



UNIVERSITÀ
DI PARMA



IIETA International Information and
Engineering Technology Association

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



Parma, Italy June 8-9, 2022

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CONFERENCE PROGRAM

PROGRAM AT A GLANCE

Wednesday, June 8th

8:30-10:00	Registration
10:00–10:30	Open Ceremony , Room K8
10:30-11:00	Coffee Break
11:00-13:00	Technical Sessions Session 1: Thermodynamics and Heat Transfer I, Room K8 Session 2: Energy Conversion and Management I, Room K9
13:00-14:15	Lunch
14:15-15:35	Technical Sessions Session 3: Energy in Food processing, Room K8 Session 4: Energy and Environmental Policy, Room K9
15:35-16:00	Coffee Break
16:00-17:45	Round Table , Room K8 2022: quale transizione energetica?
17:45-18:30	AIGE Board Meeting , Room K8
20:30	Gala Dinner, Ristorante “Il Cortile” , Borgo Paglia, 3, Parma

Thursday, June 9th

9:00-9:20	Registration
9:20-11:00	Technical Sessions Session 5: Thermodynamics and Heat Transfer II, Room K8 Session 6: Energy Conversion and Management II, Room K9
11:00 -11:45	Poster Session
11:00-11:45	Coffee Break
11:45-13:15	Round Table , Room K8 Buildings’ energy models and applications at urban scale
13:15-14:30	Lunch
14:30-16:50	Technical Session Session 7: Renewable Energy Sources, Room K8
16:50-17:15	Closing Ceremony , Room K8

Wednesday, June 8th

8:30-10:00	Registration
10:00–10:30	Open Ceremony, Room K8
	Speakers: <i>Paolo Andrei, Rettore dell'Università di Parma</i> <i>Antonio Montepara, Direttore del Dipartimento di Ingegneria e Architettura</i> <i>Mario Menegatti, Direttore del Dipartimento di Scienze economiche e Aziendali</i>
	Chairs: <i>Sara Rainieri, Presidente del Congresso</i> <i>Enrico Lorenzini, Presidente AIGE</i>
10:30-11:00	Coffee Break
Session 1	Thermodynamics and Heat Transfer I - Room K8
	<i>Chair: Oronzio Manca, Università degli Studi della Campania "Luigi Vanvitelli"</i>
11:00–11:20	CHECK TEMPERATURE: a small-scale elastocaloric device for the cooling of the electronic circuits. <i>Luca Cirillo, Adriana Greco, Claudia Masselli</i>
11:20–11:40	Preliminary analysis of a novel battery thermal management system based on a low boiling dielectric fluid. <i>Luca Giammichele, Valerio D'Alessandro, Matteo Falone, Renato Ricci</i>
11:40–12:00	Thermofluid-dynamic characterization of the elastocaloric air conditioner SUSSTAIN-EL. <i>Luca Cirillo, Adriana Greco, Claudia Masselli</i>
12:00–12:20	Thermal and visual remote sensing of residential buildings by UAV. <i>Marco Ottaviani, Luca Giammichele, Federico Fioretti, Renato Ricci</i>
12:20–12:40	Semi-empirical correlations and an artificial neural network for liquid dynamic viscosity of low GWP refrigerants. <i>Giovanni Di Nicola, Sebastiano Tomassetti, Mariano Pierantozzi, Pio Francesco Muciaccia</i>
12:40–13:00	An experimental apparatus coupled by an optimization model for measuring thermal diffusivity of solid material. <i>Roberto Baccoli, Nicola Pintus</i>

Session 2**Energy Conversion and Management I - Room K9**

Chair: Paolo Tartarini, Università di Modena e Reggio Emilia

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.

Simone Pedrazzi, 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

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

13:00-14:15

Lunch

Session 3**Energy in Food processing - Room K8**

Chair: Alberto Muscio, Università di Modena e Reggio Emilia

14:15-14:35

Energy cost and parmesan cheese. An overview in the different energy fluxes needed to produce a parmesan wheel.

Marco Puglia, Nicolò Morselli, Giulio Allesina, Simone Pedrazzi, Filippo Raguzzoni, Paolo Tartarini

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

Chair: Fabio Polonara, Università Politecnica delle Marche

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, Matteo Vincenzo Rocco, Emanuela Colombo

14:35-14:55 Preliminary testing of a simplified methodology for indoor environments evaluation correlated to airborne transmission: the case of a university classroom with vertical low-velocity ventilation.
Marco Puglia, Nicolò Morselli, Filippo Ottani, Giulio Allesina, Simone Pedrazzi, Alberto Muscio, Andrea Cossarizza, Paolo Tartarini

14:55-15:15 Microclimate assessment at real experimental conditions for green energy urban policy.
Cristina Piselli, Carla Balocco, Ilaria Pigliautile, Claudia Fabiani, Roberta Jacoby Cureau, Fabio Sciarpi, Cristina Carletti, Anna Laura Pisello, Franco Cotana

15:35-16:00 **Coffee Break**

16:00-17:45

Round Table - Room K8

La politica energetica italiana: indirizzi attuali

Gilberto Dialuce, Presidente ENEA

2022: quale transizione energetica?

Romano Borchiellini, Energy Center Politecnico di Torino

Antonio D'Aloia, Università di Parma

Oronzio Manca, Università degli Studi Luigi Vanvitelli

Davide Tabarelli, Nomisma Energia

Francesco Vetrò, Università di Parma

Chairs:

Enrico Lorenzini, Presidente AIGE

Sara Rainieri, Università di Parma

17:45-18:30

AIGE Board Meeting - Room K8

20:30

Gala Dinner – Ristorante “Il Cortile” Borgo Paglia, 3, Parma

Thursday, June 9th

9:00-9:20 **Registration**

Session 5 **Thermodynamics and Heat Transfer II - Room K8**

Chair: Adriana Greco, Università di Napoli Federico II

- 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, Michele Cossu, **Alberto Muscio***
- 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 Geospatial assessment and modeling of outdoor thermal comfort at
urban scale.
*Guglielmina Mutani, **Simone Beltramino***
- Session 6** **Energy Conversion and Management II - Room K9**
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- 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	<p>Comparison of combustion and gasification for energy recovery from residual woody biomass.</p> <p><i>Alberto Carotenuto, Simona Di Fraia, M. Rakib Uddin, Laura Vanoli</i></p>
10:40–11:00	<p>Pyrogasification to produce biogas and biomethane from wood wastes.</p> <p><i>Massimiliano Livi, Ferruccio Trifirò</i></p>
11:00 -11:45	<p>Poster Session</p> <hr/> <p>Numerical Investigation on Shell and Tube Latent Heat Thermal Energy Storage with External Heat Losses Partially Filled with Metal Foam.</p> <p><i>Bernardo Buonomo, Oronzio Manca, Sergio Nardini, Renato Elpidio Plomitallo</i></p> <p>A Numerical Study on an Integrated Solar Chimney with Latent Heat Thermal Energy Storage in Various Arrangements.</p> <p><i>Bernardo Buonomo, Maria Rita Golia, Oronzio Manca, Sergio Nardini</i></p> <p>An ICT platform based on a multi-objective control systemic approach for reducing energy use in public buildings.</p> <p><i>Alessandro Franco</i></p> <p>Energy and social benefits of smart sustainable maintenance in existing public buildings.</p> <p><i>Valeria Selicati, Nicola Cardinale</i></p> <p>Life Cycle Assessment for a solar cooling plant.</p> <p><i>Bernardo Buonomo, Oronzio Manca, Sergio Nardini, Renato Elpidio Plomitallo, Silvio Vigna</i></p>
11:00-11:45	<p>Coffee Break</p>
11:45-13:15	<p>Round Table - Room K8</p> <hr/> <p>Buildings' energy models and applications at urban scale</p> <p><i>Umberto Berardi, Ryerson University (CA)</i> <i>Javanroodi Kavan and Dr. Valeria Todeschi, EPFL (CH)</i> <i>Antonella Tundo, ENEA (IT)</i> <i>Angelo Tartaglia and Silvia Santantonio, Comunità Energetica del Pinerolese</i></p> <p>Chair: <i>Guglielmina Mutani, Politecnico di Torino</i></p>
13:15-14:30	<p>Lunch</p>

Session 7**Renewable Energy Sources - Room K8**

Chair: Giorgio Pagliarini, Università di Parma

- 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 Development of sustainable ORC applications in the tertiary sector: a case study in the Mediterranean climate.
***Laura Cirrincione**, Massimo Morale, Giorgia Peri, Gianluca Scaccianoce*
- 15:30-15:50 On the Modelling of PEM Electrolysis using 3D Computational Fluid Dynamics.
*Alessandro D'Adamo, **Giuseppe Corda***
- 15:50-16:10 Gasification as possible technological solution for driftwood management in bodies of waters.
***Nicolò Morselli**, Filippo Ottani, Fabio Dalmonte, Paolo Tartarini, Simone Pedrazzi*
- 16:10-16:30 Optimal management of Hybrid Heat Pump systems.
***Alice Mugnini**, Patricia Ercoli, Alessia Arteconi*
- 16:30-16:50 Digital platforms for Renewable Energy Communities projects: an overview.
*Francesco Demetrio Minuto, Andrea Lanzini, **Lorenzo Giannuzzo**, Romano Borchiellini*
- 16:50-17:15 **Closing Ceremony - Room K8**

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.

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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.

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