / Fuel Cell Testing II

LOCATION: MIRABILIS I

- | | | |
|---------------|---|--|
| 12:10 > 12:30 | + | EFC17139 / Hack Jennifer
A multi-scale approach to polymer electrolyte fuel cell characterisation |
| 12:30 > 12:50 | + | EFC17210 / Giacoppo Giosue
An Insight Into The Current Density Distribution Of A Pem Fuel Cell Working At Different Operative Conditions |
| 12:50 > 13:10 | + | EFC17137 / Bharti Abha
In-situ diagnosis of proton exchange membrane fuel cell performance with Pt/TiO ₂ cathode catalyst |

SESSION 3b / European Fuel Cells & Hydrogen Projects III

LOCATION: MIRABILIS II

- | | | |
|---------------|---|--|
| 12:10 > 12:30 | + | EFC17219 / Linhart Andreas
Design 2 Service project – Towards improved serviceability and durability of micro CHP and supplemental power systems |
| 12:30 > 12:50 | + | EFC17191 / Jedicke Olaf
NET-Tools, an e-Infrastructure to compile and provide e- Learning Content to the FCH Community |
| 12:50 > 13:10 | + | EFC17034 / Iordache Ioan
HyLAW – a project designed to reduce vulnerabilities of the hydrogen economy in Europe |

SESSION 3c / Modelling Operation

LOCATION: SANTA LUCIA

- | | | |
|---------------|---|--|
| 12:10 > 12:30 | + | EFC17028 / Ubertaini Stefano
Analysis of the performances of a fuel cell CHP system under different energy demand and climate scenarios |
| 12:30 > 12:50 | + | EFC17281 / Botta Giulia
Safe Operating Range, Dynamic Analysis, And Tuning Of The Temperature and Reactant Utilization Control For Solid Oxide Cells |
| 12:50 > 13:10 | + | EFC17109 / Kang Sanggyu
Dynamic modeling of a solid oxide electrolyser cell System for distributed energy storage |
| 13:10 > 14:30 | + | LUNCH |
| 13:40 > 14:30 | + | POSTER SESSION & EXHIBITION |

PARALLEL SESSION #4

LOCATION: **HOTEL ROYAL CONTINENTAL**

14TH
D E C E M B E R

SESSION 4a / Fuel Cell Testing III

LOCATION: MIRABILIS I

- | | | |
|---------------|---|--|
| 14:30 > 14:50 | + | EFC17062 / Rabissi Claudio
Local optimization of PEMFC and DMFC catalyst layers components for improved durability |
| 14:50 > 15:10 | + | EFC17245 / Calabriso Andrea
Assessment of a methodology for the control of methanol concentration in a Direct Methanol Fuel Cell |
| 15:10 > 15:30 | + | EFC17005 / Pilinski Nadine
Effect of Acid Loss on HT-PEM Fuel Cell Degradation |

SESSION 4b / Energy Storage I

LOCATION: MIRABILIS II

- | | | |
|---------------|---|--|
| 14:30 > 14:50 | + | EFC17019 / Grüger Fabian
Optimized Electrolyzer Operation: Employing Forecasts of Wind Energy Availability, Hydrogen Demand and Electricity Prices |
| 14:50 > 15:10 | + | EFC17118 / Joris Proost
State-of-the-art CAPEX data for water electrolyzers, and their impact on renewable hydrogen price settings |
| 15:10 > 15:30 | + | EFC17144 / Guarnieri Massimo
Stack-based technologies for energy storage: a comparative assessment |

SESSION 4c / Modelling SOFC

LOCATION: SANTA LUCIA

- | | | |
|---------------|---|--|
| 14:30 > 14:50 | + | EFC17018 / Conti Bruno
Detailed physical modelling of Solid Oxide Fuel Cells |
| 14:50 > 15:10 | + | EFC17158 / Zhu Jiang
Effects of material structure evolutions on the performance degradation of SOFC |
| 15:10 > 15:30 | + | EFC17159 / Lin Zijiang
3D multiphysics modeling based mechanical stress analysis of planar SOFC stacks |

PARALLEL SESSION #5

LOCATION: **HOTEL ROYAL CONTINENTAL**

14TH
D E C E M B E R

SESSION 5a / Fuel Cell Testing IV

LOCATION: MIRABILIS I

- | | |
|---------------|--|
| 15:40 > 16:00 | EFC17132 / Hodnik Nejc
High performance of scaled-up PtCu ₃ /C oxygen reduction electrocatalyst: an XPS and MEA study |
| 16:00 > 16:20 | EFC17074 / Bettermann Hans
Photoacoustic Spectroscopy - A Tool for Gas Measurements in PEM Fuel Cells |
| 16:20 > 16:40 | EFC17061 / Siegwart Muriel
Neutron dark field imaging of dry and water filled gas diffusion layers |

SESSION 5b / Energy Storage II

LOCATION: MIRABILIS II

- | | |
|---------------|---|
| 15:40 > 16:00 | EFC17145 / Proost Joris
Power-to-Hydrogen and Hydrogen-to-X: latest results of Task 38 of the IEA Hydrogen Implementing Agreement |
| 16:00 > 16:20 | EFC17263 / Toro Claudia
Sabatier Based Power-To-Gas System: Design And Thermoeconomic Analysis |
| 16:20 > 16:40 | EFC17021 / Hansen John Bøgild
Operating experiences with a 50 kW SOEC unit integrated with a catalytic methanation unit for biogas upgrading. |

SESSION 5c / Modelling Alternative Fuel Cells

LOCATION: SANTA LUCIA

- | | |
|---------------|--|
| 15:40 > 16:00 | EFC17048 / Tanaka Yohei
Numerical analysis of HT steam electrolysis with an SOEC to separate gas conversion impedance from overall impedance for proper estimation of genuine cell performance |
| 16:00 > 16:20 | EFC17073 / Grimler Henrik
Modelling Limiting Processes of an Anion-exchange Membrane Fuel Cell |
| 16:20 > 16:40 | EFC17218 / Polverino Pierpaolo
Energetic analysis of HHO injection in internal combustion engine systems |

PARALLEL SESSION #6

LOCATION: **HOTEL ROYAL CONTINENTAL**

14TH
D E C E M B E R

SESSION 6a / Fuel Cell Testing V

LOCATION: MIRABILIS I

- | | |
|---------------|---|
| 16:50 > 17:10 | EFC17181 / Jang Hansaem
Operational strategy to achieve predictable and sustaining power performance in direct carbon fuel cells |
| 17:10 > 17:30 | EFC17078 / Motylinski Konrad
Experimental study of fuel recirculation in solid oxide fuel cell integrated with water removal unit |
| 17:30 > 17:50 | EFC17090 / Ihringer Raphael
Short stack kit for the Open Flange™ Set-Up using soft mica seals |

SESSION 6b / Solid Oxide Electrolysis

LOCATION: MIRABILIS II

- | | |
|---------------|---|
| 16:50 > 17:10 | EFC17120 / Thomann Olivier
Effect of load cycle profiles on degradation rate of a Solid Oxide Electrolyser stack |
| 17:10 > 17:30 | EFC17255 / Jensen Søren Højgaard
Pressurized Reversible Operation of a 30-cell Solid Oxide Cell Stack using Carbonaceous Gasses |
| 17:30 > 17:50 | EFC17070 / Mastropasqua Luca
Solar-assisted reversible solid oxide cell (rSOC) integrated with heat-pipes for electric energy storage and H ₂ production: technical assessment |

SESSION 6c / Materials PEM

LOCATION: SANTA LUCIA

- | | |
|---------------|--|
| 16:50 > 17:10 | EFC17032 / Paritosh Kumar Mohanta
Feasibility Of Doped Metal Oxides And Graphitized Carbon As A Stable Cathode Catalyst Support For Low Temperature Polymer Electrolyte Membrane Fuel Cell |
| 17:10 > 17:30 | EFC17013 / Rolf Hempelmann
Hierarchical structured foams of porous nitrogen-doped carbon for PEM fuel cells |
| 17:30 > 17:50 | EFC17094 / Bisello Andrea
Durability Issues in Precious-Group-Metal Free PEMFC Cathodes |
| 17:50 > 19:00 | COFFEE BREAK & POSTER SESSION & EXHIBITION |

PARALLEL SESSION #7

LOCATION: **HOTEL ROYAL CONTINENTAL**

15TH
D E C E M B E R

SESSION 7a / Fuel Cell Testing VI

LOCATION: MIRABILIS I

- | | |
|---------------|--|
| 09:00 > 09:20 | EFC17230 / Dushina Anastasia
Evaluation of the Electrochemical Noise and Distribution of Relaxation Time for High-Temperature PEM Fuel Cells Diagnosis |
| 09:20 > 09:40 | EFC17241 / Fan Zhou
Evaluation of CO poisoning of a HT-PEM fuel cell by distribution relaxation times analysis |
| 09:40 > 10:00 | EFC17042 / Ritzberger Daniel
Harmonic signal estimation in the time domain for on-line electrochemical impedance spectroscopy |
| 10:00 > 10:20 | EFC17135 / Pivac Ivan
Low-frequency EIS intercept as a diagnostic tool for PEM fuel cells degradation |

SESSION 7b / Modelling Systems

LOCATION: MIRABILIS II

- | | |
|---------------|---|
| 09:00 > 09:20 | EFC17065 / Cuneo Alessandra
Economical Optimization of an Hybrid System GT Size with SOFC Stack Degradation |
| 09:20 > 09:40 | EFC17187 / Rashid Kashif
Numerical Investigation for 1 kw-Class FT-SOFC System to Evaluate the Compact Size Integrated Hotbox Design |
| 09:40 > 10:00 | EFC17027 / Loreti Gabriele
Numerical modeling of an automotive derivative PEM fuel cell CHP system with selective membranes |
| 10:00 > 10:20 | EFC17029 / Facci Andrea Luigi
Numerical analysis of a CHCP system combining an absorption chiller and a low temperature PEM fuel cell |

SESSION 7c / Materials SOFC I

LOCATION: SANTA LUCIA

- | | |
|---------------|--|
| 09:00 > 09:20 | EFC17236 / Shin Sung Soo
A novel fabrication method of multiscale solid oxide fuel cell (SOFC) via electrospray deposition (ESD) method |
| 09:20 > 09:40 | EFC17106 / Holtappels Peter
Development of Redox Stable, Multifunctional Substrates for Anode Supported SOFCs |
| 09:40 > 10:00 | EFC17249 / Coppola Nunzia
Interface Diffusion In Gdco ₂ Thin Buffer Layers Sputter Deposited On Crystalline Substrates for Solid Oxide Cells Applications |
| 10:00 > 10:20 | EFC17209 / Kumar Ajay
Novel fabrication and high temperature oxidation of an ODS ferritic stainless steel alloy interconnect for SOFC |
| 10:20 > 10:40 | COFFEE BREAK |

PARALLEL SESSION #8

LOCATION: **HOTEL ROYAL CONTINENTAL**

15TH
D E C E M B E R

SESSION 8a / Transport applications I

LOCATION: MIRABILIS I

- | | |
|---------------|---|
| 10:40 > 11:00 | EFC17087 / Campanari Stefano
The role of hydrogen mobility in fulfilling EU 2050 targets on GHG emissions reduction |
| 11:00 > 11:20 | EFC17059 / Higgins Scott
Demonstration of Fuel Cell Electric Bus Operation in Hawaii Volcanoes National Park |
| 11:20 > 11:40 | EFC17133 / Di Giorgio Paolo
Hydrogen based hybrid power unit for light vehicles: optimization of fuel cell management by mean of an evolved battery state of charge evaluation. |

SESSION 8b / Waste-to-energy

LOCATION: MIRABILIS II

- | | |
|---------------|--|
| 10:40 > 11:00 | EFC17122 / Gandiglio Marta
Waste to energy with an SOFC generator system - pilot plant experimentation |
| 11:00 > 11:20 | EFC17257 / Langnickel Hendrik
Operation of real landfill gas fueled solid oxide fuel cell (SOFC) using internal dry reforming |
| 11:20 > 11:40 | EFC17266 / Cavalli Alessandro
Influence of tar and HCl on SOFC anodes in Integrated Biomass Gasifier-Solid Oxide Fuel Cell Systems |

SESSION 8c / PEM Degradation

LOCATION: SANTA LUCIA

- | | |
|---------------|---|
| 10:40 > 11:00 | EFC17015 / Ota Kenichiro
Challenges of NPGM Oxide Cathode with Metal Oxide Support for Advanced PEFCs |
| 11:00 > 11:20 | EFC17091 / Acevedo Gomez Yasna
Performance recovery from NO ₂ exposure in PEM fuel cells |
| 11:20 > 11:40 | EFC17017 / Jung Aeri
Hydrogen Crossover Phenomena In Polymer Electrolyte Membrane Water Electrolyzers |

PARALLEL SESSION #9

LOCATION: **HOTEL ROYAL CONTINENTAL**

15TH
D E C E M B E R

SESSION 9a / Transport applications II

LOCATION: MIRABILIS I

11:50 > 12:10	+	EFC17103 / Taccani Rodolfo Performance analysis of fuel cells utilization in marine applications
12:10 > 12:30	+	EFC17213 / Jafarzadeh Sepideh Potential for fuel cell-driven passenger ships in Norway
12:30 > 12:50	+	/

SESSION 9b / Energy Storage III

LOCATION: MIRABILIS II

11:50 > 12:10	+	EFC17262 / Perez Trujillo Juan Pedro Reverse Operation Of A Single Molten Carbonate Fuel Cell: Numerical And Experimental Comparison
12:10 > 12:30	+	EFC17279 / Turchetti Luca Molten carbonate steam electrolysis powered with concentrating solar energy: a first evaluation of the potential of a new process for renewable hydrogen production
12:30 > 12:50	+	EFC17237 / Kono Tatsuoki Hydrogen Energy Supply System by using Renewable Energy Sources

SESSION 9c / Polymer Membranes

LOCATION: SANTA LUCIA

11:50 > 12:10	+	EFC17081 / Özoğul Buğçe Improving the High Temperature Performances of Nafion-Based Membranes with Silica-Based Mesostructured Fillers for H ₂ /O ₂ PEM Fuel Cells
12:10 > 12:30	+	EFC17082 / Karaeyvaz Mukaddes Candan Novel High Performance sPES/SCMS and sPEEK/SCMS Composite Membranes for High Temperature H ₂ /O ₂ PEM Fuel Cells
12:30 > 12:50	+	EFC17172 / Hosseinpour Milad Significantly improving the performance of the DMFCs by Graphene Oxide coated multi-layer Nafion membranes
13:00 > 14:30	+	LUNCH
13:30 > 14:30	+	POSTER SESSION & EXHIBITION

PARALLEL SESSION #10

LOCATION: **HOTEL ROYAL CONTINENTAL**

15TH
D E C E M B E R

SESSION 10a / Industrial applications

LOCATION: MIRABILIS I

- | | | |
|---------------|---|---|
| 14:30 > 14:50 | + | EFC17200 / Kuntke Philipp
Current driven ammonium recovery |
| 14:50 > 15:10 | + | EFC17189 / Haneda Takahide
Development of PEFC power generation system for by-product hydrogen produced from a caustic soda plant |
| 15:10 > 15:30 | + | EFC17105 / Spinelli Maurizio
Preliminary design of a MW-class demo system for CO ₂ capture with MCFC in a university campus cogeneration plant |

SESSION 10b / Materials SOFC II

LOCATION: MIRABILIS II

- | | | |
|---------------|---|---|
| 14:30 > 14:50 | + | EFC17242 / Yamaguchi Toshiaki
Development of high performance proton-conducting electrochemical cell for intermediate temperature application |
| 14:50 > 15:10 | + | EFC17260 / Navarrete Laura
Development of advanced cathodes for IT-SOFC |
| 15:10 > 15:30 | + | EFC17004 / Donazzi Alessandro
Kinetic investigation of the Oxygen Reduction Reaction on LSCF-GDC composite cathodes for use in IT-SOFCs |

SESSION 10c / PEM Catalysts

LOCATION: SANTA LUCIA

- | | | |
|---------------|---|---|
| 14:30 > 14:50 | + | EFC17033 / Busby Yan
Versatile Catalyst Materials Fabrication by Low-Pressure Plasma Treatments |
| 14:50 > 15:10 | + | EFC17156 / Lidasan Jun Jeffri
Nanostructured nickel hydroxide as anode catalyst for direct ethanol fuel cells |
| 15:10 > 15:30 | + | EFC17043 / Kúš Peter
Thin-film magnetron sputtered catalysts supported on high-surface sublayers for PEM water electrolysis |

PARALLEL SESSION #11

LOCATION: **HOTEL ROYAL CONTINENTAL**

15TH
D E C E M B E R

SESSION 11a / Residential Applications

LOCATION: MIRABILIS I

- | | |
|---------------|--|
| 15:40 > 16:00 | EFC17124 / Zomparelli Federico
Life Cycle Assessment (LCA) of a residential SOFC system for energy production |
| 16:00 > 16:20 | EFC17202 / Cinti Giovanni
Comparison of the solid oxide fuel cell system for micro CHP using natural gas with a system using a mixture of natural gas and hydrogen |
| 16:20 > 16:40 | EFC17064 / Di Marcoberardino Gioele
Economic and energy savings analysis of PEM fuel cell based micro-cogeneration systems in residential applications |

SESSION 11b / Stack Design I

LOCATION: MIRABILIS II

- | | |
|---------------|---|
| 15:40 > 16:00 | EFC17193 / Barbera Orazio
A reliable methodology for low temperature fuel cell stacks design |
| 16:00 > 16:20 | EFC17258 / D'urso Claudia
Design and testing of a monopolar configuration direct methanol fuel cell stack for portable applications |
| 16:20 > 16:40 | EFC17020 / Dohkoh Tatsuki
Improvement of high electrical efficient SOFC generator with a multi-stage SOFC system |

SESSION 11c / LEAP03 I

LOCATION: SANTA LUCIA

- | | |
|---------------|--|
| 15:40 > 16:00 | EFC17093 / Tucker David
Insights into Pressurized vs Atmospheric Solid Oxide Fuel Cell Operation |
| 16:00 > 16:20 | EFC17097 / Shadle Lawrence
Nano-Hybrids; The Effect Of Turbine Efficiency On Fuel Cell-Turbine Hybrid Performance |
| 16:20 > 16:40 | EFC17092 / Bryden Kenneth Mark
Turbine speed control in fuel cell/gas turbine hybrid system using multiple actuators |

16:40 > 17:00 — **COFFEE BREAK**

PARALLEL SESSION #12

LOCATION: **HOTEL ROYAL CONTINENTAL**

15TH
D E C E M B E R

SESSION 12a / Alternative applications

LOCATION: MIRABILIS I

- | | | |
|---------------|---|--|
| 17:00 > 17:20 | + | EFC17055 / Felix P. Lohmann
Stable High-Performance Solid Acid Fuel Cell Electrodes with minimized Catalyst Loading |
| 17:20 > 17:40 | + | EFC17174 / Kim Beom-jun
Performance Characteristics of Open Cathode PEFC stack |
| 17:40 > 18:00 | + | EFC17285 / Meyer Nico
Challenges And Solutions In The R2r Manufacturing Of The Fuel Cell Membrane Electrode Assembly |

SESSION 12b / Stack Design II

LOCATION: MIRABILIS II

- | | | |
|---------------|---|--|
| 17:00 > 17:20 | + | EFC17214 / Hollinger Adam
Electrically Conductive Polymer Composites for Injection Molding of Bipolar Plates |
| 17:20 > 17:40 | + | EFC17100 / Kim Dong Kyu
Application of platinum coated aluminum separator to passive type proton exchange membrane fuel cell |
| 17:40 > 18:00 | + | / |

SESSION 12c / LEAP03 II

LOCATION: SANTA LUCIA

- | | | |
|---------------|---|--|
| 17:00 > 17:20 | + | EFC17095 / Tucker David
Optimum SOFC Fuel Utilization for Fuel-cell/Turbine Hybrid |
| 17:20 > 17:40 | + | EFC17151 / Ferrari Mario Luigi
Turbocharged Solid Oxide Fuel Cell System: Design and Emulation |
| 17:40 > 18:00 | + | EFC17157 / Krummrein Thomas
Numerical analysis of a biogas powered hybrid MGT-SOFC power plant |
| 16:40 > 17:00 | + | COFFEE BREAK |

MICROBIAL FUEL CELL SESSION

LOCATION: **Capuana / HOTEL ROYAL CONTINENTAL**
CHAIRMEN: **Pierangela CRISTIANI / Ioannis IEROPOLOUS**

14TH
DECEMBER

9:00 > 9:20	+	EFC17268 / Lo Gorton Microbial Fuel Cells Based on Mediated Electron Transfer through the Use of Redox Polymers
9:20 > 9:40	+	EFC17256 / Cristiani Pierangela Field testing of floating microbial fuel cells for energy harvesting in aerated water and wastewaters
9:40 > 10:00	+	EFC17232 / Walter Xavier Alexis Field trial of self-stratifying membraneless microbial fuel cells: increased lighting
10:00 > 10:20	+	EFC17111 / Andrea Schievano New terracotta-based microbial fuel cells treat wastewater while providing nutrients for microalgae cultivation
10:20 > 10:40	+	COFFEE BREAK
10:40 > 11:00	+	EFC17110 / Marzorati stefania Giant Cane as Low-cost Material for Microbial Fuel Cells Architectures
11:00 > 11:20	+	EFC17166 / Theodosiou Pavlina Towards monolithically printed MFCs: A report on the development of a 3D-printable membrane electrode assembly (MEA)
11:20 > 11:40	+	EFC17080 / Quaglio Marzia New insights into microbial fuel cell based sensors: the role of fluid dynamic and material morphology
11:40 > 12:00	+	EFC17022 / Di Lorenzo Mirella Manufacturing microbial fuel cell sensors from low-cost and biodegradable materials
12:10 > 12:30	+	EFC17119 / Merino Jimenez Irene Microbial Desalination Cell Cascade
12:30 > 12:50	+	EFC17007 / Obata Oluwatosin Microbial fuel cells treating urine as a source of disinfectant: a pathogens' killing efficacy study
12:50 > 13:10	+	EFC17170 / Erable Benjamin Impact and solutions to solve the limitation of oxygen transport in biocathodes
13:10 > 14:30	+	LUNCH
13:40 > 14:30	+	POSTER SESSION & EXHIBITION
14:30 > 14:50	+	EFC17177 / Salvador Gian Paolo Nitrogen-doped carbon aerogels as electrodes for oxygen reduction in microbial fuel cells: a green approach
14:50 > 15:10	+	EFC17215 / Chiodoni Angelica Mn _x O _y decorated carbon-based cathode for ORR catalysis
15:10 > 15:30	+	EFC17188 / Mecheri Barbara Novel iron based catalyst using aminobenzimidazole and benzimidazole as organic precursor for microbial fuel cell applications
15:40 > 16:00	+	EFC17147 / Nastro Rosa Anna Biochair-cathode-based Microbial Fuel Cells and carbon metal mesh performances in Solid-Phase-MFCs fed with the Organic Fraction of Municipal Solid Waste (OFMSW).
16:00 > 16:20	+	EFC17031 / Poehere Chong Anodes for Microbial fuel cell: what does occur inside pores?
16:20 > 16:40	+	EFC17113 / Falcucci Giacomo Predicting the Electrochemical and Power Performances of Microbial Fuel Cells: a Novel Numerical Approach
16:50 > 17:10	+	EFC17046 / Emma Roubaud Optimizing hydrogen production in a microbial electrolyzer using a weak-acid solution as catholyte
17:10 > 17:30	+	EFC17198 / Izadi Paniz Microbioelectrochemical synthesis of carbohydrates from carbon dioxide reduction
17:30 > 17:50	+	EFC17276 / Espinoza Tofalos Anna Hydrocarbon removal efficiency in bioelectrochemical systems inoculated with cupriavidus matallidurans CH34
17:50 > 18:10	+	EFC17251 / Squadrito Gaetano Influence of the geometry and nature of substrate in biofilm forming by Thermotoga neapolitana
18:10 > 19:00	+	COFFEE BREAK & POSTER SESSION & EXHIBITION

GRID-CONNECTED RES PLANTS

INNOVATIVE AND HYBRID ENERGY STORAGE SOLUTIONS

LOCATION: **Giardino / HOTEL ROYAL CONTINENTAL**

14TH
DECEMBER

Organized in the framework of dissemination activities of the TVB project (CCSEB_00201 "Sviluppo di una innovativa Tecnologia integrata Volano-Batteria per l'accumulo efficiente di energia da rinnovabile per applicazioni di piccola taglia") funded by Italian Minister of Economic Development (MISE).

9:00 > 9:30	Luca CASTELLINI / Umbra Cuscinetti Welcome, Workshop introduction, TVB project presentation
9:30 > 10:00	Marc STEEN / JRC-PETTEN Energy Storage as enabler of EU Energy Policy
10:00 > 10:30	Eleonora PETROLATI / CSEA Ricerca di Sistema: energy research for everyone by everyone
10:30 > 11:00	COFFEE BREAK
11:00 > 11:30	Fabio DI NINNO / TERNA Energy storage role for grid management
11:30 > 12:00	Giorgio GRADITI / ENEA - UTTP Micro-grid
12:00 > 12:30	Andrea MICANGELI / Sapienza University of Rome / State University of New York Micro Grids Storage for Rural Communities and Industries - case studies, optimisations and interuniversity field study proposals in Africa.
12:30 > 14:30	LUNCH
14:30 > 15:00	Michael ISMAR, Stornetic GmbH Microgrid Stabilization via Dynamic Storage with DuraStor Technology
15:00 > 15:30	Guglielmo CARONTI, Fronius Italia New solutions for Storage Systems in PV plants
15:30 > 16:00	Michael ISMAR / E&MS GmbH Hydrogene storage for Power to Gas applications
16:00 > 16:30	Massimo GUARNIERI, University of Padova Vanadium Redox Flow Batteries: potentials and challenges



HIGH PERFORMANCE COMPUTING / HPC

AND OPEN PLATFORMS FOR ENERGY TECHNOLOGY MODELLING

LOCATION: **Capuana / HOTEL ROYAL CONTINENTAL**

15TH
DECEMBER

9:20 > 9:30	WELCOME AND OPENING, SCOPE OF THE WORKSHOP Stephen McPhail, ENEA (Italy)
	THE BYTES OF ENERGY TECHNOLOGY MODELLING
9:30 > 9:50	Valeria Jana Schwanitz, HVL (Norway) HPC for sustainable development data
9:50 > 10:10	Massimo Celino, ENEA (Italy) The Energy Oriented Centre of Excellence (EoCoE)
10:10 > 10:30	Steven Beale, FZJ (Germany) The Open Source Paradigm and CFD modelling
10:30 > 10:45	Santiago Badia, UPC (Spain) A highly scalable finite element framework for complex multiphysics
10:45 > 11:20	Panel of speakers + audience Debate: ICT needs for modelling energy technologies
11:20 > 11:45	COFFEE BREAK
	THE PHYSICS OF ENERGY TECHNOLOGY MODELLING
11:45 > 12:00	Xavier Granados, ICMAB (Spain) Materials research for energy devices
12:00 > 12:20	Thierry Deutsch, CEA (France) Energy storage
12:20 > 12:40	Mathias Gérard, CEA (France) Multi-scale approaches for fuel cell modelling
12:40 > 13:15	Panel of speakers + audience Debate: Common grounds in modelling energy technologies
13:15 > 14:00	LUNCH
	THE FUTURE OF ENERGY TECHNOLOGY MODELLING
14:00 > 14:20	Holger Ihssen, HZG (Germany) The European Energy Research Alliance: modelling and open source software in the different JPs
14:20 > 15:30	Panel of speakers + audience Debate: Creating a stronger EU position in terms of computational science for energy applications. Is open source software a way forward?
15:30	CLOSE OF WORKSHOP



SECONDO WORKSHOP ITALIANO SU

CELLE A COMBUSTIBILE E IDROGENO



LOCATION: **Giardino / HOTEL ROYAL CONTINENTAL**

9:00 > 9:20	APERTURA DEI LAVORI Prof. Gianni BIDINI , Università degli Studi di Perugia
9:20 > 9:40	ATENA Scarl Prof. Elio JANNELLI , Università degli Studi di Napoli Parthenope
9:40 > 10:00	Politecnico di Milano
10:00 > 10:20	Università degli Studi di Trieste
10:20 > 10:40	COFFEE BREAK
10:40 > 11:00	Università degli Studi di Genova
11:00 > 11:20	Università del Salento
11:20 > 11:40	Univesità degli Studi della Toscana
11:40 > 12:00	Università di Pisa
12:00 > 12:20	Università degli Studi di Perugia
12:20 > 12:40	CNR ITAE
12:40 > 13:00	SOLIDpower S.p.A.
13:00 > 14:30	LUNCH
14:30 > 14:50	Università di Roma Tor Vergata
14:50 > 15:10	Università degli Studi di Salerno
15:10 > 15:30	Università di Roma La Sapienza
15:30 > 15:50	FBK - Fondazione Bruno Kessler
15:50 > 16:10	ENEA
16:10 > 16:40	Tavola rotonda
16:40	COFFEE BREAK





AppliedEnergy

Authors of selected extended abstracts will be invited to submit a full paper for publication within the special issues of the International Journal of Hydrogen Energy and Applied Energy fully dedicated to EFC15