

ROLE

Associate Professor of "Systems for Energy and the Environment" at the School of Industrial and Information Engineering, Politecnico di Milano.

EDUCATION

- Degree in Mechanical Engineering in 1998 at Politecnico di Milano
- PhD degree in 2002 at Politecnico di Milano in Energy Engineering

MAIN STEPS IN ACADEMIC CAREER

- Awarded in 2002 with a 2 years post-doc research fellowship
- From 2005 to 2014 Assistant Professor of "Energy Systems" at School of Industrial and Information Engineering at Politecnico di Milano
- Since 2014 Associate Professor of "Energy Systems" at the School of Industrial and Information Engineering at Politecnico di Milano

RESEARCH INTERESTS

- Concentrating Solar Power (CSP) plants
- Supercritical CO₂ cycles
- Cogeneration (Industrial and Micro-Cogeneration)
- Numerical simulation and optimized management of power plants and CHP systems
- Organic Rankine Cycles

CURRENT TEACHING ASSIGNMENTS (Academic Year 2020/2021)

- "Power Production from Renewable Energy" for MSc Energy and Mechanical Engineering students (since AY 2007/08)
- "Wind, Hydro and Geothermal Power Generation" for MSc Energy Engineering students (since AY 2018/19)

SECONDARY LEVEL MASTER COURSES AND OTHER TEACHING ACTIVITIES

The teaching activity has been also related to lessons given in secondary level Master Courses for graduated students, both given at Politecnico di Milano (Master Course RIDEF - "Renewable Energy, Decentralisation, Energy Efficiency", Master Course in "Energy Management") and other universities (Master Courses "Management and regulation for sustainable energy" at the LUISS University in Rome, "School of Operation and Maintenance" at Scuola Superiore Sant'Anna (Pisa), "Strategic and Innovative O&M management (ENEL)", ENI-Politecnico in "Energy Innovation", "Smart Grid -ENEL").

Besides the institutional activity he has taught in several courses and workshops in the fields of cogeneration, renewable energies and optimization of fossil fueled power plants. This activity has been carried out mainly at Politecnico but even at companies and organizations (A&A, AICARR, AXA, ATM, ENEL Foundation, Experta, Camera di Commercio di Como, CINEAS, Climgas, CNA, Cofely, Emerson, IIR- Istituto Internazionale di Ricerca, INNTEC, Res4Med, SAIPEM, Università della montagna, Vodafone).

RESPONSIBILITIES

- Since 2011 Responsible of the Commission for International Mobility for Energy Engineering
- Since 2015 Deputy Director of the II level Master: "RIDEF - Renewable Energy, Decentralization, Energy Efficiency" at Politecnico di Milano
- Since 2015 member of the committee "Micro-cogeneration" of the Italian Thermal Technologies Association (ATI)
- Since 2019 Secretary of the Energy Engineering course at Politecnico di Milano
- Since Academic Year 2018/19 he has been member of the Scientific Board of the Corporate Master Course ENI-Politecnico in "Energy Innovation" at Politecnico di Milano

NATIONAL FINANCED PROJECTS

- Industry 2015 call (2010) - Project "PIACE - Intelligent platform, integrated and adaptive of efficient micro-CHP and renewable sources for residential uses", Principal Investigator for Politecnico
- Lombardy Region call (2009) - Project "Microgen - Development and implementation of a micro-CHP Stirling engine fueled by natural gas", Project Coordinator
- Ministry of Economic Development, call RIDITT (2009) - Project "ETICO - Energy for Innovation in Technology Transfer", Project Coordinator
- "5 x mille" call (2012-2014) by Politecnico di Milano – Project "Micro-wind turbine for a sustainable campus". Co-financed budget for the research team: 93 k€. ROLE: Scientific Responsible for the Department of Energy.
- Project funded by the Italian Ministry MATTM (2018-2020) – call "Servizi di alta formazione nei settori dello sviluppo sostenibile e della gestione dell'ambiente nel quadro della cooperazione bilaterale Italia — Cina" (C.I.G. 6767684582). ROLE: Scientific Responsible for the Department of Energy.

EUROPEAN FINANCED PROJECTS (last 5 years)

- H2020 project (2018-2021) "sCO₂-Flex - SUPERCRITICAL CO₂ CYCLE FOR FLEXIBLE AND SUSTAINABLE SUPPORT TO THE ELECTRICITY SYSTEM", Principal Investigator for Politecnico
- Marie Curie Project ITN - Innovative Training Networks (2020-2024) "EASYGO - Efficiency and Safety in Geothermal Operations", Scientific Responsible for Politecnico
- H2020 project (2021-2025) "CO₂OLHEAT - SUPERCRITICAL CO₂ POWER CYCLES DEMONSTRATION IN OPERATIONAL ENVIRONMENT LOCALLY VALORISING INDUSTRIAL WASTE HEAT", Responsible of Gecos research group

RESEARCH CONTRACTS WITH COMPANIES AND ORGANIZATIONS (last 10 years)

A significant research activity has been carried out within the framework of research contracts between the Department of Energy of Politecnico di Milano, external organizations and private companies. In the last 10 years he was responsible of research contracts with the following companies: Enel, ENI, SIRAM, Enipower, ENEA, Engie, Agrati Group, Nooter Eriksen, A2A, Edipower, Colombo Costruzioni, Fastweb, Sperlari, Arvedi, Adsum, Reno de Medici Group, ECM, Silea, Snam Rete Gas, Saipem, Turboden, Sorgenia.

PhD THESIS SUPERVISOR (last 5 years)

- Supervisor of Sonia Gomez PhD thesis "DESIGN AND MODELING OF A MICRO GAS TURBINE WITH BOTTOMING ORGANIC RANKINE CYCLE: STEADY-STATE AND DYNAMIC APPROACH" (2016-2019)
- Supervisor of Dario Alfani PhD thesis "Techno-economic optimization and part-load operational strategies definition of flexible and high-efficiency supercritical CO₂ power systems" (2017-2020)
- Co-Supervisor of Tristan Merbecks PhD thesis (Joint Program PhD with ETH-Zurich) "Design and operation of a binary ORC plant for the exploitation of different geothermal sources, including two-phase sources" within EASYGO H2020 project (2021-2024)
- Joint Program Coordinator for POLIMI of 1 Joint PhD position (Dual diploma) with TU-Delft (Prof. E.C. Slob)

MEMBERSHIP

- Member of the American Society of Mechanical Engineers (ASME)
- Member of European Turbine Network (ETN)
- Member of the International Gas Turbine Institute (IGTI) committees "Industrial & Cogeneration" and "Cycle Innovation"
- Board member of AIRU - Associazione Italiana Riscaldamento Urbano
- Member of the "Micro-cogeneration" Committee of the CTI (Comitato Termotecnico Italiano)

PRIZES AND AWARDS

- Best Paper Award with "GRID BALANCING WITH A LARGE-SCALE ELECTROLYSER PROVIDING PRIMARY RESERVE", presented in the 8th IET Renewable Power Generation Conference (RPG 2019), Shanghai, China
- Best Paper Award ("Desertec Best Paper Award") with "Modeling on/off-design performance of solar tower plants using saturated steam" in the ASME 2010 4th International Conference on Energy Sustainability

PATENTS

- Italian Patent: "*Dispositivo e metodo per il recupero di energia termica dalla scoria di acciaieria*", Politecnico di Milano – GAP S.p.A., Patent N° 102019000002733 (authors from Politecnico: Campanari S., Romano M., Colombo L.P.M., Silva P., Giostrì A.)

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