

75° CONGRESSO NAZIONALE ATI ROMA, 15-16 settembre 2020

Programma del 16 settembre

SESSIONE 1

| Orario | Settore | Titolo | Relatore |
|--------|---|--|--|
| 9.00 | Accumulo dell'energia e integrazione delle reti energetiche. Tecnologie | Constant-volume vapor-liquid equilibrium for thermal energy storage: Generalized analysis of pure fluids | Abdullah Bamoshmoosh |
| 9.10 | | Design parameters influencing the operation of a CHP plant within a micro-grid: application of the ANOVA test | Rosaria Volpe |
| 9.20 | | Heading towards 100% of renewable energy sources fraction: a critical overview on smart energy systems planning and flexibility measures | Lorenzo Mario Pastore |
| 9.30 | | Numerical model for the analysis of thermal transients in district heating networks | Martina Capone |
| 9.40 | | Optimal Indirect Integration of Steam Rankine Cycles in Concentrated Solar Power Coupled with Thermochemical Storage | Umberto Tesio |
| 9.50 | | Optimal sizing of a distributed energy system with thermal load electrification | Pietro Lubello |
| 10.00 | | Performance assessment of integrated energy systems for the production of renewable hydrogen energy carriers | Francesco Lonis |
| 10.10 | | Gestione della domanda e dell'offerta di energia. Smart Grid | Clustering of educational building load data for defining healthy and energy-efficient management solutions of integrated HVAC systems |
| 10.20 | Energy flexibility in residential buildings clusters | | Alice Mugnini |
| 10.30 | Tecnologie e sistemi di poligenerazione dell'energia | Analysis of citrus peels-based polygeneration plant for hydrogen, heat, power and DME production: energy and exergy analysis | Mauro Prestipino |
| 10.40 | | Port energy supply through an LNG-powered integrated grid | Federico Silenzi |
| 10.50 | Valorizzazione dei Rifiuti Solidi e delle plastiche | Influencing factors of Solid Waste Management global cost and efficiency: a multi-objective optimization focusing on the collection system | Sofia Russo |

SESSIONE 2

| Orario | Settore | Titolo | Relatore |
|---------------|------------------------------|--|--------------------|
| 9.00 | Motori a combustione interna | 1D numerical study on hydrogen injection enabling ultra-lean combustion in a small gasoline Spark Ignition engine | Luigi Teodosio |
| 9.10 | | 3D-CFD Simulation of a GDI Injector Under Standard and Flashing Conditions | Simone Sparacino |
| 9.20 | | A Numerical Analysis of the Air Cooling System of a Spark Ignition Aeronautical Engine | Maria Faruoli |
| 9.30 | | A Practical Design Approach to Improve the Charging Efficiency of a Small Two-Stroke High-Speed Engine Based on Basic CFD | Massimo Masi |
| 9.40 | | A Preliminary 1D-3D Analysis of the Darmstadt Research Engine Under Motored Condition | Clara Iacovano |
| 9.50 | | An appraisal of the application of open-cell foams in automotive SCR systems | Andrea Vespertini |
| 10.00 | | Analysis of the Integration of the Three-Way Catalyst Thermal Management in the On-Line Supervisory Control Strategy of a Gasoline Full-Hybrid Vehicle | Andrea Valletta |
| 10.10 | | Application of the Sectional Method to Investigate Particle Number and Soot Mass in Ethanol and Gasoline Fueled Premixed Spark Ignition Engines | Valentina Pessina |
| 10.20 | | CFD 3D Analysis of Charge Motion and Combustion in a Spark-Ignition Internal Combustion Engine under Close-to-Idle Condition | Vincenzo De Bellis |
| 10.30 | | Comparison Between Experimental and Simulated Knock Statistics Using an Advanced Fuel Surrogate Model | FRANCESCO CICCI |
| 10.40 | | Assessment of late pilot injection effect in dual-fuel combustion | Antonio Caricato |

SESSIONE 3

| Orario | Settore | Titolo | Relatore |
|---------------|------------------------------|--|----------------------|
| 11.15 | Motori a combustione interna | Development of a Combustion Delay Model in the Control of Innovative Combustions | davide moro |
| 11.25 | | Experimental Adsorption and Desorption Characterization of a Gasoline-Fueled Vehicle Carbon Canister for European Application filled with n-butane and Nitrogen Mixtures | Luca Romagnuolo |
| 11.35 | | Experimental and numerical analyses to improve the design of engine coolant pumps | Davide Di Battista |
| 11.45 | | Impact of grid density on the analysis of the in-cylinder flow of an optical engine | Alessio Barbato |
| 11.55 | | Optical and Energetic Investigation of an Advanced Corona Ignition System in a Pressure-Based Calorimeter | Valentino Cruccolini |
| 12.05 | | Performance analysis of a small biodiesel internal combustion engine | Diego Perrone |
| 12.15 | | Standard and consistent Detached-Eddy Simulation for turbulent engine flow modeling: an application to the TCC-III engine | Clara Iacovano |
| 12.25 | | Theoretical and Experimental control strategies assessment of a Sliding Vane Oil Pump | Fabio Fatigati |
| 12.35 | | Waste heat recovery of a heavy-duty natural gas engine by Organic Rankine Cycle | Antonio Mariani |

SESSIONE 4

| Orario | Settore | Titolo | Relatore |
|--------|--|--|------------------------|
| 11.15 | Trasmissione del calore e fluidodinamica | Assessment of the impact of nanosecond plasma discharge on the combustion of methane air flames | Donato Fontanarosa |
| 11.25 | | CFD analysis of the combustion in the BERL burner fueled with a hydrogen-natural gas mixture | Tommaso Capurso |
| 11.35 | | Data-Driven Air-Cooled Condenser Performance Assessment: Effect of Models and Input Selection | Alessandro Sorce |
| 11.45 | | Effects of plasma kinetic modeling on performance characterization of plasma actuators for active flow control | Donato Fontanarosa |
| 11.55 | | Investigation on thermal and fluid dynamic behaviors in mixed convection in horizontal channels with aluminum foam and heated from below | Oronzio Manca |
| 12.05 | | Measurement of Internal Heat Transfer Distribution of Highly-Loaded Gas Turbine Blade by Combined Experimental/Numerical Method. | ASIF ALI |
| 12.15 | | Modelling and analysis of a liquid-cooling system for thermal management applications of an electronic equipment | Lapo Cheli |
| 12.25 | | Numerical and experimental analysis of thermal penetration depth in bare reinforced concrete structures during fire accidents | Chiara Marafioti |
| 12.35 | | Numerical Investigation on Heat Transfer in Confined Impinging Slot Jets with Nanofluids in Partially Filled Configuration of Metal Foam | Oronzio Manca |
| 12.45 | | REFRIGERANT SELECTION FOR EJECTOR REFRIGERATION SYSTEMS: A MULTISCALE EVALUATION | Giorgio Besagni |
| 12.55 | | TRANSIENT 2D FEM-FLUID NETWORK COUPLING FOR THERMO-MECHANICAL WHOLE GAS TURBINE ENGINE SIMULATIONS: MODELLING FEATURES AND APPLICATIONS | Sabrina Giuntini |
| 13.05 | | Formation and Topology of vortices in Couette Flow over Open Cavities | Eugenia Rossi di Schio |

SESSIONE 5

| Orario | Settore | Titolo | Relatore |
|--------|---------------------------|--|-----------------------|
| 13.30 | Oleodinamica e pneumatica | 3D CFD numerical analysis of vane dynamic effects on the pressure ripple in a variable displacement vane pump | Gianluca Marinaro |
| 13.40 | | An Aerostatic Pad with an Internal Pressure Control | Andrea Trivella |
| 13.50 | | Downstream Compensator: Innovative Systems, Modeling Analysis and Energy Optimization | Antonella Bonavolontà |
| 14.00 | | Feasibility study of using amplified piezo-stack actuators for the actuation of direct drive servovalves | Paolo Tamburrano |
| 14.10 | | Lumped Parameter Model and Experimental Tests on a Pressure Limiter for Variable Displacement Pumps | Paola Fresia |
| 14.20 | | On the Design of a Diaphragm Valve for Aerostatic Bearings | Luigi Lentini |
| 14.30 | | Simulink Modelling For Simulating Intensive Care Mechanical Ventilators | Paolo Tamburrano |
| 14.40 | | Stability analysis of a pneumatically actuated inverted pendulum | Federico Colombo |
| 14.50 | | The Hydraulic Power Generation and Transmission on Agricultural Tractors: feasible architectures to reduce dissipation and fuel consumption - Part 1 | Andrea Gaiola |
| 15.00 | | The Hydraulic Power Generation and Transmission on Agricultural Tractors: feasible architectures to reduce dissipation and fuel consumption - Part 2 | Salvatore Ardizio |

SESSIONE 6

| Orario | Settore | Titolo | Relatore |
|--------|---------------|--|----------------------------|
| 13.30 | Turbomacchine | A Quasi-dimensional Numerical Investigation of the Scroll Expander of an Organic Rankine Cycle Unit | Antonio Cantiani |
| 13.40 | | AERODYNAMICAL PERFORMANCE DECAY DUE FOULING AND EROSION IN AXIAL COMPRESSOR FOR GT AEROENGINES | Giovanni Maria De Pratti |
| 13.50 | | AIRFOIL TO IMPROVE AERODYNAMIC PERFORMANCE OF AILERON REDUCED SPANWISE IN COMBAT HELICOPTER | Giovanni Maria De Pratti |
| 14.00 | | Analysis of the Influence of the Mean Flow Field Mach Number on Thermo-Acoustic Combustion Instability | Vito Ceglie |
| 14.10 | | Design and CFD Analysis of a Radial-Inflow Turbine for Small Scale ORC Applications | Alessandro Cappiello |
| 14.20 | | DEVELOPMENT OF A DATA-DRIVEN MODEL FOR TURBULENT HEAT TRANSFER IN TURBOMACHINERY | Francesco Aldo Tucci |
| 14.30 | | Experimental assessment of fouling effects in a multistage axial compressor | Alessio Suman |
| 14.40 | | Numerical investigation of CSP air cooled condenser fan | Lorenzo Tieghi |
| 14.50 | | Numerical Study of Entropy Wave Evolution within a HPT Stage | Leonardo Lilli |
| 15.00 | | One Lever Control for Variable Pitch Turboprop Aircraft | Lorenzo Dambrosio |
| 15.10 | | The exploitation of CFD legacy for the meridional analysis and design of modern gas and steam turbines | Martina Ricci |
| 15.20 | | Water washing of axial flow compressors: numerical study on the fate of injected droplets | Giuliano Agati |
| 15.30 | | FSI analysis and simulation of flexible blades in a Wells turbine for wave energy conversion | Valerio Francesco Barnabei |

SESSIONE 7

| Orario | Settore | Titolo | Relatore |
|--------|--|--|-------------------------------|
| 15.40 | Efficienza energetica nell'edilizia e nell'industria | On the optimisation of a direct current (dc) hot-wall refrigerator | Angelo Maiorino |
| 15.50 | | Energy efficiency in outdoor lighting applications: potentials of photoluminescent light spots | Claudia Fabiani |
| 16.00 | | Energy flexibility in Mediterranean buildings: a case-study in Sicily | Ilaria Marotta |
| 16.10 | | Historical analysis and refurbishment proposal of the "Red schools" in Viterbo | GIADA ROMANO |
| 16.20 | | Minimalist RC network for building energy simulations: a case study based on OpenBPS | Rossano Scoccia |
| 16.30 | | Numerical assessment of bioclimatic architecture strategies for buildings design in tropical climates: A case of study in Panama | Miguel Chen Austin |
| 16.40 | | Approaching the validation of building energy models: billing vs indoor environmental data | Domenico Palladino |
| 16.50 | | Passive solar systems for buildings: performance indicators analysis and guidelines for the design | Giacomo Cillari |
| 17.00 | | Reconstruction and Analysis of the Energy Demand of a Healthcare Facility in Italy | Marco Zini |
| 17.10 | | Refurbishment of a house in a historical building: energy saving, electrification and flexibility | GIADA ROMANO |
| 17.20 | | sCO2 Power Plant for Industrial Waste Heat Recovery: a case study | Ambra Giovannelli |
| 17.30 | | Sensitivity analysis of the thermal energy need of a residential building assessed by means of the EN ISO 52016 simplified dynamic method. | Franz Bianco Mauthe Degerfeld |
| 17.40 | | Urban Abacus of Building Energy Performances a methodological approach | Stefano Pili |
| 17.50 | | Using natural fibre insulators on green roofs: some considerations | Francesca Merli |

SESSIONE 8

| Orario | Settore | Titolo | Relatore |
|--------|--|---|---------------------|
| 15.40 | Sostenibilità ambientale e Fonti Energetiche Rinnovabili | Performance Assessment of Multi-Electrodes Reactors for Scaling-up Microbial Fuel Cells | Simona Di Micco |
| 15.50 | | Adsorption gas Heat Pump fuelled with hydrogen enriched natural gas blends: the analytical simulation model development and validation | Matteo Sforzini |
| 16.00 | | Applying Spiroid Winglet on The Tip of NREL 5 MW Offshore Wind Turbine's Blade to Investigate Vortex Effects | BEHROUZ FATHI |
| 16.10 | | Bio-additives for CI engines from one-pot alcoholysis reaction of lignocellulosic biomass: an experimental activity | Gianluca Pasini |
| 16.20 | | Calcium Looping technology demonstration in industrial environment: the CLEANKER project and status of the CLEANKER pilot plant | MARTINA Fantini |
| 16.30 | | Ducted Savonius Turbine Performance: A Multi-Application Approach | Sebastian Brusca |
| 16.40 | | Experimental Analysis of the CO ₂ /CH ₄ Replacement Efficiency due to Sodium Chloride Presence in Natural Gas Hydrates Reservoirs. | Alberto Gambelli |
| 16.50 | | Experimental characterization of the unsteady performance behavior of a Wells turbine operating at high flow rate coefficients | Marco Torresi |
| 17.00 | | Fluid Dynamic-based Engineering design of a Full-Scale Device for the improvement of Extra Virgin Olive Oil Yield and Quality by Means of Combined Acoustic Cavitation and Thermal Conditioning | Giuseppe Calò |
| 17.10 | | Food waste anaerobic digestion in Umbria region: scenario analysis on the use of digestate using LCA | Pietro Bartocci |
| 17.20 | | High-reflective mulching membrane for a sustainable development: monitoring campaign | Alessia Di Giuseppe |
| 17.30 | | Methodologies for Sustainable Energy Action Plan design and monitoring applied to the Municipality of Avezzano, Abruzzo Region, Italy | Simona Abbate |
| 17.40 | | Multi-Variable Control and Optimization Strategy for Domestic Solar-ORC Combined Heat and Power Generation System | Diego Vittorini |
| 17.50 | | On the prospects of improving the numerical analysis of symmetric airfoils at low Reynolds numbers and high angles of attack by a LES approach: the case of NACA 0021 profile | Filippo Mariotti |
| 18.00 | | Optimization and performance assessment of Solar Towers | Elisa Ghirardi |
| 18.10 | Performance Analysis of Solar District Cooling systems: the Effect of Heat Rejection | giovanni brumana | |

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| 18.20 | | Performance and Emissions Comparison between Biomethane and Natural Gas Fuel in Passenger Vehicles | Fabio Cignini |
| 18.30 | | Production of eco-sustainable insulating panels by recovering wood waste: fabrication and preliminary experimental characterization of thermal and acoustic properties | Francesca Merli |
| 18.40 | | A numerical analysis on a solar chimney with an integrated thermal energy storage with phase change material in metal foam | Bernardo Buonomo |
| 18.50 | | On the wake effect in wind farm power forecasting: a new data-driven approach | Fabio Famoso |
| 19.00 | | First results of the H2020-LC-SC3-RES-11 BLAZE project: biomass low cost advanced zero emission small-to-medium scale integrated gasifier fuel cell combined heat and power plant | Enrico Bocci |

SESSIONE 9

| Orario | Settore | Titolo | Relatore |
|---------------|----------------------|--|-----------------------|
| 18.10 | Mobilità sostenibile | Ammonia as hydrogen carrier for distributed on-site refueling stations implementing PEMFC technology | Simona Di Micco |
| 18.20 | | ASSESSMENT OF FEEDSTOCKS AVAILABILITY AND TECHNOLOGIES FOR ADVANCED BIOFUEL PRODUCTION | Francesca Di Gruttola |
| 18.30 | | Experimental validation of a 3D-CFD model of a PEM fuel cell | Matteo Riccardi |
| 18.40 | | Feasibility analysis of a hybrid auxiliary power unit for pleasure boats | Gianluca Pasini |
| 18.50 | | Passenger Car Energy Demand Assessment: a New Approach Based on Road Traffic Data | Umberto Previti |
| 19.00 | | Performance analysis of an on-site hydrogen facility for fuel cell trains | Francesco Piraino |