



Silvia Marelli

Full professor

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Education and training

2008

PhD in Mechanical Engineering - Fluid Machines

Experimental study on turbocharging systems for automotive engines
Università degli studi di Genova

2004

Master's Degree In Mechanical Engineering

Analisi sperimentale in regime transitorio delle prestazioni di turbogruppi
di sovralimentazione per applicazione automobilistica
Università degli studi di Genova

Academic experience

2022 - ONGOING

Full Professor of Fluid Machines and Low Carbon Propulsion Systems

Università degli Studi di Genova

2021 - ONGOING

Coordinator of the Bachelor in Mechanical Engineering

Università degli Studi di Genova

2018 - ONGOING

Associate Professor

Università degli Studi di Genova

2011 - 2018

Assistant Professor

Università degli Studi di Genova

2008 - 2011

Research Assistant

Università degli Studi di Genova

2005 - 2008

PhD Student

Università degli Studi di Genova

Language skills

English

Independent

Teaching activity

She teaches some courses related to internal combustion engines and fluid machines:

- 'Low Carbon propulsion systems' for Mechanical Engineering master's degree (A.Y. 2011/2012, 2012/2013, 2013/2014, 2014/2015, 2015/2016, 2016/2017, 2017/2018, 2018/2019, 2019/2020)
- 'Machines and propulsion systems' for Safety Engineering master's degree (A.Y. 2013/2014, 2014/2015, 2015/2016)
- 'Machines and systems for energy and propulsion' for Mechanical Engineering bachelor's degree (A.Y. 2015/2016, 2016/2017, 2017/2018, 2018/2019, 2019/2020)
- 'Fluid Machines 1' for Nautical Engineering bachelor's degree (A.Y. 2016/2017, 2017/2018, 2018/2019, 2019/2020)
- 'Fluid Machines' for Mechanical Engineering master's degree (A.Y. 2017/2018, 2018/2019, 2019/2020)

Postgraduate research and teaching activity

Supervision of PhD students, residents and post-doctoral fellows

Silvia Marelli is tutor and supervisor of several PhD students and associate researchers.

PhD committees membership

She is a member of the teaching board of different PhD courses at the University of Genoa.

She has been a member of the board of PhD defence of different thesis in Europe.

Research interests

Silvia Marelli is Full Professor of Fluid Machines and Low Carbon Propulsion Systems at the University of Genoa. Her field of expertise is the analysis of automotive engines intake and exhaust components performance, with special reference to turbochargers under steady and unsteady flow operation. She is collaborating with national and international companies. She is also responsible for the development of research activities related to the following topics:

- Accurate definition of compressor and turbine maps (no automatic mapping)

- Correlation between hot and cold turbine maps
- Direct measurement of turbine isentropic efficiency evaluation of inlet temperature of the after treatment system
- Efficiency maps correction for heat transfer phenomena within the turbocharger (air oil water exhaust gases)
- Evaluation of turbocharger mechanical losses in turbocharger bearings
- Optimization of TC regulating device control (waste gate, VGT) under steady and unsteady flow conditions
- Comparison between single and two entry turbine configuration
- Compressor surge detection and active control
- Interactions between EGR and turbocharging circuits
- Energy recovery from turbocharger waste gate flow
- Study on electrically assisted turbocharger

She has been involved in several national and European projects such as:

- H2020 European project (2016-2019) 'UPGRADE - High efficient Particulate free Gasoline Engines'
- EU VII Framework Programme (2010-2014) "POWERFUL - Powertrain for future light-duty vehicles"
- EU VI Framework Programme (2004-2007) 'NICE - New Integrated Combustion System for future Passenger Car Engines'

Grants

2016 - 2019

UPGRADE - High efficient Particulate free Gasoline Engines

European Commission
Principal investigator

2010 - 2014

POWERFUL - Powertrain for future light-duty vehicles

European Commission
Participant

2004 - 2007

NICE - New Integrated Combustion System for future Passenger Car Engine

European Commission
Participant

2017 - 2018

Twin scroll turbocharger characterization (performance maps for simulations)

FPT Industrial Spa - IT
Principal investigator

2015 - 2016

Turbocharger characterization Performance maps for simulations

FPT Industrial Spa - IT
Principal investigator

2015 - 2016

Turbine characterization

CRITT M2A - FR
Principal investigator

2013 - 2014

Testing methodologies for automotive turbochargers

CRITT M2A - FR
Principal investigator

2013 - 2014

Parameter study of Pulsating flow in a Variable Geometry Turbine

General Motors Powertrain-Europe S.r.l. - IT
Principal investigator

Editorial activity

Silvia Marelli has authored more than sixty papers in international scientific congress and journals and she is reviewer of international journals.
BIBLIOMETRIC INDICATORS (Database SCOPUS):

- Total citations = 773
- H-index = 18
- Number of publications in scientific journals = 54