

40<sup>th</sup>

# International Heat Transfer Conference

**JUNE**  
**26-28**  
2023

**PALAZZO  
BERNABEI**  
ASSISI



A.D. 1308  
**unipg**  
UNIVERSITÀ DEGLI STUDI  
DI PERUGIA

# WELCOME LETTER

Dear Conference Delegate,

welcome to the 40<sup>th</sup> UIT Heat Transfer Conference, organized by the Department of Engineering at the University of Perugia (Italy) and held at Palazzo Bernabei, Assisi, on June 26-28, 2023.

The annual UIT Conference, which has grown over time, is held in Assisi for the first time. The scope of the conference covers a range of topics in computational fluid-dynamics and heat transfer, thermophysical properties, heat and mass transfer for sustainable energy systems, experimental techniques for heat and mass transfer, multiphase fluid-dynamics, natural, forced and mixed convection.

The Conference, in this 40<sup>th</sup> edition, includes three invited lectures by international recognised scientists: Ibrahim Dincer from Ontario Tech. University (Oshawa, Ontario) about the role of thermodynamics in integrated energy systems, on June 26<sup>th</sup>, Gary Neil Coleman from NASA Langley Research Center (Hampton, USA) about numerical studies of turbulent supersonic plane-channel flows, on June 27<sup>th</sup>, and Sauro Filippeschi from

University of Pisa (Italy) about wickless two phase heat transfer devices, on June 28<sup>th</sup>.

The 2023 Conference will be attended by over 140 delegates and over 100 papers were contributed, articulated in three technical parallel oral sessions every day and a poster session on June 27<sup>th</sup>.

At the end of the first conference day, on June 26<sup>th</sup>, a guided tour at the Basilica di San Francesco d'Assisi is planned and at the end of the second conference day, on June 27<sup>th</sup>, the traditional social dinner will take place.

We hope this conference will be an occasion of meeting and knowledge sharing between scientists in the fields of thermo-fluid dynamics and heat transfer and to visit Assisi, one of the most beautiful art cities in Italy and in the world.

Special thanks go to all the people who contributed to the success of the event, the Organizing and Scientific Committees, and to all the Conference attendees.

**Franco Cotana** and **Federico Rossi**

Chairs of 40<sup>th</sup> UIT Heat Transfer Conference

**Cinzia Buratti**

President of the Organizing Committee

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(University of Birmingham)

**Giovanni Tanda**

(Università degli Studi di Genova)

**Ding Yulong**

(University of Birmingham)

## ORGANIZING COMMITTEE

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# CONFERENCE SITES

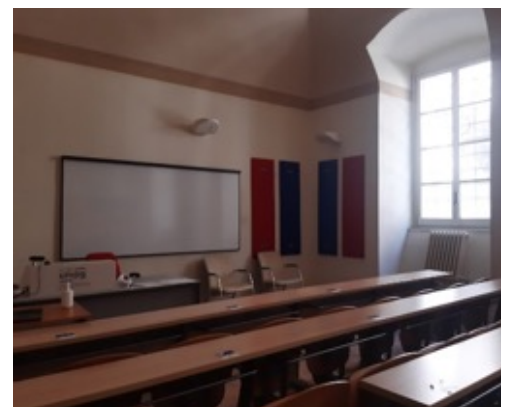
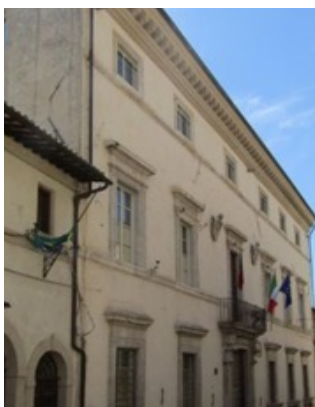


The 40<sup>th</sup> International Conference (UIT) is organized by the University of Perugia, Italy, and will be held in Assisi for the first time, on June 26-28, 2023.

A few miles from Perugia, the main administrative town of the Umbria Region, Assisi is one of the most important religious and art cities in Italy and is the birthplace of Saint Francis of Assisi, the patron saint of Italy.

Palazzo Bernabei, an architectural gem located in the heart of Assisi, will be the Conference venue. Its historic charm, combined with modern facilities, provides the perfect setting for an inspiring and productive Conference.

## Palazzo Bernabei





# GUIDED TOUR

At the end of the first UIT Conference day, all the attendees are invited to take part to the guided tour at the Basilica di San Francesco d'Assisi.

Constructed in the 13<sup>th</sup> century, this iconic basilica showcases a captivating blend of Romanesque and Gothic architectural styles.

Step inside and be captivated by the breath-taking frescoes created by the renowned artist Giotto di Bondone and his skilled disciples. These masterpieces depict the life of Saint Francis, offering a visual narrative that resonates with profound spiritual significance.

The Basilica comprises two main levels: the Lower Basilica, where the simple and serene crypt holds the sacred remains of Saint Francis, and the Upper Basilica, adorned with soaring arches and intricate details that exemplify the Gothic aesthetic.

## Basilica di San Francesco d'Assisi



📍 **Basilica di San Francesco d'Assisi**

📅 June 26<sup>th</sup>, 2023

🕒 from 18:45

# SOCIAL DINNER

At the end of the second UIT Conference day, the social dinner will take place at the Hotel Windsor Savoia, a haven of elegance and comfort nestled in the heart of Assisi.

The social dinner is a highly significant and convivial occasion that all conference attendees should engage in to embrace the conviviality, savor the authentic Umbrian cuisine, and create lasting memories in the company of your colleagues and friends.

## Hotel Windsor Savoia



📍 **Hotel Windsor Savoia**, Assisi

(Viale Guglielmo Marconi, 1)

📅 June 27<sup>th</sup>, 2023

🕒 from 20:00

# GENERAL PROGRAM



## CONFERENCE DAY 1 | JUNE 26<sup>th</sup>, 2023

09:30

CONFERENCE REGISTRATION

10:00

**Opening Ceremony** (Great Hall/Room n. 4)

**MAURIZIO OLIVIERO**

(Rector of the University of Perugia)

**STEFANIA PROIETTI**

(Mayor of Assisi)

**ERMANNO CARDELLI**

(Director of the Department of Engineering)

**SARA RAINIERI**

(President of UIT Association)

**CINZIA BURATTI**

(President of the Organizing Committee)

11:30

COFFEE BREAK

12:00

**Keynote Lecture:**

**prof. IBRAHIM DINCER**

Ontario Tech. University (CANADA)

*The Role of Thermodynamics in Integrated Energy Systems*

(Great Hall/Room n. 4)

Chairman: Alfonso Niro

13:00

LUNCH BREAK

14:30  

**Technical session A1**

Computational fluid dynamics and heat transfer

(Great Hall)

Chairman: Pietro Asinari

**Technical session C1**

Heat and mass transfer for sustainable energy systems (Room n. 4)

Chairman: Sara Rainieri

**Technical session D1**

Experimental techniques for heat and mass transfer

(Room n. 2)

Chairman: Gian Luca Morini

16:10

COFFEE BREAK

16:40  

**Technical session A2**

Computational fluid dynamics and heat transfer

(Great Hall)

Chairman: Pietro Asinari

**Technical session C2**

Heat and mass transfer for sustainable energy systems (Room n. 4)

Chairman: Sara Rainieri

**Technical session D2**

Experimental techniques for heat and mass transfer

(Room n. 2)

Chairman: Gian Luca Morini

18:00

End Conference Work Day-1

18:45

**GUIDED TOUR AT THE BASILICA  
DI SAN FRANCESCO**



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## CONFERENCE

### DAY 2 | JUNE 27<sup>th</sup>, 2023

08:30

#### CONFERENCE REGISTRATION

9:00  

##### Technical session A3

Computational fluid dynamics and heat transfer  
(Great Hall)

Chairman: Vincenzo Naso

##### Technical session B1

Conduction, radiation, thermophysical properties  
(Room n. 4)

Chairman: Nicola Bianco

##### Technical session E1

Multiphase fluid dynamics and heat transfer  
(Room n. 2)

Chairman: Paolo Di Marco

10:40

#### COFFEE BREAK

11:00  

##### Technical session A4

Computational fluid dynamics and heat transfer  
(Great Hall)

Chairman: Vincenzo Naso

##### Technical session C3

Heat and mass transfer for sustainable energy systems (Room n. 4)

Chairman: Maria Rosa Giardina

##### Technical session E2

Multiphase fluid dynamics and heat transfer  
(Room n. 2)

Chairman: Paolo Di Marco

12:00

#### Keynote Lecture:

##### dr. GARY COLEMAN

Langley Research Center - NASA (USA)

*Numerical studies of turbulent supersonic plane-channel flows - Implications for modeling high-speed boundary layers*

(Great Hall/Room n. 4)

Chairman: Franco Cotana

13:00

#### LUNCH BREAK

14:30  

##### Technical session A5

Computational fluid dynamics and heat transfer  
(Great Hall)

Chairman: Giulio Croce

##### Technical session C4

Heat and mass transfer for sustainable energy systems  
(Room n. 4)

Chairman: Maria Rosa Giardina

##### Technical session F1

Natural, forced and mixed convection  
(Room n. 2)

Chairman: Giovanni Tanda

#### Poster session (Room n. 3)

The posters will be exhibited on Monday 26<sup>th</sup>, Tuesday 27<sup>th</sup> and Wednesday 28<sup>th</sup>. Authors are requested to be present during the poster session

(Tuesday, June 27<sup>th</sup>, 14:30 – 16:10)

16:10

#### COFFEE BREAK

17:00

UIT Assembly (Great Hall/Room n. 4)

18:00

End Conference Work Day-2

20:00

SOCIAL DINNER AT WINDSOR SAVOIA  
IN ASSISI

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## CONFERENCE

### DAY 3 | JUNE 28<sup>th</sup>, 2023

08:30

#### CONFERENCE REGISTRATION

9:00  

##### Technical session E3

Multiphase fluid dynamics and heat transfer  
(Great Hall)

Chairman: Dario Ambrosini

##### Technical session C5

Heat and mass transfer for sustainable energy systems (Room n. 4)

Chairman: Fabio Inzoli

##### Technical session F2

Natural, forced and mixed convection  
(Room n. 2)

Chairman: Antonio Barletta

10:40

#### COFFEE BREAK

11:10

#### Keynote Lecture:

##### prof. SAURO FILIPPESCHI

University of Pisa (Italy)

*Wickless heat pipe applications: current advances and future perspectives*

(Great Hall/Room n. 4)

Chairman: Federico Rossi

12:10

#### Closing Ceremony





(Great Hall/Room n. 4)

13:00


#### LIGHT LUNCH

# PARALLEL TECHNICAL SESSIONS: Program Details

MONDAY, JUNE 26





 		<b>Session A1:</b> Computational fluid dynamics and heat transfer (Great Hall)	<b>Session C1:</b> Heat and mass transfer for sustainable energy systems (Room n. 4)	<b>Session D1:</b> Experimental techniques for heat and mass transfer (Room n. 2)
<b>Chair</b>	<i>Pietro Asinari</i>	<i>Sara Rainieri</i>	<i>Gian Luca Morini</i>	
<b>14:30</b>	Accuracy in evaluating convective heat transfer coefficient by RANS CFD simulations in a rectangular channel with high aspect ratio and 60° tilted staggered ribs. M Corti, P Gramazio, D Fustinoni, A Niro	Performance analysis of a reversible heat pump for a 5th generation district heating substitution. G Martinazzoli, D Pasinelli, A M Lezzi, M Pilotelli	Infrared measurements of fluid temperature in a poly-meric Pulsating Heat Pipe. L Pagliarini, F Clemens, F Bozzoli, L Cattani, N Miche, M Bernagozzi, M Marengo, A A Alqahtani, V Bertola	
<b>14:50</b>	Heat transfer in a non-isothermal turbulent particle-laden flow in the collisional regime. H R Zandi Pour, M Ioviengo	Experimental study on a Dual-Source Heat Pump in ground mode to assess the soil thermal response by means of a Distributed Temperature Sensing system. C Natale, M Dongellini, C Naldi, G L Morini	Heat flux measurement approach for an enhanced thermometric method: preliminary tests. L Evangelisti, LM Barbaro, E De Cristo, C Guattari, T D'Orazio, F Asdrubali, R De Lieto Vollaro	
<b>15:10</b>	Mixed Convection in Turbulent Particle-Laden Channel Flow at $Re_t = 180$ . D Zaza, M Ioviengo	A novel Ground Source heat exchanger in an underground metro tunnel. F Ahmed, N Massarotti, A Mauro, G Normino	An overview of the Transient Hot Wire and preliminary studies for its implementation. R Ricci, P M Congedo, C Baglivo, R Baccoli, C C Mastino, F Floris, F Cambuli, A G Ostrogorsky	
<b>15:30</b>	Topology optimization of a pseudo 3D microchannel heat sink: influence of the initial guess. N Bianco, A Fragnito, M Iasiello, G M Mauro	Development and validation of a model for an air-to-air air conditioner. W Ferretto, L Molinaroli, F Inzoli, S De Antonellis	Variable PI controller for heat pump operation in single liquid coolant loop systems. L Muratori, L Peretto, G Bottiglieri, F Coiro, R Di Sante, B Pulvirenti	
<b>15:50</b>	Experimental data analysis and dimensionless energy levels in a commercial stratified thermal storage. AV. Anacreonte, M Musto, N Bianco, R Vitobello, R Russo	A Critical Review of Modeling Methods for Radiant Floor Cooling Systems. M Bizzarri, P Conti, L R Glicksman, E Schito, D Testi	Design of a new test bench based on the Hardware-in-the-Loop methodology for dynamic performance testing of hydronic heat pumps. M Dongellini, C Natale, C Naldi, G L Morini	
<b>16:10</b>	<b>COFFEE BREAK</b>			
 		<b>Session A2:</b> Computational fluid dynamics and heat transfer (Great Hall)	<b>Session C2:</b> Heat and mass transfer for sustainable energy systems (Room n. 4)	<b>Session D2:</b> Experimental techniques for heat and mass transfer (Room n. 2)
<b>Chair</b>	<i>Pietro Asinari</i>	<i>Sara Rainieri</i>	<i>Gian Luca Morini</i>	
<b>16:40</b>	Analysis of geometric uncertainties in 3D thermo-fluid problems solved by RBF-FD meshless method. R Zamolo, D Miotti, E Nobile	3D-printed metal mesh frameworks to improve heat transfer in latent heat storage systems. M Morciano, M Alberghini, M Fasano, M Almiento, F Calignano, D Manfredi, P Asinari, E Chiavazzo	Experimental analysis on a LHTES prototype system made by a finned tube heat exchanger dipped in a paraffinic PCM. G Martino, M Dongellini, C Naldi, G L Morini	
<b>17:00</b>	Numerical analysis of the binder angle effect on convective heat transfer and pressure drop in drilled-hollow sphere architected foams. M Iasiello, G M Mauro, N Bianco, A Andreozzi, W K S Chiu, V Naso	Modelling of heat and mass transfer in membrane distillation technologies: From component to system scale. M Morciano, E Chiavazzo, P Asinari, M Fasano	An experiment for measuring dilute-gas binary diffusion coefficients based on the Stefan method. R Nobakht, R Cuccaro, R Salerno, V Fericola	
<b>17:20</b>	Analysis of Effective Thermal Conductivity in Triply Periodic Minimal Surface Foam Structures. M T Bartlett, M Iasiello, A Anacreonte, A A Peracchio, G M Mauro, N Bianco, W K S Chiu	Switching criteria analysis for a condenser moving boundary model. M Giovannini, M Lorenzini	Permeability measurement of a 3D-printed AISI10Mg porous medium: comparison between experimental and numerical techniques. L Vitali, G Brambati, R Caruana, S Foletti, M Guilizzoni, A Niro	
<b>17:40</b>	Assessment of a Flow-dependent Subgrid Characteristic Length for Large-Eddy Simulation on Anisotropic Grids. V DAlessandro, Y Delorme, M Falone, M Wasserman, R Ricci	Preliminary thermal-hydraulic deterministic safety analysis of an in-vessel LOCA for the DTT facility. G Grippo, A Bersano, F Mascari		
<b>18:00</b>	<b>END CONFERENCE WORK DAY-1</b>			
<b>18:45</b>	<b>GUIDED TOUR AT THE BASILICA DI SAN FRANCESCO</b>			

## TUESDAY, JUNE 27

	  <b>Session A3:</b> Computational fluid dynamics and heat transfer (Great Hall)	<b>Session B1:</b> Conduction, radiation, thermophysical properties (Room n. 4)	<b>Session E1:</b> Multiphase fluid dynamics and heat transfer (Room n. 2)
<i>Chair</i>	<i>Vincenzo Naso</i>	<i>Nicola Bianco</i>	<i>Paolo Di Marco</i>
<b>09:00</b>	Effects of door design on thermal performance in an innovative commercial oven. R Timur, <b>Z Kahraman</b> , M Haci, H S Soyhan	Critical assessment of thermal conductivity models for Miscibility Gap Alloy-based composite Phase Change Materials for high temperature Thermal Energy Storage. <b>M Molteni</b> , I M Carraretto, P Bassani, E Gariboldi, A Lucchini, L P M Colombo	Two Phase Bubble Columns: the Determinants of the Flow Regime Transitions. <b>N Varallo</b> , G Besagni, R Mereu, F Inzoli
<b>09:20</b>	Numerical analysis of forced convection within electric ovens. <b>S Rustico</b> , J Briglia, B Pulvirenti, M Reguzzoni, L Raschi	Evaluating the potential of persistent luminescence in counteracting urban overheating. <b>C Chiatti</b> , C Fabiani, E Bou-Zeid, A L Pisello	Convective condensation of R449a inside smooth tube. <b>A Lucchini</b> , I M Carraretto, L P M Colombo, D Mazzeo, P G Pittoni, G Lipori
<b>09:40</b>	Investigation of a thermomechanical improved tangential fan geometry. J Hauch, K Reich, D Büschgens, H Pfeifer	Investigating the relationship between surface roughness and reflectance properties of building materials. <b>F Marchini</b> , C Chiatti, C Fabiani, L Latterini, A L Pisello	Visualization of the flow regime during condensation of R1234ze(E) inside a 5 mm OD micro-finned tube. N Irannezhad, L Rossetto, <b>A Diani</b>
<b>10:00</b>	Numerical and experimental study to examine methods to increase the convective heat transfer of recuperator tubes. E Trampe, J Hauch, D Büschgens, H Pfeifer	Experimental investigation of moisture influence on biochar and biochar-soil blends thermophysical properties. N Morselli, <b>M Puglia</b> , F Ottani, S Pedrazzi, G Allesina, A Muscio, P Tartarini	A new model to study the life of millions of drops during condensation of steam. M Mirafiori, <b>A Abbatecola</b> , M Tancon, S Bortolin, D Del Col
<b>10:20</b>	CFD design of a novel device for temperature profile measurement in Waste-to-Energy plants <b>G Grossi</b> , F Arpino, C Canale, G Cortellessa, G Ficco, T Lombardi	Numerical investigation of radiative transfer during oxyfuel combustion of hydrogen and hydrogen enriched natural gas in the container glass industry. <b>F Ott</b> , J Losacker, N Schmitz, H Pfeifer	Experimental data for flow boiling of R450A in a horizontal tube. R Mastrullo, A W Mauro, A F Passarelli, I Viscardi, <b>L Viscito</b>
<b>10:40</b>	<b>COFFEE BREAK</b>		
	  <b>Session A4:</b> Computational fluid dynamics and heat transfer (Great Hall)	<b>Session C3:</b> Heat and mass transfer for sustainable energy systems (Room n. 4)	<b>Session E2:</b> Multiphase fluid dynamics and heat transfer (Room n. 2)
<i>Chair</i>	<i>Vincenzo Naso</i>	<i>Maria Rosa Giardina</i>	<i>Paolo Di Marco</i>
<b>11:00</b>	Direct numerical simulation of liquid metal forced and mixed convection in a square rod bundle. <b>D Trane</b> , M Grespan, E Stalio, D Angeli	Influence of different heating systems on thermal comfort perception: a dynamic and CFD analysis. <b>V Ballerini</b> , E P B de Volo, B Pulvirenti, E Rossi di Schio, P Valdiserri, P Guidorzi	Numerical simulation of shear driven film instability over heterogeneous surfaces via enhanced lubrication theory. <b>N Suzzi</b> , G Croce
<b>11:20</b>	Effect of closed-loop nanochannels on the onset of explosive boiling: a molecular dynamics simulation study. <b>R Fallahzadeh</b> , F Bozzoli, L Cattani	Thermally adaptive wall to enhance indoor comfort and energy performance. F Bianchi, <b>G Baldinelli</b> , J A Schnotale, A A Lechowska, A Presciutti	Pool boiling performances comparison of FC-72 and Novec 649 in the presence of a DC electric field. <b>A I Garivalis</b> , P Fanani, P Di Marco
<b>11:40</b>	Experimental validation of a heat exchanger model for thermoacoustic applications. <b>A Di Meglio</b> , N Massarotti, A Piccolo	Development of lumped-parameters models for the thermal evaluation and air quality in aircrafts. <b>G Tognon</b> , P Biasibetti, A Zarrella	An experimental study on scaling of pool boiling critical heat flux in lunar and martian gravity. <b>P Di Marco</b> , A I Garivalis, L Bernardini, B Marangolo, B Liu, J Wei
<b>12:00</b>	Keynote Lecture <b>dott. GARY COLEMAN</b> Langley Research Center - NASA (USA) (Great Hall/Room n. 4) Chairman: <i>Franco Cotana</i>		
<b>13:00</b>	<b>LUNCH BREAK</b>		





	  <b>Session A5:</b> Computational fluid dynamic and heat transfer (Great Hall)	<b>Session C4:</b> Heat and mass transfer for sustainable energy systems (Room n. 4)	<b>Session F1:</b> Natural, forced and mixed convection (Room n. 2)
<i>Chair</i>	<i>Giulio Croce</i>	<i>Maria Rosa Giardina</i>	<i>Giovanni Tanda</i>
<b>14:30</b>	A 3D numerical model for the performance analysis of a differential pressure flow meter in transient conditions for liquid fuels. <i>C Canale, F Arpino, G. Cortellessa, G. Ficco, G. Grossi, M Huovinen, A Karvinen</i>	Local heat-transfer coefficient estimation in cross-helix corrugated tubes under turbulent regime. <i>M W Azam, M Malvasi, L Cattani, F Bozzoli, S Rainieri</i>	Experimental observations of the onset of unsteadiness for buoyant airflow along smooth and rough vertical isothermal walls. <i>G Tanda, E N Ahmed, A Bottaro</i>
<b>14:50</b>	Numerical modelling of an electric motor cooling jacket. <i>M Grespan, L Campanelli, D Angeli, R Freddi</i>	Towards a more realistic MELCOR model for a dry cask for spent nuclear fuel. Part I: sensitivity studies. <i>M Angelucci, S Paci</i>	Unstable convection in a vertical double-layer porous slab. <i>S Lazzari, M Celli, A Barletta, P V Brandão</i>
<b>15:10</b>	Combined Experimental and Numerical Approach for the Thermal Heat Exchange Investigation of Li-Ion Cells for Automotive Applications. <i>C Karaca, G Baldinelli, L Postrioti, F Scrucca</i>	Towards a more realistic MELCOR model for a dry cask for spent nuclear fuel. Part II: application. <i>M Angelucci, S Paci</i>	Estimation of Internal Heat Flux on Pulsating Heat Pipes using Kalman Filter: Numerical and Experimental Results. <i>B H M Margotto, M J Colaço, C E P Kopperschmidt, F Bozzoli, L Pagliarini, L Cattani, W B da Silva, M Hamada, H. Nagano</i>
<b>15:30</b>		iENTRANCE@ENL - a new research infrastructure for energy transition and circular economy within the NextGenEU Program: The role of INRiM. <i>P Asinari</i>	New insights on Pulsating Heat Pipe Startup time. <i>M Capuani, M Abela, M Mameli, S Filippeschi, B S Taft</i>
<b>15:50</b>			Gravity induced shape effects on the time-dependent evaporation of pendant drops. <i>S Tonini, G E Cossali</i>
<b>14:30 – 16:10</b>	<b>POSTER SESSION</b>  		
<b>16:10</b>	<b>COFFEE BREAK</b>		
<b>17:00</b>	UIT Assembly (Great Hall/Room n. 4)		
<b>18:00</b>	<b>END CONFERENCE WORK DAY-2</b>		
<b>20:00</b>	<b>SOCIAL DINNER AT WINDSOR SAVOIA IN ASSISI</b>		



<b>14:30–16:10</b>	(Room n. 3)
<b>P-1</b>	Experimental analysis of insulating materials using Guarded Hot Box - Preliminary results. T de Rubeis, A Ciccozzi, D Paoletti, D Ambrosini
<b>P-2</b>	Comprehensive modelling of ventilation systems for Nearly Zero Energy Buildings. R Sedoni, G Cannistraci, P E Santangelo, D Angeli, M Romani, L Fioravanti
<b>P-3</b>	Assessing Thermal comfort and indoor air quality in an office room by means of CFD simulations. E P B de Volo, B Pulvirenti, M Silvestrini, F Salvi, A Casolari
<b>P-4</b>	The role of SRF in achieving the EU landfill targets in the Umbria Region, Italy. A Pazzaglia, B Castellani
<b>P-5</b>	Thermal-hydraulic study of the EU-DEMO Helium Cooled Pebble Bed Breeding Blanket Primary Heat Transport System. E Vallone, G Agnello, G Bongiovi, F M Castrovinci, S D'Amico, P A Di Maio, I Moscato, A Quartararo
<b>P-6</b>	Numerical study of the Thermo-hydrodynamic behavior of a non-Newtonian nanofluid in a backward facing step. A Mokhefi, E Rossi di Schio, P Valdiserri, C Biserni, D Derbal
<b>P-7</b>	The impact of the distribution of the condensation energy adsorbed in the water pool on the DCC efficiency at sub-atmospheric pressure. D Aquaro, L Berti, R Lo Frano, S A Cancemi, F d'Errico, B Sarkar
<b>P-8</b>	CFD analysis of thermal fluid dynamic parameters inside an organ pipe: influence of air temperature variations. P Domenighini, C Buratti
<b>P-9</b>	Influence on energy demand of thickness, thermal conductivity, and volumetric heat capacity of ladle working lining in secondary steel making process. M Neri, M Pilotelli, A M Lezzi
<b>P-10</b>	Thermal performance of clay bricks with different fillings: a CFD analysis. F Merli, S Susta, C Buratti
<b>P-11</b>	Improving the energy performance of a 3D-printed wall using recycled materials. M Neri, L Licciardello, A Reggia, M Pilotelli, A M Lezzi
<b>P-12</b>	Fluid dynamic parameters of naturally derived hydroxyapatite scaffolds for in vitro studies of bone cells. E Salerno, A d'Adamo, G Corda, C Ongaro, B Zardin, G Orlandi, A Ruffini, J Bertacchini, D Angeli
<b>P-13</b>	Energy comparison analysis between direct and indirect dry saturated steam generation, thermally powered by EFPCs' solar fields. A Levranò, A V Anacreonte, E Gaudino, R Vitobello, S Sparano, R Russo, M Musto
<b>P-14</b>	Saccardo nozzle ventilation system: cfd analisys to upgrade the performance of the ventilation system. M Musto, F Cascetta, N Bianco, G Rotondo
<b>P-15</b>	Design and thermal test of high-vacuum insulator for heat delivery pipes. F Capolupo, C D'Alessandro, P Strazzullo, R Russo, M Musto
<b>P-16</b>	Retro-reflective plaster coatings after outdoor aging and soiling: an in-lab optical performance characterization. A Di Giuseppe, A Pazzaglia, B Castellani, A Nicolini, F Rossi, F Cotana
<b>P-17</b>	Experimental analysis of flow boiling heat transfer in multimicrochannel evaporators. F Riccardi, G Zummo, L Saraceno, L Gugliermetti, G Caruso
<b>P-18</b>	The innovative use of ultrasounds in electronics to maximize heat dissipation. C Bartoli, A Franco, C Di Brango, D Testi, P Conti, M Macucci
<b>P-19</b>	Characterization of thermal contact resistance between ceramic-aluminium and ceramic-steel for thermoelectric applications. A Rodríguez, G Pérez-Artieda, I Alzuguren, D Chavarren
<b>P-20</b>	The DEPLOY! Project: Development of a Deployable Pulsating Heat Pipe Experiment on a parabolic flight. A Billi, M Mameli, S Filippeschi, N Miché, F Bozzoli, R Perna, S Picchi, V Rosellini, E Saltmarsh, M Bocelli, N Ricci
<b>P-21</b>	Preliminary assessment of a microscale damper prototype suppressing air flow oscillations in a microchannel. A Fichera, A Pagano, R Volpe
<b>P-22</b>	A new concept of direct oil cooling system for AFPM Machines, numerical analysis and optimization. L Pirillo, F Nardecchia, F Bisegna



## WEDNESDAY, JUNE 28

	<b>Session E3:</b> Multiphase fluid dynamics and heat transfer (Great Hall)	<b>Session C5:</b> Heat and mass transfer for sustainable energy systems (Room n. 4)	<b>Session F2:</b> Natural, forced and mixed convection (Room n. 2)
Chair	<i>Dario Ambrosini</i>	<i>Fabio Inzoli</i>	<i>Antonio Barletta</i>
<b>09:00</b>	Biochar powders coating to improve evaporative cooling in Maisotsenko-cycle systems. <i>N Morselli, F D Fracasso, M Cossu, F Ottani, M Puglia, S Pedrazzi, G Allesina, A Muscio, P Tartarini</i>	Numerical performance investigation of High Vacuum Flat Plate Hybrid Photovoltaic-Thermal devices. <i>P Strazzullo, D De Luca, A Caldarelli, E Gaudino, M Musto, E Di Gennaro, R Russo</i>	Instability of adiabatic shear flows in a channel. <i>A Barletta, M Celli, S Lazzari, P V Brandão</i>
<b>09:20</b>	BEPU analysis of an Upgraded ICE facility test by TRACE/DAKOTA coupling. <i>A Bersano, G Agnello, PA Di Maio, G Grippo, F Mascari</i>	Mass Transport at the Anode Interface in Lithium-Ion Batteries: a Computational Approach. <i>R Cappabianca, P De Angelis, M Fasano, P Asinari, E Chiavazzo</i>	Spatially developing instability in the Darcy-Bénard problem with throughflow: a nonlinear analysis. <i>P V Brandão, L S d B Alves, A Barletta, M Celli</i>
<b>09:40</b>	Control of CO2 evaporation in an integrated photovoltaic module: experiments and modelling. <i>M Azzolin, E Zanetti, R Conte, D Del Col</i>	A Test Bench for the Assessment of Flow Meters Accuracy for Fuel Consumption Measurement in Highly Dynamic Drive Cycle Tests. <i>M Martino, L Postrioti, A Malengo</i>	A new dry deposition model implemented in CALPUFF code to simulate contamination of radionuclides released into atmospheric environment post-nuclear accidental event. <i>M Giardina, P Buffa, A Cervone, C Lombardo, D Giaiotti, D Oshurok, O Skrynyk</i>
<b>10:00</b>	Multi-scale analysis of respiratory droplets transport within the breathing cloud. <i>L Campanelli, M Cavazzuti, P Tartarini</i>		Parallel connected natural circulation loops using different working fluids: experimental results. <i>J A Bocanegra, A Marchitto, M Misale</i>
<b>10:20</b>	Numerical validation of ice formation on a lattice structure evaporator. <i>L Bernardini, A I Garivalis, B Marangolo, E Rezaei, P Di Marco</i>		Thermal characterisation of rarefied flows in rhombic microchannels. <i>P Vocale, G L Morini</i>
<b>10:40</b>	<b>COFFEE BREAK</b>		
<b>11:00</b>	Keynote Lecture <b>prof. SAURO FILIPPESCHI</b> University of Pisa (Italy) (Great Hall/Room n. 4) Chairman: <i>Federico Rossi</i>		
<b>12:30</b>	<b>CLOSING CERIMONY</b> (Great Hall/Room n. 4)		
<b>13:00</b>	<b>LIGHT LUNCH</b>		

# GENERAL INFORMATION

### BADGE AND DINNER TICKET

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.

Delegates also will receive a ticket to be exhibited at the social dinner entrance.

### TECHNICAL INFORMATION FOR PRESENTERS

Technical sessions: oral presentations

15 minutes at disposal for the presentation + 5 minutes for questions/change of Speaker.

Speakers must bring their presentations to the scheduled presentation room at least two hours before the relevant session starts, or in the afternoon of previous day in case of early morning sessions.

Presenters cannot connect their laptop to the projector.

### Posters

Authors are requested to mount their poster before the poster session starts (if it is possible during the day 1 – June 26) and to remove them at the end of the Conference (June 28).

## SECRETARIAT

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