

7th AIGE/IIETA International Conference and 16th AIGE 2022 Conference

Parma, Italy June 8-9, 2022

<https://www.aige2022.unipr.it>

aige2022@unipr.it

CONFERENCE PROGRAM

DRAFT 3.0

Wednesday, June 8th

8:30-10:00 Registration

10:00–10:30 Open Ceremony, Room K8

10:30-11:00 *Coffee Break*

Session 1

Thermodynamics and Heat Transfer I -Room K8

11:00–11:20

CHECK TEMPERATURE: a small-scale elastocaloric device for the cooling of the electronic circuits.

*Luca Cirillo, Adriana Greco, **Claudia Masselli***

11:20–11:40

Preliminary analysis of a novel battery thermal management system based on a low boiling dielectric fluid.

***Luca Giammichele**, Valerio D'alessandro, Matteo Falone, Renato Ricci*

11:40–12:00

Numerical Resolution of the Fourier's Inverse Problem supervised by an Optimization Model for Determining the Thermal Diffusivity of homogeneous materials: Theoretical analysis and experimental validation.

***Roberto Baccoli**, Andrea Medda, Nicola Pintus, Amit Kumar, Gianluca Gatto, Anna Concas, Giuseppe Rodriguez*

12:00–12:20

Thermal and visual remote sensing of residential buildings by UAV.

***Marco Ottaviani**, Luca Giammichele, Federico Fioretti, Renato Ricci*

12:20–12:40

Semi-empirical correlations and an artificial neural network for liquid dynamic viscosity of low GWP refrigerants.

*Giovanni Di Nicola, **Sebastiano Tomassetti**, Mariano Pierantozzi, Pio Francesco Muciaccia*

12:40–13:00

Thermofluid-dynamic characterization of the elastocaloric air conditioner SUSSTAIN-EL.

*Luca Cirillo, **Adriana Greco**, Claudia Masselli*

Session 2

Energy Conversion and Management I – Room K9

11:00–11:20

Mechanical Vapour Recompression (MVR): a review of applications and a comparison with Thermal Vapour Recompression (TVR).

Renato Lazzarin

11:20–11:40

The Laminar Flame Speed of Iso-Octane/Air/Ozone Lean Mixtures under Engine-Like Thermo-chemical Conditions.

***Marco D'amato**, Antonio Cantiani, Vinicio Magi, Annarita Viggiano*

11:40–12:00

Natural gas system decarbonization by green hydrogen injection: a distributed approach.

***Giorgio Grossi**, Fausto Arpino, Michele Bertone, Christian Canale, Laura Canale, Gino Cortellessa, Marco Dell'isola, Giorgio Ficco, Linda Moretti*

12:00–12:20	A management strategy for multi-source heat pump systems. Giuseppe Emmi , Marco Cavazzuti, Michele Bottarelli
12:20–12:40	A student-driven multilevel approach for increasing energy sustainability of remote areas in the Emilia Romagna Apennines. <i>Simone Pedrazzi, Nicolò Morselli, Marco Puglia, Filippo Ottani, Massimiliano Parenti, Davide Parmeggiani, Aurora De Luca, Martina Grasso Silvestro, Anna Spartà, Francesco Tavani, Pietro Fontana, Niccolò Martini, Mattia Martire, Manuel Bertoni, Luisa Cannas, Martina Benacci, Leonardo Beltrami, Alessandro Francini, Margherita Zanichelli, Gaetano Rossi, Emiliano N. Guberman Villafane, Islam H. El Nabbi and Giulio Allesina</i>
12:40–13:00	Comparative environmental performance analysis of two air conditioning systems by using Expanded Total Equivalent Warming Impact metric. Elisa Marrasso , Francesca Ceglia, Maurizio Sasso, Carlo Roselli, Giovanna Pallotta
13:00-14:15	Lunch
Session 3	Energy in Food processing – Room K8
14:15-14:35	Energy cost and parmesan cheese. An overview in the different energy fluxes needed to produce a parmesan wheel. <i>Marco Puglia, Nicolò Morselli, Giulio Allesina, Simone Pedrazzi, Filippo Ottani, Filippo Raguzzoni, Alberto Muscio, Paolo Tartarini</i>
14:35-14:55	Assessment of the volume and material container influence on juice cooling process. Alessio Suman , Nicola Zanini, Riccardo Friso, Michele Pinelli, Luca Bottos
14:55-15:15	Average and local analysis of the effect of transversal and helical wall corrugation on convective heat transfer. Luca Cattani , Matteo Malavasi, Fabio Bozzoli, Sara Rainieri
15:15-15:35	Development and characterization of a new passive device for the temperature management in wine fermenter tank. Matteo Malavasi , Luca Cattani, Fabio Bozzoli, Sara Rainieri
Session 4	Energy and Environmental Policy – Room K9
14:15-14:35	Investigating the economic and environmental impacts of a technological shift towards hydrogen-based solutions for steel manufacture in high-renewable electricity mix scenarios for Italy. Marco Conte , Lorenzo Rinaldi, Francesco Tonini, Tommaso Fumagalli, Giacomo Lorenzin, Paolo Piras, Gian Giacomo Sommariva, Emanuela Colombo

14:35-14:55	<p>A simplified methodology for indoor environments evaluation correlated to airborne transmission: the case of a university classroom with vertical low-velocity ventilation.</p> <p>Marco Puglia, Nicolò Morselli, Filippo Ottani, Giulio Allesina, Simone Pedrazzi, Alberto Muscio, Andrea Cossarizza, Paolo Tartarini</p>
14:55-15:15	<p>Digital platforms for Renewable Energy Communities projects: an overview.</p> <p>Francesco Demetrio Minuto, Andrea Lanzini, Romano Borchellini</p>
15:15-15:35	<p>Microclimate assessment at real experimental conditions for green energy urban policy.</p> <p>Cristina Piselli, Carla Balocco, Ilaria Pigliautile, Claudia Fabiani, Roberta Jacoby Cureau, Fabio Scieurpi, Anna Laura Pisello, Franco Cotana</p>
15:35-16:00	<i>Coffee Break</i>
16:00-17:45	Round Table - Room K8
<hr/>	
	2022: quale transizione energetica?
18:00-19:00	AIGE Board Meeting
<hr/>	
20:30	<p>Gala Dinner – Ristorante “Il Cortile” Borgo Paglia, 3, 43125 Parma PR</p>
<hr/>	

Thursday, June 9th

9:00-9:20

Registration

Session 5

Thermodynamics and Heat Transfer II -Room K8

9:20-9:40

Local heat flux analysis of a thin Loop Heat Pipe.

Luca Pagliarini, *Kelvin Guessi Domiciano, Larissa Krambeck, Fabio Bozzoli, Marcia Mantelli*

9:40-10:00

Replacing Batteries With Water By An Innovative Evaporative Cooling Process For Vehicle Air Conditioning.

Nicolò Morselli, *Marco Puglia, Simone Pedrazzi, Giulio Allesina, Alberto Muscio, Paolo Tartarini*

10:00-10:20

Numerical solution of convective heat transfer problems over complex 3D geometries using the RBF-FD meshless method.

Davide Miotti, *Riccardo Zamolo, Enrico Nobile*

10:20-10:40

Towards large-scale simulation of indoor thermal conditions in buildings supplied with district heating: model evaluation based on experimental data.

Benedetta Grassi, *Adriano Maria Lezzi, Mariagrazia Pilotelli*

10:40-11:00

GIS-based tool for outdoor thermal comfort.

Guglielmina Mutani, **Simone Beltramino**

Session 6

Energy Conversion and Management II – Room K9

9:20-9:40

On the interoperability of Building Information Modeling for Energy Analysis: the case study of the Maritime Station of Napoli (Italy).

Vittoria Battaglia, *Alberto Carotenuto, Alessandro Mauro, Gennaro Normino*

9:40-10:00

Proposal and validation of a new innovative solution for green hydrogen storage, via clathrate hydrates.

Alberto Maria Gambelli, *Beatrice Castellani, Mirko Filipponi, Andrea Nicolini, Federico Rossi*

10:00-10:20

Smart controllers for integrated energy systems.

Agostino Gambarotta, *Mirko Morini, Costanza Saletti*

10:20-10:40

Comparison of combustion and gasification for combined heat and power cogeneration from woody biomass: a numerical analysis.

Alberto Carotenuto, *Simona Di Fraia, M. Rakib Uddin, Laura Vanoli*

10:40-11:00

Pyrogasification to produce biogas and biomethane from wood wastes.

Ferruccio Trifirò

11:00 -11:45

Poster Session – Room K10

Numerical Investigation on Shell and Tube Latent Heat Thermal Energy Storage with External Heat Losses Partially Filled with Metal Foam.

*Bernardo Buonomo, **Oronzio Manca**, Sergio Nardini Renato Elpidio Plomitallo*

A Numerical Study on an Integrated Solar Chimney with Latent Heat Thermal Energy Storage in Various Arrangements.

***Bernardo Buonomo**, Maria Rita Golia, Oronzio Manca, Sergio Nardini*

An ICT platform based on a multi-objective control systemic approach, aimed at reducing energy consumption in public buildings.

Alessandro Franco

Energy and social benefits of smart sustainable maintenance in existing public buildings.

***Valeria Selicati**, Nicola Cardinale*

Numerical Investigation on a Flat-Plate Direct Absorption with Water-Nanofluid Mixtures in Summer and Winter Conditions.

*Bernardo Buonomo, Fabio Cardillo, Pietro Chirico, **Oronzio Manca**, Sergio Nardini, Giovanna Russo, Angela Scapatucci, Ivan Vicidomini*

Life Cycle Assessment for a solar cooling plant.

*Bernardo Buonomo, Oronzio Manca, Sergio Nardini, **Renato Elpidio Plomitallo**, Silvio Vigna*

11:00-11:45

Coffee Break

11:45-13:15

Round Table – Room K8

Buildings' energy consumption models and applications

13:15-14:30

Lunch

Session 7

Renewable Energy Sources – Room K8

14:30-14:50

Design and construction of a UAV for high atmosphere flight powered by hydrogen fuel cell.

*Concettina Marino, Antonino Nucara, Maria Francesca Panzera, **Matilde Mariarosa Consolata Pietrafesa***

14:50-15:10

Improving Efficiency and Renewables Utilization in Hybrid Heating Plants for Industrial Buildings.

*Francesco Cerboni, Simone Mancin, **Marco Noro***

15:10-15:30	<p>Development of sustainable ORC applications in the tertiary sector: a case study in the Mediterranean climate. <i>Laura Cirrincione, Massimo Morale, Giorgia Peri, Gianluca Scaccianoce</i></p>
15:30-15:50	<p>On the Modelling of PEM Electrolysis using 3D Computational Fluid Dynamics. <i>Alessandro D'adamo, Giuseppe Corda</i></p>
15:50-16:10	<p>Gasification as possible technological solution for driftwood management in bodies of waters. <i>Nicolò Morselli, Marco Puglia, Filippo Ottani, Fabio Dalmonte, Paolo Tartarini, Giulio Allesina, Simone Pedrazzi</i></p>
16:10-16:30	<p>Optimal management of Hybrid Heat Pump systems. <i>Alice Mugnini, Patricia Ercoli, Alessia Arteconi</i></p>
16:30-17:00	<p>Closing Ceremony – Room K8</p>

GENERAL INFORMATION

CONFERENCE VENUE

Università degli Studi di Parma
Polo didattico Kennedy
Vicolo S. Maria 11, Parma

BADGE

Delegates will receive a badge to participate in the scientific sessions and join the social program. Accompanying persons will receive a badge to join the social events.

TECHNICAL INFORMATION FOR PRESENTERS

Technical sessions: oral presentations

15 minutes at disposal for the presentation + 5 minutes for questions.

The written text in the slides must be in English language while the presentations can be held in Italian or English language

A template for the presentation is available on the website of the conference. Its adoption is recommended

Speakers must bring their presentations to the scheduled presentation room before the relevant session starts. Presenters cannot connect their laptop to the projector.

Posters

The required format is A0.

Authors are requested to mount their poster before the poster session starts and to remove them at the end of the session. Posters should not be left in place overnight.