Università di Genova

# Giorgio Zamboni

Associate professor

## Education and training

1997
### PhD in Fluid Machines Engineering
University of Genoa - Genoa - IT

1990
### Degree in Mechanical Engineering
110/110 cum laude
University of Genoa - Genoa - IT

## Academic experience

2017 - 2020
### Fixed term assistant professor
University of Genoa - Genoa - IT

2001 - 2017
### Technician
University of Genoa - Genoa - IT

1999 - 2000
### Post-doctoral fellow
University of Genoa - Genoa - IT

1997 - 1998
### Research assistant
University of Genoa - Genoa - IT

1993 - 1996
### PhD student
University of Genoa - Genoa - IT

## Teaching activity

- Fluid Machines, Bachelor's Degree in Energy Engineering
- Propulsion Systems and Alternative Fuels for Sustainable Mobility, Master's Degree in Mechanical Engineering – Energy and Aeronautics.
- Advanced Propulsion Systems and Green Fuels, Master's Degree in Energy Engineering.
- Machines, Systems and Green Fuels for Transport and Logistics, Master's Degree in Safe Transport and Logistics Engineering.

## Postgraduate research and teaching activity

### PhD committees membership

- Currently, member of the Teaching Board for the PhD Course in Sciences and Technologies

for the Sea - Machines and Energy Systems for the Sea.
- Member of the Teaching Board for the PhD Course in Modeling, Machines and Systems Engineering for Energy, Environment and Transportation (XXXIV course).

## Academic Appointments

- Delegate of the Head of the Department for safety issues (Dipartimento di Ingegneria Meccanica, Energetica, Gestionale e dei Trasporti, DIME), 1st November 2018 – 31st October 2024.
- Head of the Energy Engineering Master's Degree Course, 1st November 2020 – 31st October 2025.
- Department teaching activities Coordinator (Dipartimento di Ingegneria Meccanica, Energetica, Gestionale e dei Trasporti, DIME), 1st November 2024.

## Research Interests

Theoretical and experimental investigations on topics concerning ICEs, their energy consumption and environmental impact, mainly referred to vehicle applications:

- Turbocharged diesel engines control.
- Development and application of engine-turbocharger matching models.
- Analysis of mechanical losses and evaluation of ICEs mechanical efficiency.
- Combustion analysis in diesel ICEs.
- Assessment of fuel/energy consumption and emissions of powered two-wheelers and heavy-duty vehicles in real-world conditions.

Current research fields:

- Experimental studies on diesel ICEs focused on the development of main sub-systems integrated strategies for fuel consumption and exhaust emissions reduction.
- Investigations on the use of alternative fuels in engines, to assess their influence on combustion, efficiency and emissions.
- Evaluation of road vehicles, ships, non-road mobile machinery exhaust emissions and fuel/energy consumption under real operating conditions applying Well-to-Wheels/Wake approach.
- Comparison of decarbonization scenarios for the maritime sector and port areas activities based on alternative fuels and energy carriers.

## Publications and funding

Scopus page

ORCID page

Selected publications:

- Zamboni G., Capobianco M. Integrated Control Strategies of EGR System and Fuel Injection Pressure to Reduce Emissions and Fuel Consumption in a DI Engine Fueled with Diesel-WCOME Blends and

Neat Biodiesel. Energies 2025, 18, 2791. ISSN: 1996-1073; https://doi.org/10.3390/en18112791

- Zamboni G., Scamardella F., Gualeni P., Canepa E. Comparative analysis among different alternative fuels for ship propulsion in a well-to-wake perspective. Heliyon, Volume 10, Issue 4, Article number e26016, 2024. ISSN: 2405-8440; doi: 10.1016/j.heliyon.2024.e26016
- Zamboni G., Capobianco M. Definition of the optimal content of used cooking oil methyl ester in blends fuelling a turbocharged diesel engine. Biomass and Bioenergy, 150, 106098, 2021. ISSN: 0961-9534; doi: 10.1016/j.biombioe.2021.106098
- Zamboni G. A study on combustion parameters in an automotive turbocharged diesel engine. Energies 2018, 11(10), 2531; ISSN 1996-1073; doi: 10.3390/en11102531
- Zamboni G., Moggia S., Capobianco M. Hybrid EGR and turbocharging systems control for low NOX and fuel consumption in an automotive diesel engine. Applied Energy, vol.165, pp.839-848, March 2016, doi:10.1016/j.apenergy.2015.12.117.
- Zamboni G., André M., Roveda A., Capobianco M. Experimental evaluation of Heavy Duty Vehicle speed patterns in urban and port areas and estimation of their fuel consumption and exhaust emissions. Transportation Research Part D: Transport and Environment, vol.35, pp.1-10, March 2015, ISSN: 1361-9209, doi: 10.1016/j.trd.2014.11.024.
- Zamboni G., Malfettani S., André M., Carraro C., Marelli S., Capobianco M. Assessment of heavy-duty vehicle activities, fuel consumption and exhaust emissions in port areas. Applied Energy, vol. 111, pp. 921-929, November 2013, doi:10.1016/j.apenergy.2013.06.037.
- Zamboni G., Capobianco M. Influence of high and low pressure EGR and VGT control on in-cylinder pressure diagrams and rate of heat release in an automotive turbocharged diesel engine. Applied Thermal Engineering, vol. 51, p. 586-596, March 2013, ISSN: 1359-4311, doi: 10.1016/j.applthermaleng.2012.09.040.
- Zamboni G., Capobianco M. Experimental study on the effects of HP and LP EGR in an automotive turbocharged diesel engine. Applied Energy 94, pp. 117-128, 2012, ISSN: 0306-2619, doi:10.1016/ j.apenergy.2012.01.046.
- Zamboni G., Carraro C., Capobianco M. On-road instantaneous speed measurements on powered two-wheelers for exhaust emission and fuel consumption evaluation. Energy 36, pp. 1039-1047, 2011. ISSN: 0360-5442, doi:10.1016/ j.energy.2010.12.004.