

4th Winter School for PhD students on

FLUID MACHINES AND ENERGY SYSTEMS

March 27th – 31st, 2023
 University of Pisa

The 4th Winter School for PhD students of fluid machines and energy systems will be held in Pisa (Italy) on **March 27th - 31st**. The main topic of the school will be **Renewable Energies, Energy Storage and Energy Transition**. In the last years, the share of renewable sources in the energy mix of several countries is increased with a steady pace. This led to a revolution in the way to conceive energy conversion and diffusion in comparison to a fossil fuel-based system. However, the transition to a future with a high penetration of renewables implies several criticalities from both the technical and economic point of views. The school will be the opportunity to discuss these topics, have an insight to new frontiers of engineering research and promote the cooperation between PhD Students. The focus of the conference will be **Turbomachinery (TM), Energy Systems (ES) and Internal Combustion Engines (ICE)**.

	Monday March 27 th	Tuesday March 28 th	Wednesday March 29 th	Thursday March 30 th	Friday March 31 st
08:30					
09:00		Plenary Prof. Michelassi	Plenary Prof. Barsali	Plenary Prof. Onorati	Workgroup activity Presentation and discussion
09:30					
10:00	Opening Ceremony	Coffee break	Coffee break	Coffee break	Coffee break
10:30					
11:00	Plenary Prof. Assadi	TM-1 Prof. Andreini	ES-2 Prof. Sciacovelli	ICE-3 Prof. Bianchi	Workgroup activity Presentation and discussion
12:00		ES-1 Prof. Cordiner	TM-3 Prof. Fontaneto	TM-4 Prof. Pinelli	
12:30					
13:00	Lunch	Lunch	Lunch	Lunch	Lunch
13:30					
14:00	Plenary Prof. Zirpoli	TM-2 Prof. Persico	ES-3 Prof. Kyprianidis	ICE-4 Ing. Arnone	Closing Ceremony
15:00		ICE-1 Prof. Serrano	ICE-2 Prof. Ferrari	ES-4 Prof. Milewsky	
15:30					
16:00	Coffee break	Coffee break	Coffee break	Coffee break	
16:30					
17:00	Workgroup activity Assignment	Workgroup Self-learning activity	Workgroup Self-learning activity	Workgroup Self-learning activity	
17:30					
18:00					
	Welcome reception	Social dinner			

Location: “Le Benedettine” Conference Center
 Piazza S. Paolo a Ripa D'Arno, 16 – 56122 – Pisa

Keynotes

- **Prof. M. Assadi** University of Stavanger
Energy transition towards carbon neutral energy solutions: challenges and opportunities
- **Prof. F. Zirpoli** Ca'Foscari University of Venice
Managing complex products innovation: the case of the automotive industry
- **Prof. V. Michelassi** Baker Hughes spa
High-fidelity and machine-learning-assisted modeling of turbomachinery for energy transition
- **Prof. S. Barsali** University of Pisa
Balancing and control in power systems with large share of renewable sources
- **Prof. A. Onorati** Politecnico di Milano
Next generation of internal combustion engines for zero CO₂ emissions

Turbomachinery

- **Prof. A. Andreini** University of Florence
Challenges in the transition from fossil to hydrogen-based fuels in gas turbines: perspectives for power generation and aviation sectors
- **Prof. G. Persico** Politecnico di Milano
Aero-thermodynamic design and analysis of advanced turbomachinery for novel energy conversion systems
- **Prof. F. Fontaneto** Von Karman Institute
Testing of turbomachinery components: process and challenges of the experiments design
- **Prof. M. Pinelli** University of Ferrara
Mechanisms and analysis of performance degradation in turbomachinery

Energy systems

- **Prof. S. Cordiner** University of Roma Tor Vergata
Biomass as energy source: exploring the potential for energy and biofuel generation
- **Prof. A. Sciacovelli** University of Birmingham
Long duration thermo-mechanical energy storage: components, technologies, and strategies for future zero-carbon energy systems
- **Prof. K. Kyprianidis** Mälardalen University
Conceptual design of environmentally friendly propulsion systems: novel technologies and some AI applications
- **Prof. J. Milewsky** Warsaw University of Technology
Hydrogen and fuel cells technologies: theory and applications

Internal combustion engines

- **Prof. J. R. Serrano** University Politècnica de València
Oxyfuel combustion for zero tank-to-wheel tail-pipe emissions in reciprocating internal combustion engines
- **Prof. A. Ferrari** Politecnico di Torino
Future scenario for a sustainable vehicular mobility and state-of-the-art of hydrogen ICE technologies
- **Prof. G. M. Bianchi** University of Bologna
Internal combustion engine for passenger cars: status and outlook
- **Dr. L. Arnone** Kohler Engines
Powertrains for off-road machines

Fees and application:

- Applications must be submitted [here](#) before **Feb. 27th**. Required documents (in pdf form): identity document (passport in case of a foreign student), signed enrolment form, curriculum vitae, certification of PhD student status
- Once the application has been approved, a fee of € 500,00 is requested. The fee includes attendance, 1 welcome reception, 1 social dinner, 5 lunches and 8 coffee breaks

For additional information:

- Prof. Lorenzo Ferrari
lorenzo.ferrari@unipi.it +39 050 221 7132
- Summer/Winter School Office
support.summerschool@unipi.it



Suggested accommodations

RESIDENCE LE BENEDETTINE

Lungarno Sonnino 18, Pisa, Italia
Tel. 050 28 257 Fax 050 22 06 593

HOTEL LA PACE

Viale Gramsci, 14 (Galleria B) – 56125 Pisa
Tel. 050.29351-2 48863 Fax 050.502266

HOTEL ROMA

Via Bonanno, 111 – 56126 Pisa
Tel. 050.554488 Fax 050.550164

HOTEL VERDI

Piazza della Repubblica, 5 – 56125 Pisa
Tel. 050.598947 Fax 050.598944

HOTEL BOLOGNA

Via Mazzini, 57 – 56125 - Pisa
Tel. 050.502120 Fax 050.43070

HOTEL REPUBBLICA MARINARA

Via Matteucci, 81 – 56124 Pisa
Tel. 050.3870100 Fax 050.3870200

HOTEL ROYAL VICTORIA

Lungarno Pacinotti, 12 – 56126 Pisa
Tel. 050.940111 Fax 050.940180

GRAND HOTEL BONANNO

Via Carlo Francesco Gabba, 17 – 56122 Pisa
Tel. 050.524030 Fax 050.532072

How to reach Pisa:

- Train: The Pisa Central railway station is served by regional trains from Florence (approx. 1 hour), and by Regional, Frecciabianca and Interregional trains serving the Italian west coast from Genoa to Rome. (www.trenitalia.com)
- Car: Pisa can be easily accessible by car from Florence by using the A11 motorway from Firenze Nord exit on the A1, or by using the S.G.C. Firenze-Pisa-Livorno from the Firenze Scandicci exit on the A1. Along the A12 (Genova- Rosignano) there are two exits to reach Pisa (Pisa Nord e Pisa Centro).
- Airplane: Pisa or Florence Airports (<https://www.pisa-airport.com/> - www.aeroporto.firenze.it/).
- Bus: Flixbus offers several low-cost connections by coach to Pisa. (www.flixbus.it).



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Renewable Energies, Energy Storage and Energy Transition

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