



Summer School on Advanced Research in Turbomachinery (ART)

1-5 July 2019
Florence, Italy

ART 2019

An event organized by the Department of Industrial Engineering (DIEF) of the University of Florence

The school will take place in the Historic Centre of Florence (UNESCO World Heritage Site)

Lectures, organized in both plenary and parallel sessions, will be held by Professors and Researchers from DIEF, who are presently working in the corresponding fields of research

Relevant advances in the field of Turbomachinery research will be addressed, including:

- turbomachinery aerodynamics
- aeroelasticity and aeroacoustics
- heat transfer and cooling
- two-phase flows
- radial machinery and turbochargers
- uncertainty quantification
- wind energy
- multi-scale modeling
- gas turbine combustion
- hydraulic machines

The school will include a tour of the factory and premises of Baker Hughes

With the support of:



Keynote Speakers:

Dr. A. Ameri (Ohio State University)

Prof. C.O. Paschereit (TU Berlin)

Prof. S. Spence (Queen's University Belfast)

Sponsored by:



Welcome to the 2019 Summer School on “Advanced Research in Turbomachinery” (ART)

The school is aimed at providing young engineering professionals with an overview on some of the most relevant issues of the present turbomachinery research.

For each topic, the current state of the art is first presented, both from a theoretical and a technical point of view. Concrete examples of applied research are then presented, with special focus on the latest developments and breakthrough technologies.

The lectures are held by Professors and Researchers from DIEF. Special thanks are due to the gold sponsor ANSYS and to former researchers from DIEF, who will also contribute with some relevant lectures.



Under the auspices of:



Registration fees ¹

Early bird registration (before May 20 th , 2019)	€ 540
Standard registration (from May 20 th to June 24 th ² , 2019)	€ 590
Accompanying person ³	€ 100

- ¹ The Registration includes:
- 1) Access to all the plenary and parallel sessions during the 5-day school
 - 2) Conference kit and digital proceedings
 - 3) Welcome cocktail, coffee breaks and lunches (see program)
 - 4) Social dinner
 - 5) “Mathematics in architecture” - Guided walk through Florence city center

² Please note that - due to organizing issues - no registration will be accepted after June 24th, 2019 @ 22:00 p.m. CEST


³ The registration includes only: welcome cocktail, lunches, social dinner and the “Mathematics in architecture” cocktail

Cancellation policy

Before May 20 th , 2019	90% of the registration fee will be reimbursed
From May 20 th to June 11 th , 2019	50% of the registration fee will be reimbursed
After June 11 th , 2019	no reimbursement

Technical program⁴

	Mon, July 1 st	Tue, July 2 nd		Wed, July 3 rd		Thu, July 4 th		Fri, July 5 th	
08:45 - 09:15	Welcome reception	Keynote K3		Session W-A1		Session H-A1	Session H-B1	Session F-A1	
09:15 - 09:45									
09:45 - 10:15	Opening								
10:15 - 10:45	Keynote K1	Coffee break		Coffee break		Coffee break		Coffee break	
10:45 - 11:15		Session T-A2	Session T-B2	Session W-A2	Session W-B2	Session H-A2		Session F-A2	Session F-B2
11:15 - 11:45									
11:15 - 12:15									
12:15 - 14:00	Lunch	Lunch		Lunch		Lunch		Closing ceremony	
14:00 - 14:30	Keynote K2	Session T-A3	Session T-B3	Session W-A3	Session W-B3	Session H-E1		Guided tour to Baker Hughes	
14:30 - 15:00									
15:00 - 15:30									
15:30 - 16:00	Coffee break	Coffee break		Coffee break					
16:00 - 16:30	Session M-A4	Session T-A4	Session T-B4	Session W-A4	Session W-B4	Session H-E2			
16:30 - 17:00									
17:00 - 17:30									

 General interest (A+B)

 Technical session

 Lunches

 Tour

Side events

Monday, July 1 st	@ 17:30	Welcome and networking cocktail
Tuesday, July 2 nd	@ 18:30	"Mathematics in architecture" - Guided walk through Florence city center
Wednesday, July 3 rd	@ 17:45	Florence beauty from the water - Seightseeing navigating on the Arno river (not included)
Thursday, July 4 th	@ 20:30	Social dinner

⁴ The technical program is subject to change. The final program will be released before the registration opening.

Keynotes and technical sessions ⁴

Session #	Speaker	Title
Keynotes		
K1	Prof. C.O. Paschereit (TU Berlin)	The future of GT combustion technologies
K2	Dr. A. Ameri (Ohio State Univ.)	Enhanced heat transfer applications in turbomachinery
K3	Prof. S. Spence (Queen's Univ.)	Advances in performance and modeling of centrifugal compressors
Technical sessions		
Monday, July 1 st 2019		
M-A4	Dr. F. Balduzzi	Recent developments in wind turbine technology and research
Tuesday, July 2 nd 2019		
T-A2	Dr. A. Bianchini	Instabilities in centrifugal compressors: the case of vaneless diffuser rotating stall
T-A3	Dr. M. Checcucci	Centrifugal pumps performance, design and optimization
T-A4	Prof. D. Fiaschi	Radial turboexpanders: the case of ORC cycles
T-B2	Dr. S. Puggelli (Ecole Centrale)	Advanced two-phase flow modelling
T-B3	Prof. A. Milazzo - Dr. F. Mazzelli	Stationary compression systems and ejectors
T-B4	Dr. T. Fondelli	Heat rejection and windage losses in lubricated gearboxes
Wednesday, July 3 rd 2019		
W-A1	Dr. A. Andreini	Multi-physics and multi-scale modelling of gas turbines components
W-A2	Dr. L. Ferrari (Univ. Pisa)	Dynamic pressure measurements in turbomachinery applications
W-A3	Dr. A. Picchi	Experimental methods for gas turbine heat transfer investigation
W-A4	Dr. F. Taddei	Turbomachinery noise: measurements and data analysis
W-B2	Dr. S. Salvadori - Dr. L. Mazzei	Unsteady component interaction
W-B3	Dr. L. Pinelli	Turbomachinery noise: numerical methods and applications
W-B4	Dr. F. Poli	Turbomachinery aeromechanics: aerodynamically induced vibrations
Thursday, July 4 th 2019		
H-A1	Dr. A. Giusti (Imperial College)	Advanced numerical models for Gas Turbine turbulent combustion
H-A2	Dr. M. Marconcini	The role of turbulence transition in turbomachinery aerodynamics
H-B1	Prof. R. Pacciani	Numerical modeling of transition in turbomachinery
H-E1	Dr. F. Bonsanto (ANSYS)	ANSYS for Turbomachinery: update on latest developments
H-E2	Dr. A. Scotti del Greco (BHGE)	Introduction to Gas Turbine performance maps
Friday, July 5 th 2019		
F-A1	Dr. M. Carnevale (Univ. Bath)	Uncertainty Quantification in Computational Fluid Dynamics for Turbomachinery
F-A2	Dr. R. da Soghe (Ergon Research)	Secondary air systems: review and applications
F-B2	Prof. R. Pacciani	Throughflow methods revisited: CFD tools for turbomachinery desing and analysis