



ANTONIO ANDREINI

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EDUCATION

2001 – Master degree in Mechanical engineering, 5 years course at the University of Florence, Italy

2004 – PhD in Energy Engineering with a thesis entitled “Development of numerical models for the analysis of turbulent premixed combustion in gas turbine”, University of Florence, Italy

ACADEMIC POSITIONS

01/07/2004 – 30/06/2006: PostDoc. fellowship at University of Florence, Italy

01/07/2006 – 30/06/2008: Employed in the academic consortium ICAD (International Consortium for Advanced Design) at the University of Florence, Italy

01/07/2008 – 31/12/2018: Assistant Professor University of Florence, Italy

01/01/2019 – today: Tenure Track Assistant Professor (RTD-B, ING-IND/08) at University of Florence, Italy

14/06/2021 – Nominated Associate Professor (ING-IND/08) at University of Florence, Italy

TEACHING EXPERIENCES

Lecturer of the course “Combustion in aeroengine” active in the MS degree programs in Mechanical and Energy Engineering at the University of Florence since 2012.

Lecturer of the course “Computational Fluid Dynamics for Industrial applications” active in the MS degree programs in Mechanical and Energy Engineering at the University of Florence since 2017.

Co-Lecturer of the course “Heat Transfer and Combustion in turbomachinery” active in the MS degree programs in Mechanical and Energy Engineering at the University of Florence since 2009.

A. Andreini has been advisor or rapporteur of more than 70 Thesis starting from the previous 5 years course in Mechanical Engineering up to current Bachelor and Master degree courses in Mechanical and Energy Engineering at the University of Florence. He has been also tutor or co-tutor of 9 PhD Thesis at the University of Florence.



Co-tutor of 2 PhD Thesis carried out in collaboration with French research center CORIA, at the University of Rouen (F).

Antonio Andreini has been appointed as jury member for the final examination of PhD courses at the Université de Pau et Des pays de l'Adour (F), TU Munich (D), EM2C Lab – Centrale Supélec (F), TU Berlin (D), Politecnico di Torino (I).

Starting from 2017 A. Andreini is member of the Board of the PhD course in Industrial Engineering (Energy Engineering area) at the University of Florence (Italy), where is currently tutor of 5 PhD Thesis.

VISTING PERIODS AND INVITED TALKS

In December 2017 A. Andreini has been hosted as Visiting Professor at the Polytechnic University of S. Petersburg where he held some Lectures about combustion systems in the International Master in Power plants. In August-September 2019 A. Andreini has been hosted as Visiting Professor at the ENSMA University of Poitiers (F) where he gave some seminars and Lectures related to his research activities.

In the last years A. Andreini has been invited speaker at some international public workshops held in the framework of different EU research programs. Particularly relevant are the following invited talks:

- “Experiences in applied research in the field of gas turbine combustion instabilities” Workshop in Industrial Aspects of thermo-acoustics, September 17-18 Genova. Workshop in the project Marie-Curie Action TANGO (Thermo-acoustic and aero-acoustic nonlinearities in green combustors with orifice structures).
- “Overview of combustor cooling research activities”, invited talk 2016 at the University of Rouen (F)
- “Combustor-Turbine interactions in modern aeroengines: experimental and numerical studies”, Invited talk CentraleSupélec –EM2C Lab (F)
- “Combustor-Turbine interactions in modern aeroengines: experimental and numerical studies”. Invited Talk ENSMA – Université de Poitiers (F)

ACADEMIC PROFILE

Antonio Andreini is Tenure Track Assistant Professor (RTD-B, ING-IND/08) at the University of Florence (Italy), member of the Department of Industrial Engineering (DIEF). Starting from December 2014 he has obtained the Professorship Qualification for Associate Professor (renewed in March 2018).

Research experience

Antonio Andreini is involved since 2006 in the most part of research activities carried out by the HTC Group (Heat Transfer and Combustion) coordinated by Prof. Bruno Facchini at DIEF. The team is active in the field of heat transfer and combustion in turbomachinery, by both computational and experimental methodologies. Particularly relevant are the research investigations carried out on gas turbine and aero-engines components. The development of the research topics related to combustion systems and in particular the modelling of reactive processes, is mostly due to the specific contribution of A. Andreini, who is now the operative responsible of all the research programs related to gas turbine and aero-engines combustors.

Generally speaking, A. Andreini is currently the scientific point contact for all the research projects involving numerical modelling and codes development which see also several collaborations with some important gas turbine and aero-engines companies.

Most part of the research studies are carried out in the framework of programs funded by the European



Commission, where the group has been involved in more than 15 projects starting from 5th Framework Program. Significant projects have also been funded by National Government (PRIN programs 2007 and 2011) as well as by Regional Government. In each research consortia A. Andreini has been always one of the reference person, with widely recognized skills and experience in conducting and managing research tasks. In most part of such programs it has to be point out the partnership of the HTC-Group with the main Italian gas turbine and aero-engines companies such as AvioAero (GE-Avio), Baker-Hughes (Nuovo Pignone, ex GE Oil&Gas), Ansaldo Energia, but also with SAFRAN and Alstom. In particular, with the Italian companies several direct research and consultancy contracts have been activated and completed across the years where the team was involved in both experimental and numerical investigations as well as in the development of customized models (combustion, heat transfer, turbulence, two-phase flows) or design tools (pollutant emissions, cooling, thermoacoustics). In such activities A. Andreini represents the contact operative point with the industrial partners, often with a personal involvement in code development and always as supervisor and coordinator of the involved team.

Since February 2018 A. Andreini is the Coordinator and scientific responsible of a European research program funded by the Clean Sky 2 platform of H2020. The project, called START (inveSTigation of an ultrA compact Reverse flow combustor) will see the team supporting AvioAero in the development of an innovative reverse flow combustor entirely realized by additive manufacturing.

Since January 2019 A. Andreini is the Coordinator and scientific responsible of a European research program funded as a Thematic Topic by Clean Sky 2. The project, called CHAiRLIFT (Compact Helically ARranged Lifted Flame combusTor) is based on a consortium of four leading Universities at European level (KIT – Karlsruhe Institute of Technology (D), University of Rouen (D) and University of Salento (I)). The objective is to assess an innovative combustor concept capable to achieve an ultra-lean, low NO_x, operation of future aero-engines.

Since January 2021 A. Andreini is the Coordinator of a Marie-Curie ITN called INSPIRE (Inspiring Pressure Gain Combustion Research, Integration and Education). The project will see some of the most important research teams at European level carrying out an holistic study of the most promising technologies for Pressure Gain Combustion (RDC and CVC). Involved partners are TU Berlin, ENSMA, CERFACS, KTH, SAFRAN, POLITO and University of Genova. Associate partners are the most important European aeroengines and gas turbine manufacturers including Purdue and Cincinnati US universities.

Academic collaborations

The huge number of research programs participated, has permitted to Antonio Andreini to establish a wide network of academic collaborations with important national and international universities or research centres. It is worth to be mentioned the collaborations with the KIT- Karlsruhe Institute of Technology (D), ENSMA of Poitiers (F), CORIA University of Rouen (F), INSA University of Rouen (F), University of Cambridge (UK), CNRS (F), DLR (D), CERFACS (F), TU Berlin (D).

Particularly relevant are the collaborations currently on going with Prof. F. X. Demoulin of the University of Rouen – CORIA (F) in the field of numerical modelling of two-phase flows which has led to the co-tutorship of some PhD researches, and the collaboration with Prof. C. O. Paschereit at TU Berlin in the field of thermoacoustics in gas turbine combustors leading also in this case to the co-tutorship of PhD students. Significant is also the collaboration with CERFACS (F) focused on the numerical modelling of heat transfer and combustion



process with Large Eddy Simulation, also adopting the state of art code AVBP.

Publications

Regarding the publishing activity, A. Andreini is author of more than 170 papers of which 52 published on renowned international journals with peer review and most part of the remaining included in the proceedings of international conferences with peer review.

A. Andreini has been admitted as official member to the Committee for Combustion Fuels & Emissions and the Committee for Heat Transfer of ASME IGTI (International Gas Turbine Institute) contributing since 2013 to the organization and chairing of technical sessions at the ASME Turbo Expo Conference.

A. Andreini acts regularly as reviewer for the following international journals: Fuels, Applied Energy, Applied Thermal Engineering, International Journal of Heat and Mass Transfer, International Journal of Thermal Science, Journal of Engineering for Gas Turbine and Power, Aerospace Science and Technology, International Journal of Heat and Fluid Flow.

Since March 2018 A. Andreini is Associate Editor of the International Journal of Aerospace Engineering of Hindawi Publisher.

Since June 2021 A. Andreini is Associate Editor of the ASME Journal of Engineering for Gas Turbine and Power

Bibliometric indexes (January 2021), Scopus (Author ID: 6701774749):

h-index = 21

total citations = 1545