PERSONAL INFORMATION

Sergio Mario Camporeale

Polytechnic of Bari
Department of Mechanics, Mathematics, and Management (DMMM)

Sex | *Date of birth* *Nationality* Enter nationality

Enterprise	University	EPR
☐ Management Level	☒ Full professor	☐ Research Director and 1st level Technologist / First Researcher and 2nd level Technologist
☐ Mid-Management Level	☐ Associate Professor	☐ Level III Researcher and Technologist
☐ Employee / worker level	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

2017-present **Full professor of Fluid Machinery and Energy Systems**

2001-2017 **Associate professor of Fluid Machinery and Energy Systems**

Polytechnic University of Bari, via Amendola 126, Bari, ITALY
website: www.poliba.it

ACADEMIC COMMITTMENTS

2019 – present: Rector's Delegate of the Polytechnic of Bari for Education and Teaching
Member of the Board of the Doctorate in Mechanical and Industrial Engineering;
2020 – present Member of the Board of the Doctorate in Industry 4.0
2015-2018 and 2018-2021: Head of the Master Degree in Mechanical Engineering (In Italian),
2021-present: Head of the Master Degree in Mechanical Engineering (In English),
Member of the Board committed to revise the Statute of the Politecnico di Bari, law 240/01

D IDACTIC ACTIVITY

2 020- present, course of "Clean Energy Systems and Fluid Machinery", Master Degree in Mechanical Engineering (taught in English)
2 019 to present: Course of "Distributed Power Generation" Master Degree (Laurea Magistrale) in Mechanical Engineering
2 013 – 2020, Course of "Energy Systems II", Master Degree (Laurea Magistrale) in Mechanical Engineering
2 005- to 2021, Course of "Internal Combustion Engines", Master Degree (Laurea Magistrale) in Mechanical Engineering
2 002 – 2018: Course of "Thermal Power Plants", Master Degree (Laurea Magistrale) in Mechanical Engineering

1991-2001 **Assistant professor of Energy Systems**
University "Mediterranean" of Reggio Calabria, Italy
Researcher on Modeling of Energy Systems and Innovative Marine Energy

1991-2001 **Researcher of Renewable Energy Systems**

ENEA – Italian National Agency for New Technologies, Energy and Sustainable Economic Development, (formerly Italian National Agency for Nuclear and Alternative energies)
Casaccia Research Center - Rome
Researcher on Renewable Energy Systems

EDUCATION AND TRAINING

1983 Master Degree in Mechanical Engineering, with honors

Faculty of Engineering, University of Bari, Bari, Italy

PERSONAL SKILLS

Mother tongue

Other language(s)

Reading skills	Writing skills	Verbal Skills

Bibliometric Data

Scopus data
140 documents
42 journal articles
1965 citations by 1456 documents
h-index 20

Digital skills Programming in Matlab, Fortran

ADDITIONAL INFORMATION

Research grants

• Program “REFIN-Research for Innovation”- Grant for a 3 year research fellow on the project “SimUlations and exPEriments of Renewable combustion for GREen Energy productioN (SUPERGREEN)”, funded by the Apulia Region, 2020
• Program Advanced Mobility – Grant for a 3 year Research Fellow in “Enriched Hydrogen Combustion for Gas Turbines”, Funded by the Italian Ministry of Education, University and Research, 2019
• Research contract of Polytechnic of Bari with ENEA under the Program Agreement ENEA - Ministry Research (2019): Research Theme 1.2:- WP 2: Thermal storage - Activity line 8: CFD modeling for simulating the behavior of a latent heat storage device; WP 2: Thermal storage -Activity line 16: Simplified modeling of the thermodynamic behavior of an LHTES device with optimized elements
• Research Project EXTREME (innovative technologies for EXTREMely Efficient spark ignited engines), 2019, "WP 2 Advanced technologies for fast combustion", The WP aims at investigating key technologies for achieving high thermodynamic efficiencies in combustion engines
• Program PON – “MEL – Marine Energy Lab”, Responsible of Research Unit of Politecnico di Bari, Research project for design and development of an innovative offshore wind turbine (budget of Politecnico: 560,242.00 eur) Industrial Partner AVIO S.p.A.
• Program PON02_00576_3333604 “INNOVHEAD -Innovative Technologiesfor reducing emissions, fuel consumption and operating costs of Heavy-Duty engines”, responsible of the Research Objective #6 “Fluid-dynamic simulation of engine with Variable Valve Actuation”, partner Centro Ricerche FIAT of Valenzano (Bari)
• Program PON “SEB – Smart Energy Boxes”, responsible of research activities A1.1, 1.4 e 1.7, integrated system for power generation and energy storage. Partner: AVIO S.p.A
• Program “Industry 2015”, Responsible of Research Unit of Politecnico di Bari, Project “Integration of MILD technologies in low emissions combustion systems”.
• PRIN 2004-2006. Responsible of Research Unit of Politecnico di Bari. Project title: “Development and tests of a turbine for wave energy conversion” within in the National Research Program entitled "New breakwaters for coastal protection and wave energy conversion into electric energy,"

RESEARCH CONTRACTS

Of the following contracts with industrial, he has been scientific responsible:
• Ansaldo Energia (2015), “Methodologies for the analysis of thermoacoustic properties of burners”
• Ansaldo Energia (2014) “Characterization of the Ansaldo Energia experimental test-rig by means of numerical methods”
• SOFINTER (2013) “Thermal and fluid-dynamic analysis of burner under MILD combustion regime”
• Ansaldo Energia (2012) “Study and design of Helmholtz resonators for the combustion chamber of the V94.3A

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gas turbine"
• Avio S.p.A. (2012), "Development of Systems and Algorithms of novel turbine application for power generation on airplanes"
• BOSCH-CVIT (2009), "Numerical investigations about Low Pressure EGR: CFD simulation of low pressure EGR admixture at inlet position"
• ITEA - Sofinter Group (2008): "CFD analysis of a combustor for Flameless Oxy-Combustion"
• Ansaldo – CRIS (NA) (2007) "CFD analysis of a burner for steam boilers fuelled by syngas"
• Ansaldo Energia.(2005) "Aero-acoustic study of passive damping devices for gas turbine annular combustion chamber"
• Ansaldo Caldaie (2005), "Finite Element Methods for the characterization of multiple Helmholtz resonators for damping combustion instabilities"

Awards

• Finmeccanica "Innovation" award 2014 for the project "Helmholtz resonators for gas turbine burner", in sharing with Ansaldo Energia R&D combustion group
• 2 015 Turbo Expo Best Paper Award with the paper "GT2015-43571 - EXTERNALLY FIRED MICRO GAS TURBINE AND ORC BOTTOMING CYCLE: OPTIMAL BIOMASS/NATURAL GAS CHP CONFIGURATION FOR RESIDENTIAL ENERGY DEMAND" Author(s): Sergio Mario Camporeale, Patrizia D. Ciliberti, Antonio Pantaleo, Bernardo Fortunato & Marco Torresi
ORC 2017 - Best Paper Award for the paper "Hybrid solar-biomass combined Brayton/organic Rankine-cycle plants integrated with thermal storage: Techno-economic feasibility in selected Mediterranean areas" by Antonio M. Pantaleo, Sergio M. Camporeale, Arianna Sorrentino, Adio Miliozzi, Nilay Shah, and Christos N. Markides, https://www.journals.elsevier.com/renewable-energy/awards/renewable-energy-article-wins-orc-2017-best-paper-award

Relevant recent Publications

1. Capurso, T., Stefanizzi, M., Torresi, M., Camporeale, S.M., Perspective of the role of hydrogen in the 21st century energy transition (2022) **Energy Conversion and Management**, 251, art. no. 114898, . DOI: 10.1016/j.enconman.2021.114898,
2. Dhinesh Thanganadar, Francesco Fornarelli, Sergio Camporeale, Faisal Asfand, Jonathon Gillard, Kumar Patchigolla (2022) Thermo-economic analysis, optimisation and systematic integration of supercritical carbon dioxide cycle with sensible heat thermal energy storage for CSP application, **Energy**, Volume 238, Part B, 1 January 2022, https://doi.org/10.1016/j.energy.2021.121755
3. Thanganadar, D., Fornarelli, F., Camporeale, S., Asfand, F., Patchigolla, K. Off-design and annual performance analysis of supercritical carbon dioxide cycle with thermal storage for CSP application, (2021) **Applied Energy**, 282, art. no. 116200, DOI: 10.1016/j.apenergy.2020.116200
4. Fornarelli, F., Camporeale, S.M., Fortunato, B., Convective Effects in a Latent Heat Thermal Energy Storage, (2021) **Heat Transfer Engineering**, 42 (1), pp. 1-22. DOI: 10.1080/01457632.2019.1685240
5. Stefanizzi, M., Capurso, T., Balacco, G., Binetti, M., Camporeale, S.M., Torresi, M. Selection, control and techno-economic feasibility of Pumps as Turbines in Water Distribution Networks (2020), **Renewable Energy**, 162, pp. 1292-1306. DOI: 10.1016/j.renene.2020.08.108
6. Fornarelli, F., Camporeale, S.M. Simplified prediction model of the discharging time of a shell-and-tube LHTES, (2020) **Applied Thermal Engineering**, 179, art. no. 115709, DOI: 10.1016/j.applthermaleng.2020.115709
7. Morgese, G., Fornarelli, F., Oresta, P., Capurso, T., Stefanizzi, M., Camporeale, S.M., Torresi, M., Fast design procedure for turboexpanders in pressure energy recovery applications, (2020) **Energies**, 13 (14), art. no. 3669, DOI: 10.3390/en13143669
8. Pantaleo A.M., Camporeale S.M., Sorrentino A., Miliozzi A., Shah N., Markides C.N., "Hybrid solar-biomass combined Brayton/organic Rankine-cycle plants integrated with thermal storage: Techno-economic feasibility in selected Mediterranean areas", 2020, **Renewable Energy**, Vol. 147, pag. 2913-2931, 24, 10.1016/j.renene.2018.08.022
9. Gurnari L., Filianoti P.G.F., Torresi M., Camporeale S.M., "The wave-to-wire energy conversion process for a fixed U-OWC device", 2020, **Energies**, Vol.13, issue 1, pag. 283, 10.3390/en13010283
10. Fornarelli F., Camporeale S.M., Fortunato B., Simplified theoretical model to predict the melting time of a shell-and-tube LHTES, 2019, **Applied Thermal Engineering**, Vol.153, pages 51-57, 10.1016/j.applthermaleng.2019.02.130
11. Fornarelli F., Camporeale S.M., Fortunato B., Convective Effects in a Latent Heat Thermal Energy Storage, 2019, **Heat Transfer Engineering**, 10.1080/01457632.2019.1685240
12. Andria, G., Attivissimo, F., Di Nisio, A., Trotta, A., Camporeale, S.M., Pappalardi, P., Design of a microwave sensor for measurement of water in fuel contamination (2019) **Measurement**: Journal of the International Measurement Confederation, 136, pp. 74-81. DOI: 10.1016/j.measurement.2018.12.076
13. Capurso, T., Stefanizzi, M., Pascazio, G., Ranaldo, S., Camporeale, S.M., Fortunato, B., Torresi, M. Slip factor correction in 1 D Performance prediction model for PaTs (2019) **Water** (Switzerland), 11 (3), art. no. 565, . DOI: 10.3390/w11030565
14. Fornarelli, F., Dadduzio, R., Torresi, M., Camporeale, S.M., Fortunato, B., Three-dimensional analysis of flow-chemical interaction within a single square channel of a lean NO<inf>x</inf> trap catalyst (2018) **Heliyon**, 4 (2), art. no. e00529, . DOI: 10.1016/j.heliyon.2018.e00529
15. Fornarelli, Dadduzio, R., Torresi, M., Camporeale, S.M., Fortunato, B, *Three-dimensional analysis of flow-chemical interaction within a single square channel of a lean NOx trap catalyst*, **Heliyon**, Volume 4, Issue 2, February 2018, Article number e00529, https://doi.org/10.1016/j.heliyon.2018.e00529
16. D. Laera, K. Prieur, D. Durox, T. Schuller, S. M. Camporeale, S. Candel *(2017)* "Impact of heat release distribution on the spinning modes of an annular combustor with multiple matrix burners", **Journal of Engineering for Gas Turbines and Power**, *Vol.* 139, *Issue* 5, doi: 10.1115/1.4035207

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17. Davide Laera, Thierry Schuller, Kevin Prieur, Daniel Durox, Sergio M. Camporeale, Sébastien Candel (2017) Flame Describing Function analysis of spinning and standing modes in an annular combustor and comparison with experiments, **Combustion and Flame**, Volume 184, 2017, Pages 136-152, ISSN 0010-2180, https://doi.org/10.1016/j.combustflame.2017.05.021.
18. S. M. Camporeale, P. D. Ciliberti, B. Fortunato, M. Torresi and A. M. Pantaleo *(2017)* Externally Fired Micro Gas Turbine ar ORC Bottoming Cycle: Optimal Biomass/Natural Gas CHP Configuration for Residential Energy Demand, **Journal of Engineering for Gas Turbines and Power,** Vol. 139, Issue 4, doi: 10.1115/1.4034721
19. Davide Laera and Sergio M. Camporeale *(2017)* A weakly nonlinear approach based on a distributed flame describing function to study the combustion dynamics of a full-sca*le lean-premixed swirled burner,* **Journal of Engineering for Gas Turbines and Power**, doi:10.1115/1.4036010**,** on line
20. Davide Laera, Giovanni Campa, Sergio M. Camporeale (2017) A finite element method for a weakly nonlinear dynamic analysis and bifurcation tracking of thermo-acoustic instability in longitudinal and annular combustors, **Applied Energy**, Volume 187, *Issue 1,* February 2017, Pages 216–227, Ed. Elsevier, http://dx.doi.org/10.1016/j.apenergy.2016.10.124
21. *M. Torresi,* F. *Fornarelli*, B. *Fortunato*, S. M. *Camporeale* and A. Saponaro *(2017)* Assessment against Experiments of Devolatilization and Char Burnout Models for the Simulation of an Aerodynamically Staged Swirled Low-NOx Pulverized Coal Burner*, **Energies**, **2017**, *10*, 66, doi:10.3390/en10010066

In fede

(prof. Ing. Sergio Mario Camporeale)