



## **Silvia Marelli**

Associate 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***

**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:

- 'Environmental friendly 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 Associate Professor 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

Principial investigator

2013 - 2014

**Testing methodologies for automotive turbochargers**

CRITT M2A - FR

Principial investigator

2013 - 2014

**Parameter study of Pulsating flow in a Variable Geometry Turbine**

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

Principial investigator

***Editorial activity***

Silvia Marelli has authored more than fifty papers in international scientific congress and journals and she is reviewer of international journals.

BIBLIOMETRIC INDICATORS (Database SCOPUS):

- Total citations = 537
- H-index = 16
- Number of publications in scientific journals = 42

BIBLIOMETRIC INDICATORS (Database GOOGLE SCHOLAR):

- Total citations = 650
- H-index = 16