

# 77° CONGRESSO NAZIONALE ATI - BARI - 12 - 14 Settembre 2022 LA SFIDA PER IL NUOVO MODELLO ENERGETICO NAZIONALE TRA DECARBONIZZAZIONE, COMUNITÀ ENERGETICHE E DIVERSIFICAZIONE DELLE FONTI DI ENERGIA

## POLITECNICO DI BARI

<https://goo.gl/maps/hyWXRNSyZzLVVSYPA>

### PROGRAMMA

#### LUNEDI 12 Settembre 2022 - POLITECNICO DI BARI

11.00 - 12.00	Consiglio Generale ATI
12.00 - 13.00	Assemblea Generale ATI
16.00 - 20.00	Cerimonia inaugurare (si veda programma dettagliato Opening Session)

#### MARTEDI 13 Settembre 2022 - POLITECNICO DI BARI

08.30 - 10.30	SESSIONI SCIENTIFICHE SESSIONE AZIENDALE/INDUSTRIALE ENERGIA E AGRICOLTURA	EXPOSITION AZIENDE POSTER
10.30 - 11.00	Coffee Break	
11.00 - 13.00	SESSIONI SCIENTIFICHE SESSIONE AZIENDALE/INDUSTRIALE 11.00-12.30 COMUNITA' ED EFFICIENZA ENERG.	EXPOSITION AZIENDE POSTER
13.00 - 14.30	Light Lunch	
14.30 - 16.30	SESSIONI SCIENTIFICHE SESSIONE AZIENDALE/INDUSTRIALE KeyNote: La Decarbonizzazione dei Grandi Impianti Industriali - Acciaierie d'Italia Alessandro Lazari Senior Key Account Manager F24 AG - La sicurezza delle infrastrutture critiche energetiche tra protezione, resilienza e climate change	EXPOSITION AZIENDE

15.30 - 18.30	Giunta della Associazione della Fisica Tecnica Italiana	POSTER
16.30 - 17.00	Coffee Break	
17.00 - 19.00	SESSIONI SCIENTIFICHE	EXPOSITION AZIENDE POSTER
<b>21.00 - 23.00</b>	<b>ATI Event Dinner</b>	

## MERCOLEDÌ 14 Settembre 2022 - POLITECNICO DI BARI

08.30 - 10.30	<b>ASSEMBLEA Associazione Italiana delle Macchine a fluido e dei Sistemi per l'Energia e l'Ambiente</b> SESSIONI SCIENTIFICHE	EXPOSITION AZIENDE POSTER
10.30 - 11.00	Coffee Break	
11.00 - 13.00	SESSIONI SCIENTIFICHE <b>PREMIAZIONI</b>	EXPOSITION AZIENDE POSTER

### SESSIONI TECNICO-SCIENTIFICHE

## Martedì 13 settembre - Aula 1 - Gratuito

8.30-10.30 - Energia e Agricoltura - chairman RICCARDO AMIRANTE

orario	titolo
8.30	<b>Introduzione e saluti</b> Dr. Beppe Bratta - Presidente Distretto La Nuova Energia
8.35	<b>Il nuovo regolamento operativo GSE " parco agrisolare"</b> Dr. Nicola Danza - Vice Presidente Distretto La Nuova Energia
8.50	<b>Energy storage in Horizon Europe: support opportunities from European Innovation Council and the role of programme managers</b> Prof. Marco Antonio Pantaleo - Università degli studi di Bari Programme manager for energy systems, European innovation Council, European Commission
9.10	<b>Gli impianti per la produzione di energia per comparto agricolo</b> Ing. Vincenzo Loverre - Politecnico Bari

9.30	<b>Le difficoltà del comparto olivicolo a seguito della crisi del mercato dell'energia</b> Stefano Caroli - Presidente A.F.P
9.50	<b>Ottimizzazione delle tariffe per l'energia</b> Dott. Enrico Belletti - CEO Sinergia Consulting
10.10	<b>Nutrire la terra, per curare l'ambiente</b> Leonardo Delle Foglie - CEO Tersan Puglia Spa

11.00-13.00 - Comunità ed efficienza energetica - chairman GIUSEPPE STARACE

orario	titolo
11.00	<b>Evoluzione normativa e opportunità delle CER</b> Avv. Angelica Cistulli - Dirigente Responsabile Regione Puglia Sezione Transizione Energetica
11.20	<b>L'efficienza energetica in ambito residenziale</b> Ing. Arcangelo Tarantino - EGE
11.40	<b>Comunità Energetiche Opportunità e tecnologie</b> Ing. Antonio Sacchetti - CEO TERA
12.00	<b>Solare termico e relative opportunità</b> Mario Gianelli - CEO CMG Solari
12.20	<b>Comunità energetiche rinnovabili: procedure attuative e casi pratici</b> Dott. Luca Calogiuri - Direttore Commerciale Efficientia
12.40	<b>Progetto Comunità Energetiche dei Comuni dei Monti Dauni</b> Daniele Borrelli - Direttore GAL Meridaunia

14.30-16.30 - La Decarbonizzazione dei Grandi Impianti Industriali - Acciaierie d'Italia - chairman ANTONIO FICARELLA

orario	titolo
14.30 - 15.30	<b>La Decarbonizzazione dei Grandi Impianti Industriali - Acciaierie d'Italia</b>
15.30 - 16.30	<b>La sicurezza delle infrastrutture critiche energetiche tra protezione, resilienza e climate change</b> Alessandro Lazari Senior Key Account Manager F24 AG

Martedì 13 settembre - Aula 3

8.30-10.30 - Energy storage systems - chairman MICHELE BIANCHI

orario	titolo	relatore
8.30	<b>ACAES systems to enhance the self-consumption rate of renewable electricity in sustainable energy communities</b> Autori: Daniele Cocco, Fabio Licheri, Davide Micheletto, Vittorio Tola	Davide Micheletto
8.50	<b>Comunità energetiche tra opportunità e problemi civilistici e fiscali</b> Autori: Pietro Bonello	Pietro Bonello
9.10	<b>Design and partial-load operation of a reversible Solid Oxide Cell system with molten salts thermal storage</b> Autori: Marco Ficili, Paolo Colbertaldo, Giulio Guandalini, Stefano Campanari	Marco Ficili
9.30	<b>Numerical analysis of the thermal energy storage in cellular structures filled with phase-change material</b> Autori: Carlo Nonino, Andrea Diani, Luisa Rossetto	Carlo Nonino
9.50	<b>Numerical study of shell and tube latent thermal energy storage partially filled with metal foam and corrugated internal tube with external heat losses</b> Autori: Bernardo Buonomo, Oronzio Manca, Maria Rita Golia, Sergio Nardini, Renato Elpidio Plomitallo	Oronzio Manca
10.10	<b>Thermo-physical properties of paraffin wax with iron oxide nanoparticles as phase change material for heat storage applications</b> Autori: Meriem Jebali, Gianpiero Colangelo, Laia Haurie Ibarra, Imene bekri Abbes, Ana Maria Lacasta	Meriem Jebali

11.00-13.00 - Hydrogen and new fuels - chairman PIETRO DE PALMA

orario	titolo	relatore
11.00	<b>Advances in 1D thermo-fluid dynamic simulation of SI hydrogen-fueled engine</b> Autori: Alberto Ballerini, Andrea Massimo, Tarcisio Cerri, Andrea Massimo Marinoni, Angelo Onorati	Andrea Massimo Marinoni
11.20	<b>Alternative fuels for hard-to-abate sectors: a carbon intensity assessment</b> Autori: Matteo Prussi, David Chiaramonti	Matteo Prussi
11.40	<b>Ammonia as a fuel for internal combustion engines: latest advances and future challenges</b> Autori: Giuseppe Langella, Mara Dejoannon, Pino Sabia, Paolo Iodice, Amedeo Amoresano	Giuseppe Langella
12.00	<b>Analysis and performance assessment of the use of ammonia based nanoadditive for lean combustion</b> Autori: Pasquale Di Gloria, Maria Grazia De Giorgi, Ciccarella Giuseppe, Castelluzzo Gregorio, Francesca Baldassarre, Antonio Ficarella, Luciano Strafella	Antonio Ficarella

12.20	<b>CFD simulations of under-expanded hydrogen jets under high-pressure injection conditions</b> Autois: Faniryriadiazazaravaka Rahantamialisoa, Jacopo Zembi, Alessio Miliuzzi, Nasrin Sahranavardfard, Michele Battistoni	Faniry Nadia Zazaravaka Rahantamialisoa
12.40	<b>Design and experimental set-up of hydrogen based microgrid characterization of components and control system development</b> Autori: Carmine Cava, Carlotta Cosentini, Gabriele Gagliardi, Luca Cedola, Michele Vincenzo, Migliarese Caputi, Marco Aresti, Domenico Borello	Carmine Cava

14.30-16.10 - Hydrogen and new fuels - chairman MARCO TORRESI

orario	titolo	relatore
14.30	<b>Development of a novel CO2 splitting fixed-bed reactor based on copper-doped cerium oxide</b> Autori: Marco Milanese, Arturo De Risi, Andrea Manzo, Gianpiero Colangelo	Arturo De Risi
14.50	<b>Economic-Comparative Study for Carbon Neutrality During Ships Docking and in Port Operations: A Path Towards Maritime Sector Decarbonization</b> Autori: Simona Di Micco	Simona Di Micco
15.10	<b>Electrochemical Impedance Spectroscopy study on ammonia-fed Solid Oxide Fuel Cells</b> Autori: Giovanni Cinti, Arianna Baldinelli, Barelli Linda, Gianni Bidini	Giovanni Cinti
15.30	<b>Fuels systems and components for future airliners fuelled with liquid hydrogen</b> Autori: Paolo Tamburrano, Luca Romagnuolo, Emma Frosina, Giovanni Caramia, Elia Distaso, Francesco Sciatti, Adolfo Senatore, Pietro De Palma, Riccardo Amirante	Paolo Tamburrano
15.50	<b>Hydrogen production from low-quality water: challenges and perspectives</b> Autori: Arianna Baldinelli, Giovanni Cinti, Barelli Linda, Gianni Bidini	Arianna Baldinelli

17.00-19.00 - Hydrogen and new fuels - chairman ARTURO DE RISI

orario	titolo	relatore
17.00	<b>Life Cycle Analysis of a Hydrogen Valley with multiple end-users</b> Autori: Giulia Concas, Daniele Cocco, Lorenzo Lecis, Mario Petrollese	Giulia Concas
17.20	<b>Numerical characterization of hydrogen under-expanded jets: influence of the nozzle cross-section shape</b> Autori: Giuseppe Anaclerio, Tommaso Capurso, Marco Torresi, Sergio Mario Camporeale	Giuseppe Anaclerio

17.40	<b>Optimized size and schedule of the power-to-hydrogen system connected to a hydrogen refuelling station for waste transportation vehicles in Valle Camonica</b> Autori: Ferdinando Vincenti, Paride Cominini, Antonio Sorlini, Dario Furlanetto, Gianluca Valenti	Ferdinando Vincenti
18.00	<b>Process Design and Techno-Economic Assessment of biogenic CO2 Hydrogenation-to-Methanol with innovative catalyst</b> Autori: Giorgia Lombardelli, Stefano Cconsonni, Antonio Conversano, Mauro Mureddu, Alberto Pettinau, Manuele Gatti	Giorgia Lombardelli
18.20	<b>Techno-economic assesment of enhanced Biogas&amp;Power-to-SNG processes with high-temperature electrolysis integration</b> Autori: Paolo Colbertaldo, Giulio Guandalini	Paolo Colbertaldo
18.40	<b>Thermodynamic analysis of a small-scale biomethane liquefaction process</b> Autori: Paolo Tamburrano, M. Salvatori, Mario Fedele, M. Meschia, Elia Distaso, Pietro De Palma, Riccardo Amirante	Mario Fedele

## Martedì 13 settembre - Aula 5

8.30-10.30 - Sustainable energy generation systems - chairman MARCO TORRESI

orario	titolo	relatore
8.30	<b>Application of an overset grid method for the performance analysis of flapping airfoils</b> Autori: Gianmarco Lemmi, Lorenzo Pinelli, Simone Giaccherini, Michele Marconcini	Lorenzo Pinelli
8.50	<b>Biomass oxy-CO2 gasification process for bio-methane production: an experimental and numerical activity</b> Autori: Roberto Gabbrielli, Stefano Frigo, Federica Barontini, Giacomo Flori, Pietro Sica, Nicola Fratianni	Giacomo Flori
9.10	<b>Bypass Control strategy of a Pump as Turbine in a Water Distribution Network for energy recovery</b> Autori: Domenico Filannino, Michele Stefanizzi, Tommaso Capurso, Gabriella Balacco, Sergio Mario Camporeale, Marco Torresi	Domenico Filannino
9.30	<b>Definition of the induction time for CO2 and CH4 hydrate via evaluation of the heat released during the process and the gas consumption rate.</b> Autori: Alberto Maria Gambelli, Mirko Filipponi, Federico Rossi	Alberto Gambelli

9.50	<b>Derivation of Met-Ocean Conditions for the Simulation of Floating Wind Turbines: a European case study</b> Autori: Francesco Papi, Yves Perignon, Alessandro Bianchini	Francesco Papi
10.10	<b>Development of a Test Bench for Biogas-fueled Internal Combustion Engines Working in Cogeneration Mode for Residential Applications</b> Autori: Maria Alessandra Ancona, Lisa Branchini, Francesco Catena, Andrea De Pascale, Francesco Melino, Saverio Ottaviano	Maria Alessandra Ancona

11.00-13.00 - Sustainable energy generation systems - chairman ADOLFO SENATORE

orario	titolo	relatore
11.00	<b>Effects of low-grade gas composition on the energy/exergy performance of a polygeneration system (CH<sub>2</sub>HP) based on biomass gasification and ICE</b> Autori: Antonio Ficarella, Luciano Strafella, Antonio Caricato, Antonio Paolo Carlucci, Francesco Previtiero, Antonio Galvagno, Sebastian Brusca, Mauro Prestipino	Antonio Caricato
11.20	<b>Experimental and numerical investigation of a micro-ORC system for heat recovery from data centers</b> Autori: Saverio Ottaviano, Maria Alessandra Ancona, Michele Bianchi, Lisa Branchini, Andrea De Pascale, Francesco Melino, Antonio Peretto, Chiara Poletto	Saverio Ottaviano
11.40	<b>Experimental characterization of a solar-powered ORC-based plant for micro-cogeneration in domestic applications</b> Autori: Fabio Fatigati, Marco Di Bartolomeo, Diego Vittorini, Arianna Coletta, Roberto Carapellucci, Roberto Cipollone	Marco Di Bartolomeo
12.00	<b>Experimental investigation of bladeless expander with an incompressible fluid</b> Autori: Avinash Renuke, Alberto Traverso, Federico Reggio, Matteo Pascenti	Alberto Traverso
12.20	<b>How to extrapolate 3D aerodynamic coefficients from HAWT CFD simulations: an inverse BEM approach</b> Autori: Stefano Mauro, Rosario Lanzafame, Michele Messina, Sebastian Brusca	Stefano Mauro
12.40	<b>How to Increase Savonius Power Coefficient: Ducted Rotor Performance with Different Overlap Ratios</b> Autori: Sebastian Brusca, Antonio Galvagno, Rosario Lanzafame, Stefano Mauro, Michele Messina	Sebastian Brusca

14.30-16.30 - Sustainable energy generation systems - chairman SERGIO MARIO CAMPOREALE

orario	titolo	relatore
14.30	<b>Integrated ORC-SOEC system for green hydrogen production from incineration of solid fuels</b> Autori: Gloria Rosati, Mattia Baiguini, Gioele di Marco Bernardino, Costante Invernizzi, Paolo Iora	Mattia Baiguini
14.50	<b>Model and transient Control strategy design of an Organic Rankine Cycle Plant for waste heat recovery of an Internal Combustion Engine</b> Autori: Giovanni Giardiello, Francesco De Nola, Giuliana Ghezzi, Alfredo Gimelli, Raffaele Iossa, Bernardo Sessa, Giuseppe Langella	Raffaele Iossa
15.10	<b>Optimization of Solar District Heating &amp; Cooling Systems</b> Autori: Giovanni Brumana, Giuseppe Franchini, Elisa Ghirardi, Silvia Ravelli	Giovanni Brumana
15.30	<b>Performance analysis of a bio-diesel fired engine bottoming with micro-ORC</b> Autori: Luigi Falbo, Sergio Bova	Luigi Falbo
15.50	<b>Pressurised Chemical Looping Combustion (PCLC) Combustor coupled with a turbo expander: designing principles of the air reactor</b> Autori: Pietro Bartocci, Gianni Bidini, Alberto Abad, Arturo Cabello, Margarita de las Obras Loscertales, Mauro Zampilli, Sara Massoli, Silvia Garlatti, Francesco Fantozzi	Pietro Bartocci
16.10	<b>Re-Powering Italian Wind Farms: a Feasibility Study from Theory to Practice</b> Autori: Sensi Letizia, Pier Francesco Melani, Alberto Venturi, Marco Giusti, Giorgia Mungo, Vittorio Tomassetti, Alessandro Bianchini	Pier Francesco Melani

17.00-18.00 - Sustainable energy generation systems - chairman MASSIMO MILANI

orario	titolo	relatore
17.00	<b>Sustainable opportunities to recover power plants' waste heat: a benchmark of techno-economically optimized heat pumps</b> Autori: Teo Grisolia, Alberto Vannoni, Alessandro Sorce, Matteo Calabria	Alberto Vannoni
17.20	<b>Techno-economic assessment of small-scale solar tower plants with modular billboard receivers and innovative power cycles</b> Autori: Ettore Morosini, Giancarlo Gentile, Marco Binotti, Giampaolo Manzolini	Ettore Morosini
17.40	<b>Understanding the near and post-stall behavior of wind turbine blade airfoils through multi-fidelity CFD simulations: the case of S809 airfoil</b> Autori: Giacomo Innocenti, Simone Giaccherini, Lorenzo Pinelli, Alessandro Bianchini, Andrea Arnone	Simone Giaccherini



## Martedì 13 settembre - Aula 7

9.10-10.30 - Turbomachines - chairman STEFANIA CHERUBINI

orario	titolo	relatore
9.10	<b>A Study on Accounting for Drift Velocities on Liquid Jets Injected in Cross Flow</b> Autori: Nasrin Sahranavardfard, Pandal Adrian, Fanirynadiazazaravaka Rahantamialisoa, Michele Battistoni	Nasrin Sahranavardfard
9.30	<b>Analysis of satellite-derived data for the study of fouling in aircraft engines</b> Autori: Nicola Zanini, Alessio Suman, Riccardo Friso, Michele Pinelli	Nicola Zanini
9.50	<b>Wells turbine efficiency improvements: experimental application of a speed control strategy</b> Autori: Fabio Licheri, Tiziano Ghisi, Francesco Cambuli, Puddu	Fabio Licheri
10.10	<b>Experimental evaluation of isentropic efficiency in turbocharger twin-entry turbines</b> Autori: Vittorio Usai, Carla Cordalunga, Silvia Marelli	Vittorio Usai

11.00-12.20 - Turbomachines - chairman FRANCO RISPOLI

orario	titolo	relatore
11.00	<b>How incoming turbulence affects wake recovery of an NREL-5MW wind turbine</b> Autori: Stefania Cherubini, Giovanni De Cillis, Semeraro, Stefano Leonardi, Pietro De Palma	Stefania Cherubini
11.20	<b>Influence of the trigger time window on the detection of gas turbine trip</b> Autori: Enzo Losi, Mauro Venturini, Lucrezia Manservigi, Giovanni Bechini	Enzo Losi
11.40	<b>Liquid film formation: prediction accuracy of different numerical approaches</b> Autori: Giuliano Agati, Adriano Evangelisti, Serena Gabriele, Franco Rispoli, Paolo Venturini, Domenico Borello	Giuliano Agati
12.00	<b>Towards a low-noise axial fan for automotive applications</b> Autori: Nicola Casari, Stefano Oliani, Michele Pinelli, Mattia Piovan, Elisa de Paola, Luana Stoica, Alessandro Di Marco, Enrico Mollica	Nicola Casari

14.30-16.30 - Hydraulics, pneumatics and drive systems - chairman ADOLFO SENATORE

orario	titolo	relatore
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14.30	<b>A lumped parameter and CFD combined approach for the lubrication analysis of a helical gear transmission</b> Autori: Gabriele Muzzioli, Giovanni Paini, Fabio Denti, Fabrizio Paltrinieri, Luca Montorsi, Massimo Milani	Giovanni Paini
14.50	<b>An Alternative Solution for Microfluidic Chip Fabrication</b> Autori: Claudio Ongaro, Barbara Zardin, Alice Betti, Vincenzina Siciliani, Leonardo Orazi, Jessika Bertacchini, Massimo Borghi	Alice Betti
15.10	<b>Design procedures for hybrid hydromechanical transmissions</b> Autori: Antonio Rossetti, Alarico Macor, Nicola Andretta	Alarico Macor
15.30	<b>Detailed CFD transient heat transfer modelling in a brake friction system</b> Autori: Francesco Orlandi, Luca Montorsi, Massimo Milani	Francesco Orlandi
15.50	<b>Detailed simulations of a turboprop fuel system by means of Simulink</b> Autori: Francesco Sciatti, Paolo Tamburrano, Pietro De Palma, Elia Distaso, Riccardo Amirante	Francesco Sciatti
16.10	<b>Downsizing the Electric Machines of Energy-Efficient Electro-Hydraulic Drives for Mobile Hydraulics</b> Autori: Damiano Padovani, Paola Fresia, Massimo Rundo, Gabriele Altare	Damiano Padovani

17.00-17.20 - Hydraulics, pneumatics and drive systems - chairman ADOLFO SENATORE

orario	titolo	relatore
17.00	<b>Performance Assessment of Hydraulic Micro Relief Valve</b> Autori: Ornella Chiavola, Fulvio Palmieri, Edoardo Frattini	Edoardo Frattini

Martedì 13 settembre - Aula 9

8.30-10.30 - Propulsion systems and sustainable mobility - chairman LORENZO DAMBROSIO

orario	titolo	relatore
8.30	<b>1D/3D simulation procedure to investigate the potential of a lean burn hydrogen fuelled engine</b> Autori: Luigi Teodosio, Berni Fabio, Alfredo La Notte, Enrica Malfi	Luigi Teodosio
8.50	<b>3D CFD analysis of Mixture Formation in Direct-Injection Hydrogen-fueled Internal Combustion Engines</b> Autori: Magda Elvira Cassone Potenza, Giuseppe Anaclerio, Marco Torresi, Sergio Mario Camporeale	Giuseppe Anaclerio

9.10	<b>A methodology to initialize tumble flow fields for fast 3D-CFD simulations of pent-roof SI engines</b> Autori: Federico Ramognino, Lorenzo Sforza, Tommaso Lucchini, Gianluca D'Errico, Angelo Onorati	Federico Ramognino
9.30	<b>Accelerometer-based SOC estimation methodology for combustion control applied to Gasoline Compression Ignition</b> Autori: Giacomo Silvagni, Vittorio Ravaglioli, Fabrizio Ponti, Enrico Corti, Davide Moro, Alessandro Brusa, Nicolò Cavina	Davide Moro
9.50	<b>Application of a one - dimensional fuel - oil dilution model coupled with an empirical droplet - to - film formation strategy for predicting in-cylinder oil effects in a direct injection engine</b> Autori: Edoardo De Renzis, Valerio Mariani, Gianmarco Bianchi, Stefania Falfari, Giulio Cazzoli	Edoardo De Renzis
10.10	<b>Batteries Thermal Management for Hybrid plug-in Powertrains</b> Autori: Diego Perrone, Teresa Castiglione, Luigi Falbo, Sergio Bova, Antonio Ficarella	Diego Perrone

11.00-13.00 - Propulsion systems and sustainable mobility - chairman ELIA DISTASO

orario	titolo	relatore
11.00	<b>CFD simulation of water droplet adhesion on the GDL of a low temperature PEM FC in air cross-flow conditions</b> Autori: Simona Silvia Merola, Christian Antetomaso, Adrian Irimescu, Bianca Maria vaglieco, Simona Di Micco, Elio Jannelli, Gabriele Scarpati, Elio Simeoni	Adrian Irimescu
11.20	<b>Comparison on the energy absorbed of volumetric and centrifugal pumps for automotive engine cooling</b> Autori: Giammarco Di Giovine, Luigi Mariani, Marco Di Bartolomeo, Davide Di Battista, Roberto Cipollone, Alessandro Carminati	Giammarco Di Giovine
11.40	<b>CFD investigation of the radiative heat transfer effects on the adoption of an electrical heated catalyst to increase the abatement efficiency</b> Autori: Loris Barillari, Augusto Della Torre, Gianluca Montenegro, Angelo Onorati	Loris Barillari
12.00	<b>Conceptual design and sizing optimization based on minimum energy consumption of lift-cruise type eVTOL aircraft powered by battery and fuel cell for urban air mobility</b> Autori: Teresa Donateo, Hasan Çınar	Teresa Donateo
12.20	<b>A dynamic model of a Hybrid Electric Propulsive System for degradation assessment</b> Autori: Ludovica Spada Chiodo, Teresa Donateo, Antonio Ficarella	Ludovica Spada Chiodo

12.40	<b>Effect of coil charge duration on combustion variability and flame morphology in a GDI engine working in lean burn conditions</b> Autori: Giovanni Cecere, Simona Silvia Merola, Adrian Irimescu, Federico Millo, Luciano Rolando	Giovanni Cecere
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14.30-16.30 - Propulsion systems and sustainable mobility - chairman TERESA DONATEO

orario	titolo	relatore
14.30	<b>Feed-Forward Neural Network for health monitoring of a parallel hybrid electric power system</b> Autori: Maria Grazia De Giorgi, Teresa Donateo, Antonio Ficarella, Nicola Menga, Ludovica Spada Chiodo, Luciano Strafella	Nicola Menga
14.50	<b>Highlighting the Role of Lubricant Oil in the Development of Hydrogen Internal Combustion Engines by means of a Kinetic Reaction Model</b> Autori: Elia Distaso, Giuseppe Calò, Riccardo Amirante, Pietro De Palma, Marco Mehl, Matteo Pelucchi, Alessandro Stagni, Paolo Tamburrano	Giuseppe Calò
15.10	<b>Hydrogen Fuel Cell Hybrid Electric Vehicles: the Impact of Commercial Vehicle Fleets on the Penetration of Renewable Energy Sources</b> Autori: Lorenzo Bartolucci, Camilla Tatangelo, Edoardo Cennamo, Stefano Cordiner, Vincenzo Mulone, Ferdinando Pasqualini	Edoardo Cennamo
15.30	<b>Model Parameterized Assessment of a Thermal Storage Unit for Engine Oil Warm-up Improvement</b> Autori: Diego Vittorini, Davide Di Battista, domenico di diomede, Roberto Carapellucci, Roberto Cipollone	Davide Di Battista
15.50	<b>Model-based optimization of Sliding Rotary Vane Pump for internal combustion engine cooling of heavy-duty vehicles</b> Autori: Fabio Fatigati, Marco Di Bartolomeo, Francesco Pallante, Giuseppe Lobiundo, Roberto Cipollone	Fabio Fatigati
16.10	<b>Modeling and design optimization of a hybrid power generator for full-electric naval propulsion</b> Autori: Gianmarco Saponaro, Michele Stefanizzi, Davide D'Amato, Manuele Franchini, Francesco Fornarelli, Marco Torresi, Sergio Mario Camporeale	Gianmarco Saponaro

17.00-18.40 - Propulsion systems and sustainable mobility - chairman IVAN ARSIE		
orario	titolo	relatore
17.00	<b>Numerical analysis of energy recovery system for turbocharged internal combustion engines via a parallel compounding turbine</b> Autori: Marco Antonelli	Marco Antonelli
17.20	<b>On Iso-octane Combustion with Ozone Addition under HCCI Engine-Like Conditions</b> Autori: Marco D'Amato, Annarita Viggiano, Vinicio Magi	Marco D'Amato
17.40	<b>Predictive model of cooling system for railway electric propulsion: validation of design choices and last mile analysis</b> Autori: Raffaele De Rosa	Raffaele De Rosa
18.00	<b>Towards the development of smart weather routing systems for leisure planing boats</b> Autori: Marco Ciampolini, Francesco Balduzzi, Luca Romani, L. Bellucci, Alessandro Bianchini, Giovanni Ferrara	Marco Ciampolini
18.20	<b>Numerical simulation of the HyShot II hydrogen combustor for hypersonic propulsion</b> Elia Distaso	Elia Distaso
18.40	<b>Influence of the energy management system control strategies on the battery state of health in hybrid electric vehicles</b> Umberto Previti	Umberto Previti

## Martedì 13 settembre - Aula 11

9.10-10.30 - Smart Energy Systems and Smart Grid - chairman ANTONIO FICARELLA		
orario	titolo	relatore
9.10	<b>The State Of The Electrical Sector In Western Balkan Countries. Case Study: Republic Of Kosovo</b> Autori: Alush Mexhuani, Luca Rubini, Kliton Bylykbashi, Bujar Jupaj, Alban Shala	Luca Rubini
9.30	<b>Data-driven modelling for gas consumption prediction at City Gate Stations</b> Autori: Lapo Cheli, Michele Meazzini, Lorenzo Busi, Carlo Carcasci	Lapo Cheli
9.50	<b>Synergy between Cities and surrounding territory to achieve the international agreements on energy and CO2 reduction. The Municipality of Avezzano in the Abruzzo Region (Italy) case.</b> Autori: Simona Abbate, Luca Di Paolo, Davide Di Battista, Roberto Carapellucci, Roberto Cipollone	Davide Di Battista

10.10	<b>Using Life Cycle Assessment in tenders to enhance the sustainable procurement of External Thermal Insulation Composite Systems</b> Autori: Alessandro Cardarelli, Ilaria Baffo, Stefano Ubertini, Marco Barbanera	Alessandro Cardarelli
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11.00-12.00 - Smart Energy Systems and Smart Grid - chairman PIER RUGGERO SPINA

orario	titolo	relatore
11.00	<b>Fault diagnosis in district heating networks</b> Autori: Hilal Bahlawan, Lucrezia Manservigi, Agostino Gambarotta, Enzo Losi, Mirko Morini, Costanza Saletti, Pier Ruggero Spina, Mauro Venturini	Pier Ruggero Spina
11.20	<b>LNG in ports: a novel integrated energy recovery system</b> Autori: Davide Borelli, Federico Silenzi, Francesco Devia, Corrado Schenone, Luca Tagliafico	Corrado Schenone
11.40	<b>Using neural networks to predict hourly energy consumptions in office and industrial buildings as a function of weather data</b> Autori: Francesco Martellotta, Ubaldo Ayr, Alessandro Cannavale, Stefania Liuzzi, Chiara Rubino	Francesco Martellotta

Martedì 13 settembre - Sala Riunioni Dip. DMMM Piano 1

15.30-16.30 - Giunta Fisica Tecnica

orario	titolo	relatore
15.30	Giunta Fisica Tecnica	
15.50	Giunta Fisica Tecnica	
16.10	Giunta Fisica Tecnica	

17.00-19.00 - Giunta Fisica Tecnica

orario	titolo	relatore
17.00	Giunta Fisica Tecnica	
17.20	Giunta Fisica Tecnica	
17.40	Giunta Fisica Tecnica	
18.00	Giunta Fisica Tecnica	
18.20	Giunta Fisica Tecnica	
18.40	Giunta Fisica Tecnica	

## Mercoledì 14 settembre - Aula Virtuale

8.50-10.35 - Aula Virtuale - chairman UMBERTO BERARDI

orario	titolo	relatore
8.50	<b>The Thermal Network Approach to Model Occupants' Heat and CO2 Generation Interactions: A Case Study in an Office Building in Panama</b> Autois: Jinela González, Miguel Chen Austin, Dafni Guerra Mora	Jinela González
9.05	<b>Optimal Hybrid Ventilation Strategy to Assure Adequate Indoor Thermal Comfort and Air Quality in Educational Spaces under a Tropical Climate</b> Autori: María del Carmen Cedeño Quijada, Miguel Chen Austin, Thasnee Solano	María Cedeño
9.20	<b>Data Driven Disaggregation Method for Electricity Based Energy Consumption for Smart Homes</b> Autori: Asad Hussain, Jacopo Cimaglia, Sabrina Romano, Francesco Mancini, Valerio Re	Asad Hussain
9.35	<b>Decision-Making Approach based on Multi-objective Optimization to Achieve Net-Zero Energy Neighborhoods through Retrofit in a Tropical Climate</b> Autori: Katherine Chung-Camargo, Miguel Chen Austin, Lorena Chacón, Carmen Castaño	Katherine Chung
9.50	<b>Energy and Environmental Refurbishment of the Hygiene Institute within the Sapienza University of Rome campus</b> Autori: Giada Romano, Giorgio Martellucci, Francesco Mancini, Alessandra Battisti	Giada Romano
10.05	<b>Comparison of different heating generator systems to reduce energy consumption in social housing in a Mediterranean climate</b> Autori: Andrea Vallati, Miriam Di Matteo, Costanza Vittoria Fiorini, Pawel Oclon, Stefano Grignaffini	Miriam Di Matteo
10.20	<b>Assessment of closed cycles operating with supercritical CO2 as bottoming of small combustion turbines</b> Autori: Elham Akramieh, Antonio Giuffrida	Elham Akramieh

11.00-12.30 - Aula Virtuale - chairman PAOLO TAMBURRANO

orario	titolo	relatore
11.00	<b>Transformation of a historical building into a Nearly Zero Energy Building (nZEB)</b> Autori: Giada Romano, Francesco Mancini	Giada Romano

11.15	<b>Energy Storage System based on Biomimetic Strategies: Concept Design and Performance Assessment in Buildings</b> Autori: Alisson Dodón, Miguel Chen Austin, Vanessa Quintero	Alisson Dodón
11.30	<b>The pyrolysis and gasification pathways of automotive shredder residue targeting the production of fuels and chemicals</b> Autori: Giovanni Manente, Sebastiano Martignano, Antonio Ficarella, Pasquale Cavaliere	Giovanni Manente
11.45	<b>1D-3D coupled approach for the evaluation of the in-cylinder conditions for Gasoline Compression Ignition Combustion</b> Autori: Davide Viscione, Gianmarco Bianchi, Vittorio Ravaglioli, Stefania Falfari, Giulio Cazzoli, Giacomo Silvagni, Valerio Mariani, Marzia Corsi	Davide Viscione
12.00	<b>A preliminary computational analysis towards the use of Electrically Heated Mixing Catalyst for innovative SCR after-treatment systems</b> Autori: Antonello Nappi, Andrea Vespertini, Augusto Della Torre, Gianluca Montenegro, Angelo Onorati	Andrea Vespertini
12.15	<b>Investigation of the effects of purge gas recycling for increasing methanol production and carbon dioxide reduction on the environment using dynamic simulation</b> Autori: Maryam Ebrahimzade Sarvestani, Francesco Di Maria	Maryam Ebrahimzadeh Sarvestani

### Mercoledì 14 settembre - Aula 5

8.30-10.30 - Refrigeration, heat pumps and Energy and systems for IAQ - chairman GIUSEPPE STARACE

orario	titolo	relatore
8.30	<b>Influence of the ventilation strategy on the respiratory droplets dispersion inside a coach bus: CFD approach</b> Autori: Giulia Parlani, Mauro Scungio, Giacomo Falcucci	Giulia Parlani
8.50	<b>Assessment of a desiccant cooling system in a traditional and innovative nanofluid HVAC system</b> Autori: Gianpiero Colangelo, Marco Milanese, Brenda Raho, Donato Cannoletta, Arturo de Risi	Brenda Raho
9.10	<b>Butane-based heat pump for advanced GTCC applications: static and dynamic model validation</b> Autori: Chiara Anfosso, Luca Mantelli, Lorenzo Gini, Marco Ferrando, Tommaso Reboli, Alberto Traverso	Luca Mantelli



9.30	<b>New Experimental Vapor-Liquid Equilibria Data and Thermodynamic Modelling for R1234yf/propane/R32 as low-GWP Mixtures in Heat Pump Applications</b> Autori: Manuele Gatti, Alessandro Panzeri Poli, Daniele Di Bona, Stefano Signorini, Luca Molinaroli	Manuele Gatti
9.50	<b>The comparative analysis of the R290 heat pump system working with standard expansion valve and two-phase ejector</b> Autori: Rafal Fingas, Michal Haida, Jacek Smolka, Giorgio Besagni, Michal Palacz, Akub Bodys, Andrzej Nowak	Rafal Fingas
10.10	<b>SARS-CoV-2 airborne infection transmission risk in transport microenvironments</b> Luca Stabile	Luca Stabile

### Mercoledì 14 settembre - Aula 9

8.30-9.30 - Energy efficiency and dynamic simulation in buildings - chairman UMBERTO BERARDI

orario	titolo	relatore
8.30	<b>A comparison between new European technical standards and dynamic simulation tools for chiller modelling</b> Autori: Franz Bianco Mauthe Degerfeld, Giovanna De Luca, Ilaria Ballarini, Vincenzo Corrado	Franz Bianco Mauthe Degerfeld
8.50	<b>A Methodology to identify appropriate refurbishment strategies towards zero energy buildings in a hot and humid climate</b> Autori: Cristina Carpino, Miguel Chen Austin, Dafni Guerra Mora, Natale Arcuri	Cristina Carpino
9.10	<b>Data driven Fault detection and diagnostics for Hydronic and monitoring systems in a residential building</b> Autori: Mohammad Abdollah Fadel Abdollah, Rossano Scoccia, Marcello Aprile	Mohammad Abdollah Fadel Abdollah

11.00-12.20 - Energy efficiency and dynamic simulation in buildings - chairman GIAMPIERO COLANGELO

orario	titolo	relatore
11.00	<b>Energy Performance of Annual Operation of Heat Pump Coupled with Ground Ice Storage and Photovoltaic/Thermal modules</b> Autori: Marco Noro, Simone Mancin, Claudio Zilio	Marco Noro
11.20	<b>Hygrothermal evaluation of sustainable insulating panels</b> Autori: Stefania Liuzzi, D'Alessandro, Francesco Martellotta, Chiara Rubino, Pietro Stefanizzi	Stefania Liuzzi

11.40	<b>Thermal and acoustic performance of additive aerogel-clay bricks</b> Autori: Cinzia Buratti, Francesco Spaccini, Francesca Merli, Elisa Belloni	Francesco Spaccini
12.00	<b>Use of sustainable Phase Change Material (PCM) in mortars for building energy efficiency</b> Autori: Antonella Sarcinella, Mariaenrica Frigione, José Luís Barroso de Aguiar	Antonella Sarcinella

### Mercoledì 14 settembre - Aula 11

9.00-10.00 - Efficiency in energy use and application processes in the circular economy - chairman FRANCESCO MARTELLOTTA		
orario	titolo	relatore
9.00	<b>Social impact assessment of wind power generation. An innovative method for decision making processes</b> Autori: Valeria Fois, Daniele Cocco, Lorenzo Lecis	Valeria Fois
9.20	<b>State of the art of evapotranspiration models for plant cultivation in open fields, greenhouse systems and plant factories</b> Autori: Alfonso William Mauro, Alice Arcasi, Mastrullo Rita Maria Antonietta, Antonio Pantaleo	Alice Arcasi
9.40	<b>Life cycle analysis of the thermodynamic and environmental sustainability of a cogeneration system based on residual biomass gasification</b> Autori: Mauro Prestipino, Antonio Piccolo, Fabio Salmeri, Filippo Cucinotta e Antonio Galvagno	Mauro Prestipino

11.00-11.40 - Innovation in heat transfer issues - chairman NICOLA CARDINALE		
orario	titolo	relatore
11.00	<b>Experimental and numerical analysis of the convective flow induced over a dry-ice bank with Particle Image Velocimetry</b> Autori: Matteo Vitali, Giovanni Biancini, Barbara Marchetti, Francesco Corvaro	Matteo Vitali
11.20	<b>Improvements to the hybrid method applied to the design of plate-finned tube evaporators</b> Autori: Giuseppe Starace, Silvia Macchitella, Gianpiero Colangelo	Silvia Macchitella

### Mercoledì 14 settembre - Aula Magna Domus Sapientae Dip. Dicar

8.30-10.30 - Assemblea AIMSEA		
orario	titolo	
8.30	Assemblea AIMSEA	
8.50	Assemblea AIMSEA	

9.10	Assemblea AIMSEA
9.30	Assemblea AIMSEA
9.50	Assemblea AIMSEA
10.10	Assemblea AIMSEA

11.00-12.20 - Premiazione	
orario	titolo
11.00	Premiazione
11.20	Premiazione
11.40	Premiazione
12.00	Premiazione

## Sessione Poster

### **Energy audit of 1900s buildings for sustainable renovation**

Nicola Cardinale, Valeria Selicati, Elisabetta Negro

### **Techno-economic analysis of alternative energy communities scenarios in small mountain localities in South Italy. A case study.**

Daniela Cirone, Roberto Bruno, Piero Bevilacqua, Stefania Perrella, Natale Arcuri

### **A novel plant configuration for solar-assisted heat pumps in cold climates: energy evaluations**

Stefania Perrella, Roberto Bruno, Piero Bevilacqua, Daniela Cirone, Natale Arcuri

### **Decarbonization of the heating sector from a system point of view: the case study of the Lombardy Region.**

Marianna Pozzi, Giuseppe Muliere, Francesco Mezzera, Fabrizio Fattori, Alice Denarie, Mario Motta, Livio Mazzarella

### **Accuracy Assessment of the Eulerian Two-phase Model for the CFD Simulation of Gas Bubbles Dynamics in Alkaline Electrolyzers**

Marco Dreoni, Francesco Balduzzi, Giovanni Ferrara, Alessandro Bianchini

### **Techno-economic study on green hydrogen production and use in hard-to-abate industrial sectors**

Francesco Superchi, Alessandro Mati, Mattia Pasqui, Carlo Carcasci, Alessandro Bianchini

### **Fluid dynamic analysis of a cryogenic piston pump**

Stefano Cioni, Francesco Balduzzi, Luca Romani, Alessandro Bianchini, Giovanni Ferrara

### **Hybrid Propulsion for Motorcycle Application to Reduce Engine-out Emissions: An Analytical-Experimental Investigation**

Paolo Iodice, Enrico Fornaro, Massimo Cardone

**In-Cylinder Pressure Estimation in a Multi-Cylinder Engine by Combining the Instantaneous Crankshaft Speed Data and a 0D Thermodynamic Model.**

Iacopo Catalani, Lorenzo Bosi, Alberto Baroni, Luca Romani, Giovanni Vichi, Alessandro Bellissima, Go Asai, Ryota Minamino, Giovanni Ferrara

**Real Time Estimation of Combustion Indicators on a 4 Cylinder CI Turbocharged Engine Based on Instantaneous Engine Speed Measurement with Rapid**

Lorenzo Bosi, Iacopo Catalani, Alberto Baroni, Luca Romani, Giovanni Vichi, Alessandro Bellissima, Go Asai, Ryota Minamino, Giovanni Ferrara

**Dynamic modelling of a dual-source heat pump system through a Simulink tool**

Christian Natale, Claudia Naldi, Matteo Dongellini, Gianluca Morini

**Design Loads in Small Wind Turbines: a Detailed Comparison Between Pitch and Stall Regulation**

Francesco Papi, Leonardo Pagamonci, Alessandro Bianchini

**PV-based hybrid residential microgrid with hydrogen and battery energy storage options**

Antonello Damato, Antonio Ferraro, Mario Iamarino, Antonio D'Angola

**Tuning the Discrete Wavelet Transform for Power Smoothing of Wind Turbines**

Alessandro Bianchini

**Three-dimensional unsteady analysis of a miniaturized pressure probe for turbocharger applications**

Rodolfo Bontempo, Enrico Marco Di Marzo, Marcello Manna, Michelangelo Napolitano

**Thermodynamic Analysis of a Parabolic Trough Collector (PTC) operating with gas-phase nanofluids**

Jessica Settino, Vittorio Ferraro, Cristina Carpino, Valerio Marinelli

**Performance and Emissions Comparison between Biomethane and Natural Gas Fuel in Passenger Vehicles: results of the third testing campaign**

Fabio Cignini, Fernando Ortenzi, Antonino Genovese, Stefano Valentini, Alberto Caprioli

**Effect of nanofluid on a Low-enthalpy geothermal plant**

Bernardo Buonomo, Sergio Nardini, Vincenza Ciccarelli, Oronzio Manca, Renato Elpidio Plomitallo

**Assessment of closed cycles operating with supercritical CO<sub>2</sub> as bottoming of small combustion turbines**

Elham Akramieh, Antonio Giuffrida

**numerical investigation on a thermoelectric generator in an exhaust automotive line with convergent metal foam**

Bernardo Buonomo, Oronzio Manca, Furio Cascetta, Anna di Pasqua

**Thermal control of lithium-ion batteries for electric cars by metal foam partially filled with Phase Change Material**

Bernardo Buonomo, Oronzio Manca, Ferdinando Menale, Sergio Nardini

**Numerical Investigation on the Effects of the Setting of the Load Control System of a Formula SAE Single-Cylinder Turbocharged Engine on Fuel Efficiency and Performance**

Sandro Raspanti, Marco Ciampolini, Simone Bigalli, Alessio Fabia, Luca Romani, Giovanni Ferrara

**Exergo-economic and exergo-environmental analysis of a binary geothermal power plant with solar boosting**

Emanuele Giusti, Pietro Ungar, Lorenzo Ciappi, Claudio Zuffi, Daniele Fiaschi, Giampaolo Manfrida, Lorenzo Talluri

**Re-designing District Heating networks through innovative CO<sub>2</sub> solutions**

Pietro Ungar, Lorenzo Milli, Giampaolo Manfrida, Daniele Fiaschi, Lorenzo Talluri

**Heat transfer effect on experimental maps of automotive compressor**

Vittorio Usai, Carla Cordalunga, Silvia Marelli

**An investigation on the intake process of a four-stroke spark ignition engine for aircraft applications**

F. Anaclerio, A. Viggiano, F. Fornarelli, V. Magi, P. Caso, M. Simonetti, D. Sparaco

**Hybrid Hydrogen production: Application of CO<sub>2</sub> heat pump for the high-temperature water electrolysis process**

Ali Mojtahed, Livio De Santoli

**How Power-to-Gas strategy could reduce national Natural Gas consumption over the energy crisis period**

Lorenzo Mario Pastore, Ali Mojtahed, Livio De Santoli

**Dynamic Modelling of a Heat Exchanger Network for a Dairy Plant**

Riccardo Casadei, Marco Lorenzini, Daniele Fattini, Paolo Valdiserri