EFC 2023

European Fuel Cells and Hydrogen

PIERO LUNGHI CONFERENCE

FINAL PROGRAM

September **13**th-**15**th 2023
Capri / Italy

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Wednesday 13th September, 2023

ROOM: TEATRO

Hydrogen, a universal fitting for a clean future

9:00→ 09:30	**Antonio Garofalo** *Magnifico Rettore Università degli Studi di Napoli Parthenope* **Giorgio Graditi** *Direttore Generale ENEA* **Viviana Cigolotti** *EFC23 Chairmen*	**Welcome and Opening Ceremony**
9:30→ 10:00	**Ibrahim Dincer** *Research Excellence Chair in Clean Hydrogen Energy Technologies, Ontario Tech. University, Canada*	**On the threshold of a Hydrogen Era**
10:00→ 10:20	**Kazuyuki Imazato** *Representative Office in Europe, NEDO, Japan*	**Hydrogen and Fuel cells Initiative in Japan - Roadmap and future perspectives**
10:20→ 10:40	**Jack Brower** *Director of the National Fuel Cell Research Center (NFCRC) and Advanced Power and Energy Program (APEP), University of California, Irvine (UCI), US*	**Hydrogen and Fuel cells Initiative in US - Roadmap and future perspectives**
10:40→ 11:00	**Maged Mahmoud** *Technical Director of Regional Center for Renewable Energy and Energy Efficiency (RCREEE)*	**Hydrogen strategies in the Southern and Eastern Mediterranean Countries**
11:00→ 11:30	**COFFEE BREAK**	
11:30→ 11:50	**Mirela Atanasiu** *Head of Unit of Operations and Communication Clean Hydrogen Partnership,Director ad interim Clean Hydrogen Partnership*	**CH2 JU Initiatives and future perspectives for R&D on H2 in Europe**
11:50→ 12:10	**Aristide Fausto Massardo** *Coordinator Horizon Europe project "JUST-GREEN AFRH2ICA", Chairholder UNESCO Chair on Innovative Sustainable Clean Energy, Università di Genova, Genova, Italia*	**Green Hydrogen: mutual benefit of sustainable development for Europe and Africa**
12:10→ 12:30	**Luigi Crema** *President of Hydrogen Europe Research*	**Implementing the hydrogen transition in Europe: status and objectives of the research sector**
12:30→ 13:30	**Round table "Hydrogen in the Mediterranean"** *Moderator: Stephen McPhail, KIWA*	
13:30→ 13:40	**Closing Remarks**	
13:40 → 14:30	**LUNCH**	

Wednesday 13th September, 2023

	ROOM: TEATRO ICE 204 Combustion in Hydrogen Fueled Engines	ROOM: DONNA LUCIA ICE 605 Battery and Energy Storage Systems for Electric Mobility
14:30 → 14:50	2023-24-0062 Numerical Modeling of Hydrogen Combustion Using Preferential Species Diffusion, Detailed Chemistry and Adaptive Mesh Refinement in Internal Combustion Engines	2023-24-0151 "Second-Life of Electric Vehicle Batteries from a Circular Economy Perspective: A Review and Future Direction"
14:50 → 15:10	2023-24-0063 Thermodynamics of Lean Hydrogen Combustion by Virtual Investigations on a Single-Cylinder Engine with Port Fuel Injection and Pre-Chamber Ignition	2023-24-0166 "Optimized Control Strategy for Inductor-based Cell Equalizers"
15:10 → 15:30	2023-24-0064 CFD Analysis of the Injection Strategy of a Dual Fuel Compression Ignition Engine Supplied with Hydrogen	2023-24-0170 "LCA and LCC of a Li-ion Battery Pack for Automotive Application"
15:30 → 15:50	2023-24-0069 Numerical Analysis of Hydrogen Injection and Mixing in Wankel Rotary Engines	2023-24-0161 "Improving the Feasibility of Electrified Heavy-Duty Truck Fleets with Dynamic Wireless Power Transfer"
15:50 → 16:20	COFFEE BREAK	
	ROOM: TEATRO ICE 605 Battery and Energy Storage Systems for Electric Mobility	ROOM: CAPRI ICE302 Alternative and Advanced Fuels
16:20 → 16:40	2023-24-0163 "Co-Simulation Framework for Electro-Thermal Modeling of Lithium-Ion Cells for Automotive Applications"	2023-24-0096 Efficiency Optimized Engine Operation with CO2 Neutral Fuels through Thermodynamic Loss Calculation and Model-Based Fuel Detection
16:40 → 17:00	2023-24-0153 "Numerical Modelling and Experimental Validation of the Thermal Behavior of Li-ion Batteries for EVs Applications"	2023-24-0092 Automated Kinetic Mechanism Evaluation for e-Fuels Using SciExpeM: The Case of Oxymethylene Ethers
17:00 → 17:20	2023-24-0154 "Model-Based Energy Consumption Optimization of a Twin Battery Concept Combining Liquid and Solid-State Electrolyte Cells"	2023-24-0098 1-D Numerical Model of a Spark Ignition Engine Fueled with Methanol for Off-Grid Charging Stations
17:20 → 17:40	2023-24-0152 "Thermal Performance of a 48V Prismatic Lithium-Ion Battery Pack Under WLTC Driving Cycles with a Liquid Cooling System"	
17:40	END OF THE CONFERENCE DAY 1	

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Thursday 14th September, 2023

	ROOM: CAPRI Road Transport		ROOM: DONNA LUCIA Hydrogen for decarbonizing different applications I	
9:00→ 9:40	KEYNOTE **Prof. Giorgio Rizzoni** *The Ohio State University College of Engineering*	**Electricity and transportation: batteries or hydrogen? …Or both**	KEYNOTE **Prof. Dr. Stefano Campanari** *Politecnico di Milano*	**The hydrogen role in the Italian energy system for Net-Zero CO2**
9:40 → 10:00	**Dr. Patrick Fortin** *SINTEF*	**Understanding Charge, Mass, and Heat Transfer in Fuel Cells for Transport Applications – Insights from the CAMELOT Project**	**Dr. Francesco Gracceva** *ENEA*	**Assessing the relative importance of hydrogen for a decarbonized Italian energy system through a model based scenario analysis**
10:00 → 10:20	**Dr. Andrea Altomonte** *University of Naples Parthenope*	**A comprehensive experimental investigation on the fuel cell powertrain of a yard tractor for sustainable port handling operations**	**Dr. Vittoria Battaglia** *University of Naples Parthenope*	**Planning the role of hydrogen in the Campania region smart energy transition**
10:20 → 10:40	**Dr. Giuseppe Anaclerio** *Politecnico Bari*	**Development of a procedure for mixture formation analysis for H2 DI ICEs**	**Claudio Carbone** *ENEA*	**Economic and environmental life cycle assessment of diesel, natural gas, biomethane, electric and hydrogen bus systems for extra urban public transportation**
10:40 → 11:10	**COFFEE BREAK**			

	ROOM: CAPRI ICE 204 Combustion in HydrogenFueled Engines		ROOM: DONNA LUCIA Waterborne transport I		ROOM: ROTONDA A Bioelectrochemical systems	
11:10 → 11:30	**2023-24-0077** **Hydrogen ICE Combustion Challenges**		**Cristina Di Maria** *UNI Ente Italiano di Normazione*	**On the use of ecosystemic knowledge approach for the definition of new guidelines for hydrogen as maritime fuel**	**Prof. Ioannis Ieropoulos** *University of Southampton*	**Bioelectrochemical Systems – from fundamentals in robotics to real world applications**
11:30 → 11:50	**Oral Only 23ICE-0556** **Overview of Hydrogen Combustion using Westport Fuel Systems' HPDI™ Technology**		**Jyrki Mikkola** *VTT Technical Research Centre of Finland Ltd*	**FLAGSHIPS – Zero Emission Vessels for European Rivers**	**Pierangela Cristiani** *RSE - Ricerca sul Sistema Energetico*	**Optimization of ternary Biochar-Copper-Hydroxyapatite multicomposites composition to be used as cathodes for bioelectrochemical power to gas**
11:50 → 12:10	**2023-24-0075** **Efficiency-Biased Design of an H2-Fueled Internal Combustion Engine for Heavy and Challenging Applications**		**Dr. Athanasios Stubos** *NCSR Demokritos*	**SHIPFC: A European project for green shipping**	**Gabriele Soggia** *Università degli Studi di Milano*	**Bioelectrochemical power-to-methane approach in double pot bioreactors**
12:10 → 12:30	**Oral Only 23ICE-0278** **Challenges and Opportunities in developing a Hydrogen High Specific Power SCE in the roadmap towards zero net GHG**		**Dr.Mike Kuznetsov** *Karlsruhe Institute of Technology*	**Enhancing safety of liquid and vaporized hydrogen transfer technologies in public areas for mobile applications**	**Rosanna Nastro** *University of Naples "Parthenope"*	**CO 2 capture by Ralstonia eutropha in Bioelectrochemical Systems (BESs) under different operational conditions**
	ROOM: CAPRI ICE 204 - Combustion in Hydrogen Fueled Engines		ROOM: DONNA LUCIA Waterborne transport II			
12:30 → 12:50	**2023-24-0065** **Conversion of a Small Size Passenger Car to Hydrogen Fueling: Focus on Vehicle Dynamics and ECU Remapping Requirements**		**Giovanni Di Ilio** *University of Naples Parthenope*	**Towards the design of a hydrogen-powered ferry for zero-emissions passenger transport**		
12:50 → 13:10			**Giaime Niccolo Montagna** *Università di Genova*	**BIIM - Design and development of an electric vessel equipped with Salt Battery, PEMFC and Metal Hydride Storage**		
13:10 → 13:30			**Prof.Rodolfo Taccani** *Università degli Studi di Trieste*	**Analysis of on board liquid hydrogen cold energy utilization in ship fuel cells power plants**		
13:30 → 14:30	**LUNCH**					

Thursday 14th September, 2023

	ROOM: TEATRO Hydrogen for decarbonizing different applications II		ROOM: CAPRI PEM Electrolysers		ROOM: DONNA LUCIA Waterborne transport III	
14:30 → 14:50	**Keynote** **Prof. Dr. Davide Bonalumi** *Politecnico di Milano*	**The Carbon Footprint of Hydrogen Produced with State-of-the-Art Renewable Electricity in Italy Using Life Cycle Assessment Methodology**	**Dr. Antonino Salvatore Aricò** *CNR-ITAE*	**ADVANCEPEM project: A cost-effective and pressurized green hydrogen production by PEM water electrolysis**	**Dr. Simona Di Micco** *University of Naples Parthenope*	**Preliminary Techno-economic assessment on small scale Methanol based-Solid Oxide Fuel Cell system for maritime application**
14:50 → 15:10	**Dr. Martin Andersson** *Lund University*	**Hydrogen in a future energy system – Business models and application in the transport sector**	**Haeseong Shin** *Seoul University*	**Dynamic simulation of PEM water electrolysis system with detailed 2D stack model**	**Si Woong Kim** *Seoul University*	**Dynamic modeling of a solid oxide fuel cell system integrated with absorption chiller for ship propulsion**
15:10 → 15:30	**Dr. Francesco Demetrio Minuto** *Politecnico di Torino*	**Techno-economic Analysis and Optimization of Hybrid Energy Storage Systems for Decarbonization in Energy-Intensive Industries**	**Dr. Stefania Siracusano** *Italian National Research Council - Advanced Energy Technology Institute "Nicola Giordano" CNR-ITAE*	**A cost-effective green hydrogen production by proton exchange membrane water electrolysis (PEMWE)**	**Dr. Massimo Rivarolo** *Università degli Studi di Genova*	**A multi-criteria design tool for performance comparison of innovative energy systems for maritime sector**
15:30 → 15:50	**Alessandro Mati** *University of Florence*	**Modelling green hydrogen systems in the decarbonization of hard-to-abate sectors: a case study on cement industry**	**Prof. Jaroslaw Milewski** *Warsaw University of Technology*	**Reversible pem fuel cell modeling: a comprehensive analysis**	**Dr. Nils Baumann** *Proton Motor Fuel Cell GmbH*	**Environmental Impacts on PEM-Fuel Cells in Maritime Application**
15:50 → 16:20	**COFFEE BREAK**					
	ROOM: TEATRO **Combined heat & power**		**ROOM: CAPRI** **Alternative Fuels**		**ROOM: DONNA LUCIA** **Hydrogen and energy storage**	
16:20 → 16:40	**Stephen McPhail** *KIWA*	**Designing for flexible use of hydrogen and natural gas: the SO-FREE project**	**Dr. Luca Pratticò** *Fondazione Bruno Kessler - FBK*	**From direct use of ammonia in solid oxide fuel cells to the next generation of ammonia fuel cell systems**	**Maria Alessandra Ancona** *Università di Bologna*	**Experimental thermal conditioning of metal hydrides canisters for hydrogen storage**
16:40 → 17:00	**Dr. Raphael Neubauer** *AVL*	**Effect of Multifuel Approach on SOFC System Performance and Architecture Requirements**	**Dr. Paolo Colbertaldo** *Politecnico di Milano*	**Reheating as an option to increase the efficiency of a novel power generation system based on ammonia oxy-combustion**	**Gabriele Scarpati** *University of Naples Parthenope*	**Thermal management strategies for a high-capacity H2 stationary storage system with metal hydride tanks**
17:00 → 17:20	**Dr. Pierpaolo Polverino** *University of Salerno*	**Innovative model-based diagnostic algorithm for leakage isolation and identification in an SOFC system for micro-CHP applications**	**Elena Rozzi** *Politecnico di Torino*	**Techno-economic assessment of deep biogas cleaning for solid oxide fuel cell application**	**Giacomo Marini** *Università di Padova*	**Vanadium Flow batteries: a path to long duration energy storage**
17:20 → 17:40	**Dr. Sergio Bruno** *DEI - Politecnico di Bari*	**Improving Energy Self-Sufficiency of a Multi-Energy System through Hydrogen Storage and Fuel Cell CHP**	**Manuel Tandl** *AVL List GmbH*	**Development of a Highly Efficient Co-SOEC-Based Power-to-Liquid Plant**	**Farhad Farajimoghadam** *Fondazione Bruno Kessler - FBK*	**A Numerical Investigation of Underground Hydrogen Storage**
17:40 → 18:40	**POSTER SESSION**					

Friday 15th September, 2023

	ROOM: TEATRO Hydrogen policies		ROOM: CAPRI Integrated hydrogen systems		ROOM: DONNA LUCIA PEM Fuel Cells I		ROOM: ROTONDA A Molten carbonate electrolysis	
9:00→ 9:20	**Keynote** **Dr. James Hinkley** *Victoria University of Wellington*	**Hydrogen as an export commodity – costs and energy retention of hydrogen carriers within the export value chain**	**Carlos Arié** *Fundacion Hidrogeno Aragon*	**Hydrogen: a storage solution of renewable energy for habitable mobile modules. life zeroenergymod project**	**Dr. Giosuè Giacoppo** *Italian National Research Council - Advanced Energy Technology Institute "Nicola Giordano" CNR-ITAE*	**An innovative infrared thermal imaging method for hydrogen leakage detection in PEM fuel cells**	**Dr. Emilio Audasso** *Korea Institute of Science and Technology*	**Molten Carbonate Reversible Cells for carbon capture**
9:20→ 9:40			**Dr. Alessandra Cuneo** *RINA Consulting*	**Hydrogen powered portable generators for the decarbonization of music festivals and outdoor events**	**Martina Butori** *KTH Royal Institute of Technology*	**Hydrogen crossover investigation at intermediate temperatures (IT) in PEMFCs**	**Silvia Lo Conte** *Università di Roma "La Sapienza"*	**Investigating the effects of operating conditions on physicochemical processes in a lab-scale molten carbonate electrolysis cell**
9:40 → 10:00	**Gaetano Squadrito** *CNR-ITAE*	**Green Hydrogen: a wider vision for policies**	**Elio Simeoni** *University of Naples "Parthenope"*	**Analysis of hydrogen/battery hybrid energy storage systems in building microgrids**	**Andraž Kravos** Faculty of Mechanical Engineering, University of Ljubljana	**Spatially Resolved Catalyst Degradation in PEMFCs Under Repetitive Start-Up and Shut-Down Operation**	**Dr. Juan Pedro Pérez Trujillo** *KTH Royal Institute of Technology*	**Analysis of an MCEC using the Distribution of Relaxation Times technique**
10:00 → 10:20	**Dr. Chiara Leggerini** *University of Study of Brescia*	**Determinants of the EU region's hydrogen technologies innovation**	**Gabriele Loreti** *UNITUS*	**Hybrid energy storage with negative carbon emission combining renewables and hydrogen technologies**	**Marcus Ringström** *KTH*	**A Coupled 2D Macro-homogenous MEA model for Proton Exchange Membrane Fuel Cells**	**Deniz Yildiz** *KTH Royal Institute of Technology, Stockholm, Sweden*	**Performance of reversible MCFC fueled by raw gas from biomass gasification**
10:20 → 10:40	**Prof. Massimiliano Cerciello** *University of Naples "Parthenope"*	**Does the Environmental Kuznets Curve Hypothesis Hold. Evidence from European countries**	**Marco Califano** *Università degli Studi di Salerno*	**Energy management control strategies addressing the rsoc degradation phenomena in a polygeneration microgrid**	**Dr. Veronica Testa** *Università di Modena e Reggio Emilia*	**Enhancement of thermophysical properties and assessment of heat-transfer by ti- and si-based nanofluids for fuel-cell cooling**	**Dr. Massimiliano Della Pietra** *ENEA*	**Experimental investigation of green hydrogen production via Molten Carbonate Electrolysers directly coupled with PV**
10:40 → 11:00	**COFFEE BREAK**						**Simone Mataloni** *ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic DevelopmentR-ITAE*	**Effect of operating conditions on molten carbonate electrolysis cell performance: experimental study**

	ROOM: TEATRO High temperature electrolysis		ROOM: CAPRI SOC materials & manufacturing		ROOM: DONNA LUCIA PEM Fuel Cells II	
11:00 → 11:20	**Francesca Panaccione** *Fondazione Bruno Kessler - FBK*	**Testing and characterization of a 5 kW SOE stack: full load, partial load and hot-standby mode analysis.**	**Prof. Dr. Elisabeth Djurado** *Grenoble Alpes University*	**Innovative nanostructured oxygen electrodes for solid oxide cells**	**Dr. Hwanyeong Oh** *Korea Institute of Energy Research*	**Development of an Operating Strategy for PEM Fuel Cell Systems based on Real-time Fault Diagnosis**
11:20 → 11:40	**Timo Roeder** *DLR - Institut für Future Fuels*	**Techno economic assessment of a concentrated solar heat supported high temperature electrolysis process using a thermal energy storage**	**Prof. Yevgeniy Naumovich** *Institute of Power Engineering*	**Characterization of Sr0.7Ce0.3MnO3-δ as Co-free oxygen electrode material for solid oxide cells**	**Chiara Pettorossi** *CEA /LITEN*	**A novel hybrid method for PEMFC systems fault diagnosis**
11:40 → 12:00	**Dr. Maria Anna Murmura** *Università di Roma "La Sapienza"*	**Numerical and experimental investigation of the effect of gas flow configuration on the performance of a solid oxide electrolyzer**	**Krystian Machaj** *Institute of Power Engineering (IEN)*	**Copper-based single and double perovskites electrodes for solid oxide cells**	**Johanna Bartlechner** *TU Wien*	**Real-time estimation of degradation in PEM fuel cells**
12:00 → 12:20	**Dr. Mariya E. Ivanova** *Forschungszentrum Juelich GmbH*	**Technological pathways to produce compressed and highly pure Hydrogen from solar power**	**Dr. Roberto Campana** *CNH2*	**Fabrication and characterization of planar electrolyte supported sofcs made by tape casting and spraying techniques**	**Zhang Peng Du** Institute of Mechanics and Mechatronics, TU Wien, Austria	**State-of-Health Observer for Polymer Electrolyte Membrane Fuel Cells**

Friday 15th September, 2023

	ROOM: TEATRO Hydrogen production I		ROOM: CAPRI Advanced Fuel Cell concepts		ROOM: DONNA LUCIA PEM Fuel Cells III	
12.30 → 12.50	**Prof. Francesco Basile** *University of Bologna*	**Hydrogen production by glycerol photoreforming over different Pt/TiO2 catalysts**	**Dr. Martin Andersson** *Lund University*	**Fibre shape effect on two-phase behaviour in gas diffusion layers and gas channels of PEMFCs – A numerical study**	**Dr Orazio Barbera** *Italian National Research Council - Advanced Energy Technology Institute "Nicola Giordano" CNR-ITAE*	**Development of an air-independent 8kW-large area fuel cell stack, manufacturing issues and influence of oxygen concentration on electrochemical performances**
12.50 → 13.10	**Dr. Alice Bertino** *Università Campus Bio-Medico di Roma*	**Continuous Bunsen reaction of the Sulfur – Iodine thermochemical cycle for the production of green H2: Experimental and Modelling**	**Dr. Marco Bogar** *Università degli Studi di Trieste*	**A unitized reversible fuel cell for in operando saxs and xas analysis for fuel cells and electrolyzers**	**Christian Antetomaso** *CNR STEMS*	**Ejector design for fuel cell and assessment on its scalability**
13-10 → 13.30	**Dohyung Jang** *Seoul University*	**Dynamic modeling and simulation of alkaline water electrolysis system**	**Raphael Ihringer** *Fiaxell Sarl*	**Multi-Flanges for intensive cell development and LCT for large cell and stack evaluation**	**Dr. Delio Casadei** *Politecnico di Milano*	**Methodology for design and optimization of straight parallel flow field channels of PEM fuel cell**
13:30 → 14:30	**LUNCH**					
	ROOM: TEATRO **Hydrogen production II**		**ROOM: CAPRI** **Hydrogen refuelling**		**ROOM: DONNA LUCIA** **Testing procedures**	**ROOM: ROTONDA** **Airborne transport**
14.30 → 14.50	**Dr. Fabiana Romano** *University of Naples "Parthenope"*	**Levelized cost of hydrogen with different water electrolysis technologies**	**Dr. Matteo Genovese** *University of Calabria*	**A Comprehensive Classification of Hydrogen Refuelling Stations: Factors and Global Comparisons**	**Dr.-Ing. Thomas Malkow** *European Commision - Joint Research Centre*	**Supporting research & innovation of hydrogen technologies through EU-wide harmonisation - developing terminology, testing protocols, test procedures and methods for performance and durability of electrolysis cells and electrolyser stacks**
						Gema Montaner Rios *DLR - TT Institut* — **Limiting factors and mitigation solutions for freezing conditions of aeronautic pemfc systems**
14.50 → 15.10	**Armando Vitale** *University of L'Aquila*	**Hydrogen enriched syngas from integration of thermochemical processes: devolatilization of softwood waste/coffee grounds pyrolysis char**	**Davide Lanni** *University of Cassino and Southern Lazio*	**Designing and sizing of a green liquid hydrogen supply chain for ship refueling**	**Prof. Daria Vladikova** *Institute For Sustainable Transition And Development, Iees - Bas*	**Accelerated stress test protocols for soc**
						Stefano Favre *Politecnico di Torino* — **Innovative thermal management systems for fuel cell on electric aircraft applications**
15:00 → 17:00	**POSTER SESSION**					
15.10 → 15.30	**Dr. Francesco Zimbardi** *ENEA*	**Ultrapure hydrogen from syngas with a composition typical of biomass gasification and conditioned in pd/ag membrane reactor**	**Antonio De Padova** *Politecnico di Torino*	**Optimizing Hydrogen Refueling Station Infrastructure for Heavy Duty Freight Transport in Italy**	**Dr. Pierpaolo Polverino** *University of Salerno*	**Analysis of testing conditions variability on ECM parameters identification from EIS measurements of SOEC stack**
						Dr. Maria Chiara Massaro **Dr. Elisa Revello** *Politecnico di Torino* — **Multiphysics Modeling for Evaluating the Efficiency of Next-Generation PEM Fuel Cells for aviation**
15.30 → 15.50			**Dr. Matteo Genovese** *University of Calabria*	**Hydrogen Refuelling Procedures and Equipment for Aviation and Maritime Sectors: A Technical Overview and Regulatory Landscape**	**Dr. Giovanni Marco Carrabba** *Politecnico di Torino*	**Accelerate Stress Testing for carbon supports using different ionomers in half-cell gas diffusion electrode setup**
						Dr. Filippo Mazzoni *Politecnico di Torino* — **Design space exploration through Liquid H2 tank preliminary sizing and Design of Experiments analysis**
15:50 → 16:20	**COFFEE BREAK**					

Friday 15th September, 2023

	ROOM: TEATRO Hydrogen production III		ROOM: CAPRI Power to gas		ROOM: DONNA LUCIA Solid Oxide Cells Testing		ROOM: ROTONDA Hydrogen Regions	
16:20 → 16:40	**Dr. Francesco Zimbardi** *ENEA*	**Production of hydrogen-rich syngas from biomass gasification by double step steam catalytic tar reforming**	**Federico Ferrari** *Università di Bologna*	**Experimental Evaluation of a Power-to-Gas System for Green Hydrogen Production**	**Giacomo Tamburrano** *Università degli Studi Guglielmo Marconi*	**Comparison of the fitting parameters of a semi-empirical polarization model applied to two anode supported Solid Oxide Fuel Cells for the determination of reaction mechanisms and kinetic parameters**	**Prof. Rodolfo Taccani** *Università degli Studi di Trieste*	**Hydrogen Valleys: a catalyst for advancing the global hydrogen value chain**
16:40 → 17:00	**Armando Vitale** *University of L'Aquila*	**Three dimensional CFD simulation of polypropylene steam gasification in a bench scale rig**	**Dr. Matteo Robino** *SNAM*	**Novel methods of testing for measurement of natural gas and hydrogen mixtures (thoth2)**	**Michele Pagliari** *Politecnico di Milano*	**Performance assessment and spectroscopic studies of Solid Oxide Fuel Cells operating with CO2-rich oxidizing streams for an innovative hybrid power cycle**	**Dr. Alessandra Cuneo** *RINA Consulting*	**TH2ICINO: Towards Hydrogen Integrated Economies in Northern Italy - Demonstrating a Replicable Micro Hydrogen Ecosystem**
17:00 → 17:20	**Dr. Andrea Fasolini** *University of Bologna*	**Hydrogen production by cellulose aqueous phase reforming over layered double hydroxide-derived catalysts**	**Gabriele Guzzo** *University of Florence*	**Unsteady simulation of a gas pipeline considering several hydrogen blends**	**Dr. Francesca Santoni** *ENEA*	**Compositional analysis of SOFC short stacks operating under different feedstocks: experimental analysis and model-based interpretation**	**Elisabeth Sibille** *Austrian Energy Agency*	**The Viability of Climate Neutral Districts Integrating "Power on Demand" and "Power to Hydrogen" regimes: A Comparative Study of Simulation Tools**
17:20 → 17:40					**Dr. Francesco Marino** *ENEA*	**Performance Evaluation of two SOFC Stack Technologies Operated Under CHP System Relevant Conditions: Replicability Study**		
17:40	**END OF THE EFC 2023**							

POSTER SESSION

Title	Authors
Validation of Solid Oxide Fuel Cell short Stack test bench in SO -FREE Project	*Francesco Marino; Lorenzo Arcidiacono; Dr Francesca Santoni; Dr Andrea Monforti Ferrario; Antonio Scotini; Luca Simonetti; Arda Hatunoglu*
3d additive manufacturing of bipolar plates for pemfcs	*Baltasar Toharias Góngora; Christian Suárez; Gracia Cabello; Alfredo Iranzo; Javier Santaolaya; Felipe Rosa*
Hydrogen Production Systems - A Review	*Dr. Gabriele Micciché PhD; Prof. Sonia Longo; Prof. Maurizio Cellura; Dr. Marco Ferraro; Dr. Manfredi Picciotto Maniscalco*
Innovative hybrid anodic electrode for water electrolysis: synergistic combination of magnesium ferrite, hard carbon, and ruthenium oxide for enhanced electrochemical efficiency	*Eng. Pietro Colucci MRes; PhD Elisabetta Borsella EB; Prof. Dr. Heiko Lange; Dr. Livia Della Seta PhD; Dr. Claudia Paoletti PhD*
Lignin based futur catalysts for hydrogen production	*Dr. Elisabetta Borsella PhD; Prof. Dr. Heiko Lange PhD; Dr. Pietro Colucci PhD*
HT-PEFC based CCHP systems and operational strategies for data center energy savings and Net Zero achievement	*Dr. Minjin Kim PhD; Seonghyeon Ham; Yoon-Young Choi; Dr. Hwanyeong Oh; Dr. Young-Jun Sohn*
New PBI electrospun membranes for HTPEM-FCs applications	*Dr. Emmanuel De Gregorio PhD*
Crosslinked PVA films as an alternative PEM in LTFCs applications	*Dr. Carlo De Luca*
Development of Proton Conducting Cells: from Materials Development to Cell Integration	*Mariya E. Ivanova, Yuan Zeng, Laura-Alena Schäfer, Shivam Dwivedi, Olivier Guillon, Norbert H. Menzler*
CapLab: Electrochemical Cells	*Maurizio Archetti; Fiammetta Bianchi; Prof. Barbara Bosio; Dario Bove; Ivan Capestro; Lucia Cardona; Riccardo Risso*
Development of matrices for Molten Carbonate Fuel Cells	*Dr. Lucia Cardona; Dr. Dario Bove; Dr. Riccardo Risso; Dr. Maurizio Archetti; Prof. Dr. Barbara Bosio*
Forecasting of a Degradation Indicator for Proton Exchange Membrane Fuel Cells	*Sofia Mendoza*
Assessing the Competitiveness of Hydrogen Trains: Uncertainties, Sensitivity Analysis, and Regional Perspectives	*Antoine Belleguie*
Hydrogen fuel cells for decarbonizing inland waterway shipping	*PhD Massimo Rivarolo; Dr. Giaime Niccolo Montagna; Dr. Thomas Lamberti; Dr. Stefano Barberis*
A Study on Performance Analysis of PEM Fuel Cell Using Real-Time Humidity Distribution Measurement	*Young-Jun Sohn PhD; Hwanyeong Oh; Yoon-Young Choi; Minjin Kim; Won-Yong Lee*
Field experience for the application of hydrogen fuel in endothermic motors	*Gaetano Santonocito*
Feasibility analysis of green ammonia production based on solid oxide electrolysis cell technology	*Fiammetta Rita Bianchi PhD; Dario Bove PhD; Lucia Cardona; Riccardo Risso; Prof. Barbara Bosio*
Digital twin of autonomous surface marine vehicles: RAISE experience	*Valeria Boscaino; Angelo Odetti; Dario Di Cara; Giovanni Tinè; Nicola Panzavecchia; Simona Aracri; Gabriele Bruzzone; Fiammetta Rita Bianchi PhD; Barbara Bosio*
Exploring the Viability and Applications of Green Hydrogen: A Comprehensive Assessment of Project Success	*Dr. Ilaria Goglia PhD ongoing*
BIO-Hydrogen, the CNR activity in the framework of AdP-PNRR program	*Gaetano Squadrito; Massimo Trotta; Pierfrancesco Cerruti; Stefano Gandolfi; Giuliana D'Ippolito*
Zero-carbon refueling/recharging infrastructures	
CCAM, Connected Networks and Smart Infrastructure	
PROTOSTAK - Tubular proton ceramic stacks for pressurized hydrogen production	
FuelSOME - Multifuel SOFC system with Maritime Energy Vectors	