Prof. Antonio Rosato, M.Sc.Eng., Ph.D.
Full Professor of Building Physics and Building Energy Systems
Scientific Responsible of the Built Environment Control Laboratory RIAS

Università degli Studi della Campania *Luigi Vanvitelli*

University of Campania Luigi Vanvitelli
Department of Architecture and Industrial Design

CURRENT ACADEMIC POSITION

- from 29/12/2020 to date: Full Professor of Building Physics and Building Energy Systems (Italian scientific disciplinary sector ING-IND/11) at Department of Architecture and Industrial Design (DADI) of University of Campania Luigi Vanvitelli (UNICAMPANIA).
- from 19/4/2021 to date: Scientific Responsible of the Built Environment Control Laboratory RIAS of DADI of UNICAMPANIA (https://www.architettura.unicampania.it/dipartimento/strutture-del-dipartimento/laboratori/8-dipartimento/163-laboratories).

EDUCATION

- 2005: M.Sc. in Mechanical Engineering at University of Naples Federico II (UNINA). Final score: 110/110 cum laude. Thesis title: Heat conduction effects on mixed convection in horizontal channels with adiabatic and moving wall
- 2009: PhD in Energetics (ING-IND/10) at University of Palermo (UNIPA). PhD thesis title: Experimental analysis of R744 and R422D heat transfer coefficients and pressure drops during evaporation.

WORK EXPERIENCE

- 2009-2010: Heat pump system engineer at R&D department of company DENSO THERMAL SYSTEMS S.p.A, Torino, Italy.
- 2010-2014: Assistant Professor of Building Physics and Building Energy Systems (ING-IND/11), DADI, UNICAMPANIA
- 2014-2020: Associate Professor of Building Physics and Building Energy Systems (ING-IND/11), DADI, UNICAMPANIA.
- 01/04/2014-25/07/2014: Visiting fellow at CanmetENERGY Research Division of research institute Natural Resources CANada (NRCAN), Ottawa, Canada.
- 07/07/2017-10/08/2017: Visiting fellow at Tokyo University of Agriculture and Technology (TUAT), Tokyo, Japan.
- from 29/12/2020 to date: Full Professor of Building Physics and Building Energy Systems (ING-IND/11), DADI, UNICAMPANIA.

PARTICIPATION TO FUNDED RESEARCH PROJECTS/AGREEMENTS

- 2006: Project call: L. R. 28/03/2002 n.5 - Regione Campania; Title: Energetic optimization of domestic freezers; 12 months; research team member
- 2011: Agreement between DADI and DENSO THERMAL SYSTEMS S.p.A.; Title: Developing a Matlab simulation code for predicting the performance of air-cooled condensers for automotive application; 6 months; principal investigator
- 2011: Agreement between Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) and Department of Engineering of University of Sannio (UNISANNIO); Title: Setting up of a virtual power plant for the analysis of micro-polygeneration systems; 1 year; research team member
- 2012: Agreement between DADI and DENSO THERMAL SYSTEMS S.p.A.; Title: Optimization of a Matlab simulation code for predicting the performance of air-cooled condensers for automotive application; 5 months; principal investigator
- 2012: Agreement between ENEA and UNISANNIO; Title: Development and experimental validation of control strategies for a real grid of micro-polygeneration systems; 1 year; research team member
- 2013-2014: Agreement between DADI and DENSO THERMAL SYSTEMS S.p.A.; Title: Analysis of the correlations for predicting both heat transfer coefficients and pressure drops of fluids flowing into water strip fin plate heat exchangers for automotive application; 3 months; principal investigator
- 2013-2015: Project call: ERDF Operational Programme Campania 2007/2013; Title: Urban eco-tourism for sustainable use of cultural heritage; 24 months; research team member

- 2017-2020: Project call: PON I&C 2014-2020 HORIZON2020; Title: WALLED – Smart LED&OLED per Lighting e MediaBuilding; 45 months; research team member
- 2019-2022: Project call: Programma V:ALERE 2019; Title: Solar smart Energy Networks integrated with borehole thermal Energy storages serving small-scale districts in the CAmpania region; 3 years; principal investigator
- 2021-2023: Project call: PON Ricerca e Innovazione 2014-2020 e FSC; Title: Brain Virtual Interactivity Platform; 30 months; research team member.
- 2021-2023: Co-Principal investigator of the research project titled "UTMOST FDD: an aUToMated, Open, Scalable and Transparent Fault Detection and Diagnosis process for air-handling units based on a hybrid expert and artificial intelligence approach. From experimental open data to transfer model learning for the enhancement of energy management and indoor environmental quality in buildings" funded by the call "PRIN: PROGETTI DI RICERCA DI RILEVANTE INTERESSE NAZIONALE –2022".

SCIENTIFIC RESEARCH COLLABORATIONS

- 2010-2014: member of international working group Annex 54 "Integration of Micro-Generation and Related Energy Technologies in Buildings" of International Energy Agency (IEA) together with 16 foreign universities/companies.
- 18/06/2015-31/12/2015: Co-supervisor of the research collaboration titled "Numerical Simulation of Integrated Heating, Cooling and Power Systems Using Adsorption Chillers and Micro-Cogeneration Units for Italian and Japanese Climates", signed between DADI of UNICAMPANIA and Tokyo University of Agriculture and Technology (Tokyo, Japan).
- 1/07/2015-31/12/2016: Co-supervisor of the research collaboration titled "Numerical Simulation and Experimental Study of Integrated Solar Powered Heating and Cooling/CCHP Systems Using Adsorption and Absorption Chillers for Italian and Canadian Climates", signed between DADI of UNICAMPANIA and NRCAN (Ottawa, Canada).
- 1/12/2017-31/03/2019: Co-supervisor of the research collaboration titled "Modeling of Integrated Solar-powered Heating and Cooling Systems for Italian and Japanese Climates", signed between DADI of UNICAMPANIA and Tokyo University of Agriculture and Technology (Tokyo, Japan).
- 1/12/2017-31/03/2019: Co-supervisor of the research collaboration titled "Development of simulation models and control strategies for investigating the impact of dust on the performance of solar thermal applications", signed between DADI of UNICAMPANIA, Tokyo University of Agriculture and Technology (Tokyo, Japan) and National University of Mongolia (Ulaanbaatar, Mongolia).
- 13/05/2019-31/12/2020: Co-supervisor of the research collaboration titled "Performance assessment of solar cooling systems for Japanese and Italian buildings", signed between DADI of UNICAMPANIA and Tokyo University of Agriculture and Technology (Tokyo, Japan).
- 20/11/2022 – 20/11/2024: Co-supervisor of the research collaboration titled "EXPERIMENTAL STUDY AND NUMERICAL SIMULATION OF BUILDING-INTEGRATED SENSIBLE THERMAL ENERGY STORAGES UNDER ITALIAN AND JORDANIAN BOUNDARY CONDITIONS", signed with the research group of the "Department of Mechanical Engineering National University College of Technology" (Amman, Jordan) coordinated by Prof. Dr. Walaa Al-Smadi.
- from 2014 to date: Member of research group Energy Efficiency & Environment (E3) at DADI of UNICAMPANIA.
- from 2017 to date: Member of research group Acoustics, vibration and multisensory interactions at DADI of UNICAMPANIA.

AWARDS

- 2012: co-author of a scientific paper awarded as one of the Top 25 most read papers published in the journal Applied Thermal Engineering (ScienceDirect Top25 Hottest Articles award).
- 2014: co-author of a scientific paper awarded as Best Paper published in International Journal of Low-Carbon Technologies over 2014 (SET Best Article Award 2014 award).
- 2018: co-author of a scientific paper awarded as Best Paper of international conference The 16th International Symposium on District Heating and Cooling – DHC 2018 - Hamburg, Germany (Award for research excellence in district heating and cooling).
- 2018: co-author of a scientific paper awarded as Best Poster of international conference The 13th Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES conference - Palermo, Italy.
- 2023: "Best paper" of the international conference "CLIMATE CHANGE AND CULTURAL HERITAGE - IV INTERNATIONAL FORUM ON ARCHITECTURE AND URBANISM" (22-23 June, 2023, Caserta, Italy) for the paper titled "BUILDING-INTEGRATED VERTICAL MICRO WIND TURBINE IN THE SOUTH OF ITALY: ENERGY, ENVIRONMENTAL AND ECONOMIC ASSESSMENT OF A TYPICAL RESIDENTIAL BUILDING" (authors: ACHILLE PERROTTA, LUIGI MAFFEI, ANTONIO ROSATO)

EDITORIAL BOARD MEMBER OF INTERNATIONAL SCIENTIFIC JOURNALS

- from 2016 to date: Housing Policies and Urban Economics – EIRIS.
- from 2017 to date: Current Alternative Energy - Bentham Science.
- from 1/1/2022 to date: Energies (section Smart Cities and Urban Management) – MDPI.
- 2017-2021: Energies (section Smart Grids and Microgrids) – MDPI.

• 2017-2021: Global Journal of Energy Technology Research Updates - Avanti Publisher.
• 2017-2021: Journal of Advanced Thermal Science Research - Avanti Publisher.

MANAGEMENT ROLES AT UNIVERSITY LEVEL
• from 01/11/2013 to date: Member of teachers' board of the Doctorate course "Architecture, Industrial Design and Cultural Heritages" of UNICAMPANIA (cycles XXVII-XXXVIII)
• from 2022 to date: Member of teachers' board of the Doctorate Course "Architecture and Cultural Heritages" of UNICAMPANIA (cycle XXVIII)
• from 2022 to date: Member of teachers' board of the Industrial Doctorate Course "Technologies for Resilient Living Environments" (cycle XXVIII)
• 25/06/2015-18/09/2018: Delegate for Technology Transfer at DADI of UNICAMPANIA
• 15/10/2015-23/10/2018: Delegate for Job Placement & Liaison Office at DADI of UNICAMPANIA
• from 24/10/2018 to date: Delegate for Research Quality at DADI of UNICAMPANIA
• 14/01/2019-29/12/2020: Elected member of council at DADI of UNICAMPANIA as delegate of Associate Professors.

TEACHING AT UNIVERSITY LEVEL
• 2010 to date: Tenured teacher of the courses titled "Energetics and Environmental Control", "Special Plants", "Design of built environment control and energetic systems (in English)", "Design and control of built environment (in English)", "Built Environment Control", "Applied Thermodynamics" at DADI of UNICAMPANIA.

CURRENT RESEARCH ACTIVITIES
• Experimental analysis of air-handling units under fault free and faulty conditions upon varying the boundary conditions
• Experimental assessment of the impacts of faults air-handling units in terms of thermal comfort, energy consumption, concentrations of indoor air pollutants
• Modeling and dynamic simulation of building-integrated air-handling units operating under fault free and faulty conditions upon varying the boundary conditions via the software TRNSYS as well as artificial neural network-based models
• Development of rule-based data-driven method for fault detection and diagnosis of air handling units
• Modeling and dynamic simulation of hybrid polygeneration energy systems integrated with seasonal borehole thermal energy storages serving small districts upon varying the boundary conditions via the software TRNSYS
• Experimental analysis of small size sensible thermal energy storages upon varying the boundary conditions
• Modeling and dynamic simulation of building-integrated small size sensible thermal energy storages upon varying the boundary conditions via the software TRNSYS as well as artificial neural network-based models
• Experimental analysis of fan coils upon varying the boundary conditions
• Modeling and dynamic simulation of fan coils upon varying the boundary conditions via the software TRNSYS as well as artificial neural network-based models.

SCIENTIFIC PUBLICATIONS
Co-author of more than 140 publications:
- https://iris.unicampania.it/simple-search?location=&query=&filtername=author&filtertype=authority&filterquery=rp00078&rpp=1000&sort_by=bi_sort_2_sort&order=desc
- https://www.scopus.com/authid/detail.uri?authorId=23467776900

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