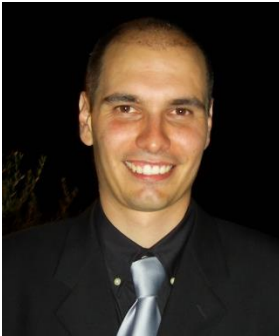


## CURRICULUM VITAE OF ANTONIO ROSATO



Associate Professor of Environmental Technical Physics (Disciplinary-scientific sector ING-IND/11)

Department of Architecture and Industrial Design

University of Campania “Luigi Vanvitelli”

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Personal webpage:

<https://www.architettura.unicampania.it/dipartimento/docenti?MATRICOLA=059382>

### EDUCATION AND TRAINING

- *from 1/11/1998 to 22/07/2005:*  
M.Sc. in Mechanical Engineering (5-year degree) at the University of Naples Federico II (Italy). Final score: 110/110 cum laude. Final thesis on Heat Transfer titled: “Heat conduction effects on mixed convection in horizontal channels with adiabatic and moving wall”. Tutors: Prof. Eng. V. Naso, Prof. Eng. O. Manca, Ph.D. A. Andreozzi.
- *year 2006:*  
Achievement of professional engineering license.
- *from 1/1/2006 to 30/03/2009:*  
Ph.D. on “Energetics” (XX<sup>th</sup> cycle, Scientific Disciplinary Sector ING-IND/10) at the University of Palermo (Palermo, Italy). Title of final thesis: “Experimental analysis of R744 and R422D heat transfer coefficients and pressure drops during evaporation”. Tutors: Prof. Eng. R.M.A. Mastrullo, Prof. Eng. G.P. Vanoli.  
Main research activities from 01/01/2006 up to 31/12/2008 as Ph.D. Student:
  - experimental evaluation of local heat transfer coefficients and local pressure gradients during evaporation of several refrigerants (R407C, R417A, R134a, R422D, R744) substitutes of ozone-depleting fluids under different operating conditions;
  - statistical analysis of methods for predicting local heat transfer coefficients and local pressure gradients during evaporation of several refrigerants (R407C, R417A, R134a, R422D, R744);
  - experimental evaluation of energetic performance of refrigerating systems for domestic applications upon varying the refrigerant charge and position;
  - dynamic and steady-state modeling of refrigerating systems for domestic applications by using the software Matlab.
 The following courses have been attended as Ph.D. Student:
  - *from 12/06/2006 to 16/06/2006:*  
Attended the second edition of the course titled “Fundamentals of Microscale Heat Transfer: Boiling, Condensation, Single and Two Phase Flows” organized by the École Polytechnique Fédérale de Lausanne (Switzerland).
  - *year 2006:*  
Attended the course titled “Thermomechanics of soft matter” held by prof. G. Marrucci from University of Naples Federico II.
  - *from 04/06/2007 to 08/06/2007:*  
Attended the third edition of the course titled “Fundamentals of Microscale Heat Transfer: Boiling, Condensation, Single and Two Phase Flows” organized by the École Polytechnique Fédérale de Lausanne (Switzerland).

- *year 2007:*  
Attended the course titled “Uncertainty in Measurement” held by prof. L. Angrisani from University of Naples Federico II.
- *year 2007:*  
Attended the course for Ph.D. Student titled “Heating Ventilation Air-Conditioning systems” held by prof. M. Cannaviello from University of Naples Federico II.
- *from 07/07/2008 to 11/07/2008:*  
Attended the first edition of the Summer School on Thermodynamics titled “Thermophysics of building envelope” organized by the University of Sannio (Benevento, Italy).
- *year 2009:*  
Attended the two-days course “Matlab Fundamentals”, the one-day course “Matlab for data processing and visualization” and the one-day course “Matlab programming techniques” organized by the company “The MathWorks s.r.l.” (Turin, Italy).
- *from 04/07/2011 to 08/07/2011:*  
Attended the fourth edition of the Summer School on Thermodynamics titled “Indoor Air Quality” organized by the University of Sannio (Benevento, Italy).

## WORK EXPERIENCES

- *from 01/04/2009 to 14/12/2010:*  
Heat pump system engineer at R&D department of the multinational company “DENSO THERMAL SYSTEMS S.p.A” (TOYOTA Group) - Torino, Italy.  
Main activities:
  - development of Matlab codes for predicting the performance of condensers for automotive applications;
  - experimental evaluation and theoretical analysis of reversing heat pump systems' energy performance and control logic for electric vehicles.

## ACADEMIC CAREER

- *from 15/12/2010 up to 02/04/2014:*  
Assistant Professor of Environmental Technical Physics (Disciplinary-scientific sector “ING-IND/11 – Environmental Technical Physics”) at the Department of Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli”.
- *from 01/04/2014 up to 25/07/2014:*  
Visiting Scientist, with fellowship, at the “CanmetENERGY Research Division – Renewables and Integrated Energy Systems Laboratory” of the Canadian Government Research Institute “Natural Resources Canada” - Ottawa (Canada).  
Main research activities as Visiting Fellow:
  - analysis of control strategies based on artificial neural networks for the optimal operation of civil air-conditioning systems using Ground Source Heat Pumps and Photovoltaic-Thermal panels;
  - dynamic simulation of civil air-conditioning systems using seasonal thermal storages coupled with solar panels;
  - dynamic simulation of solar cooling systems using absorption or adsorption units.
- *from 03/04/2014 up to 31/10/2014:*  
Confirmed Assistant Professor of Environmental Technical Physics (Disciplinary-scientific sector “ING-IND/11 – Environmental Technical Physics”) at the Department of Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli”.
- *03/02/2014:*  
Qualified by the Italian Ministry of Education, University and Research as eligible for a position of Associate Professor up to February 3<sup>rd</sup>, 2018.

- *from 01/11/2014 up to date:*  
Associate Professor of Environmental Technical Physics (Disciplinary-scientific sector “ING-IND/11 – Environmental Technical Physics”) at the Department of Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli”.
- *03/04/2018:*  
Qualified by the Italian Ministry of Education, University and Research as eligible for a position of Full Professor up to April 3<sup>rd</sup>, 2027.
- *from 07/07/2017 to 10/08/2017:*  
Visiting Scientist, with fellowship, at the “Tokyo University of Agriculture and Technology” of Tokyo (Japan). Main research topics:
  - Effect of contamination caused by the soot from coal burning on the performance of evacuated tube solar collectors;
  - Performance analysis of solar heating and cooling systems;
  - Optimal cycle time of single-stage adsorption system.

## GRANTS AND FELLOWSHIPS

- 1) *year 2005:*  
First, with scholarship and final score of 90/100, in the public academic competition organized by the University of Palermo (Italy) for a Ph.D. student position on “Energetics” (XX<sup>th</sup> cycle, Disciplinary-scientific sector “ING-IND/10 – Industrial Technical Physics”) at the Department of Energetics and Applied Thermodynamics (DETEC) of the Faculty of Engineering of the University of Naples Federico II (Italy).
- 2) *year 2006:*  
Occasional cooperation with the Department of Electric Engineering of the University of Naples Federico II (Italy) as teacher’s aid for undergraduate electric engineers attending the course of “Energetics” at the University of Naples Federico II (Italy).
- 3) *year 2008:*  
45-days occasional cooperation with the Department of Energetics and Applied Thermodynamics (DETEC) of the Faculty of Engineering of the University of Naples Federico II (Italy) in the field of experimental evaluation of Coefficient Of Performance of retrofitted vapor-compression refrigerating systems.
- 4) *year 2008:*  
Occasional cooperation with the Air University of Pozzuoli (Italy) as teacher’s aid for undergraduate civil engineers attending the course of “Thermodynamics”.
- 5) *year 2010:*  
Came first in the public academic competition for Assistant Professor position at the Faculty of Architecture of the University of Campania “Luigi Vanvitelli” (Disciplinary-scientific sector “ING-IND/11 – Environmental Technical Physics”).
- 6) *year 2013:*  
Contract as teacher of the course “Thermodynamics” for undergraduate students of the University of Campania “Luigi Vanvitelli” within the regional project titled “UNICON - Università della Conoscenza”.
- 7) *year 2014:*  
Contract as teacher of the course “Microgeneration and distributed generation” for graduate and undergraduate students of the University of Naples Federico II within the national project titled “PON01\_2864 – FC SMART GEN”.
- 8) *year 2014:*  
Visiting Fellowship awarded for one year (from 01/04/2014 up to 31/03/2015) to carry out researches at the “CanmetENERGY Research Division – Renewables and Integrated Energy Systems Laboratory” of the Canadian Government Research Institute “Natural Resources Canada” - Ottawa (Canada).

- 9) *year 2014:*  
Came first in the public academic competition for Associate Professor position at the Department of Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli” (Contest Sector 09/C2 - Disciplinary-scientific sector “ING-IND/11 – Environmental Technical Physics”).
- 10) *year 2014:*  
Occasional cooperation with the Department L.U.P.T. of the University of Naples Federico II (Italy) as teacher of the course “Efficiency of Air-Conditioning systems” for graduate students.
- 11) *year 2017:*  
Visiting Fellowship awarded from 07/07/2017 up to 10/08/2017 to carry out researches at the Tokyo University of Agriculture and Technology (Tokyo, Japan) about solar cooling systems as well as adsorption refrigerating machines.
- 12) *from 8/10/2019 up to 7/11/2019:*  
Occasional cooperation (total of 104 hours) with the company ADECCO S.R.L. as teacher for the employees of the company ASSING S.p.A. on the topics of business intelligence, system integration e neural networks, sensors for energy efficiency.

## AWARDS AND ACKNOWLEDGEMENTS

- 1) *year 2012:*  
The following paper “*Rosato, S. Sibilio, Calibration and validation of a model for simulating thermal and electric performance of an internal combustion engine-based micro-cogeneration device, Applied Thermal Engineering, Volumes 45–46, December 2012, Pages 79-98, DOI: 10.1016/j.applthermaleng.2012.04.020, URL: http://www.sciencedirect.com/science/article/pii/S1359431112002633, ISSN: 1359-4311*” has been recognized by ScienceDirect as one of the Top 25 most read papers published in the journal Applied Thermal Engineering in 2012 with the award “ScienceDirect Top25 Hottest Articles”.
- 2) *year 2014:*  
“SET Best Article Award 2014” has been awarded for the following paper “*G. Ciampi, A. Rosato, S. Sibilio, Yearly operation of a building-integrated microcogeneration system in south Italy: energy and economic analyses, International Journal of Low-Carbon Technologies, Volume 9, Issue 4, November 2014, Pages: 331-346, DOI: 10.1093/ijlct/ctt074, URL: http://ijlct.oxfordjournals.org/content/9/4/331, Online ISSN: 1748-1325*” as Best Paper published in the International Journal of Low-Carbon Technologies over the year 2014.
- 3) *2015-2016:*  
Beneficiary of the funds (2.500,0 €) by the University of Campania Luigi Vanvitelli for the development of international relationships with Extra UE Universities/Research Centers (Tokyo University of Agriculture and Technology - Tokyo, Japan).
- 4) *January 2016:*  
Outstanding Reviewer of the International Journal “Applied Thermal Engineering” as I was within the top 10<sup>th</sup> percentile of reviewers for this Journal in terms of the number of manuscript reviews completed in the previous two years (minimum 2 reviews in 2 years).
- 5) *March 2016:*  
Outstanding Reviewer of the International Journal “Measurement” as I was within the top 10<sup>th</sup> percentile of reviewers for this Journal in terms of the number of manuscript reviews completed in the previous two years (minimum 2 reviews in 2 years).
- 6) *February 2017:*  
Outstanding Reviewer of the International Journal “International Journal of Refrigeration” as I was within the top 10<sup>th</sup> percentile of reviewers for this Journal in terms of the number of manuscript reviews completed in the previous two years (minimum 2 reviews in 2 years).

- 7) 2017:  
Beneficiary of the funds (3.000,0 €) for research basic research activities (FFABR) funded by Italian Ministry of Education, University and Research.
- 8) September 2018:  
“Award for research excellence in district heating and cooling” has been awarded by the “International Energy Agency technology collaboration programme on District Heating and Cooling including combined heat and power (IEA DHC)” for the following paper “A. Rosato, G. Ciampi, A. Ciervo, S. Sibilio, Performance of Different Back-up Technologies for Micro-Scale Solar Hybrid District Heating Systems with Long-term Thermal Energy Storage, Energy Procedia, Vol. 149, pp. 565-574, 2018” submitted to the international conference “The 16<sup>th</sup> International Symposium on District Heating and Cooling – DHC 2018” (September 9-12, 2018, Hamburg, Germany).
- 9) October 2018:  
“Best poster award” has been awarded by the Scientific Committee of the international conference “The 13<sup>th</sup> Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES conference” (30 September – 4 October, 2018, Palermo, Italy), for the following paper “S. Sibilio, M. Scorpio, G. Ciampi, G. Iuliano, A. Rosato, L. Maffei, M. Almeida, Simulation models of an electric-driven smart window: energy and visual performances, Proceedings of the international conference “The 13<sup>th</sup> Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES Conference”, 30 September – 4 October, 2018, Palermo, Italy”.
- 10) 2018-2019:  
Beneficiary of the funds (2.500,0 €) by the University of Campania Luigi Vanvitelli for the development of international relationships with Extra UE Universities/Research Centers (Tokyo University of Agriculture and Technology - Tokyo, Japan).
- 11) January 2019:  
“Premio Euromediterraneo XIII Edizione” has been awarded by the “Accademia Ercolanese” (Italy) for the PhD Thesis “Title: Energy, Environmental and Economic Analysis of micro polygeneration for residential Buildings – PhD Student: Giovanni Ciampi, Tutor: Prof. Antonio Rosato, Co-Tutor: Prof. Sergio Sibilio” as Best PhD Thesis completed during the year 2018.
- 12) 2019-2020:  
Beneficiary of the funds (2.500,0 €) by the University of Campania Luigi Vanvitelli for the development of international relationships with Extra UE Universities/Research Centers (Tokyo University of Agriculture and Technology - Tokyo, Japan).

## SCIENTIFIC ACTIVITIES

- 1) 2010-2014:  
Member of the international working group “Annex 54 - Integration of Micro-Generation and Related Energy Technologies in Buildings” of the International Energy Agency (IEA).
- 2) from year 2011 up to date:  
Member of the association IBPSA-Italy, the Italian regional affiliate of the International Building Performance Simulation Association (IBPSA).
- 3) from 2015 up to date:  
Member of the Italian association “Associazione della Fisica Tecnica Italiana” (<http://www.fisicatecnica.org/>).
- 4) from 22/02/2016 up to date:  
Member of the Editorial Board of the scientific international journal “Housing Policies and Urban Economics”, ISSN (Print): 2385-1031, ISSN (Online): 2385-0671 (<http://eiris.it/riviste/hopue/>).
- 5) from 26/03/2017 up to date:

Editorial board member of the scientific international journal “Current Alternative Energy”, ISSN (Online): 2405-464X, ISSN (Print): 2405-4631 (<http://benthamscience.com/journals/current-alternative-energy/editorial-board/>).

6) *from 13/11/2017 up to date:*

Editorial board member of the scientific international journal “Global Journal of Energy Technology Research Updates”, ISSN (Online): 2409-5818

(<http://www.avantipublishers.com/editorial-board-member-gjetru/>).

7) *from 14/11/2017 up to date:*

Editorial board member of the scientific international journal “Journal of Advanced Thermal Science Research”, ISSN (Online): 2409-5826 (<http://www.avantipublishers.com/editorial-board-member-jatsr/>).

8) Enrolled in REPRISE - REGISTER OF EXPERT PEER REVIEWERS FOR ITALIAN SCIENTIFIC EVALUATION.

9) Reviewer for a number of international scientific journals:

- Applied Energy (Elsevier)
- Applied Thermal Engineering (Elsevier)
- Energy Conversion and Management (Elsevier)
- Energy and Buildings (Elsevier)
- Fuel Processing Technology (Elsevier)
- Energy (Elsevier)
- International Journal of Refrigeration (Elsevier)
- International Journal of Electrical Power & Energy Systems (Elsevier)
- International Journal of Thermal Sciences (Elsevier)
- Renewable Energy (Elsevier)
- Measurement (Elsevier)
- Sustainable Energy Technologies and Assessments (Elsevier)
- Sustainable Energy, Grids and Networks (Elsevier)
- Thermal Science and Engineering Progress (Elsevier)
- Environmental Engineering and Management Journal
- Current Alternative Energy (Bentham Science)
- Energies (MDPI)
- Housing Policies and Urban Economics (APAV)
- Journal of Building Performance Simulation (Taylor & Francis group)
- Journal of Energy (Hindawi).

## ACADEMIC ACTIVITIES

1) *two-year period 2007-2008:*

Ph.D. students representative within the Department of Energetics and Applied Thermodynamics (DETEC) of the Faculty of Engineering of the University of Naples Federico II (Italy).

2) *from 01/11/2011 to 30/10/2013:*

Member of teachers’ board of the Doctorate course “Representation, Conservation and Safety of Environment and Structures and Territory Management” of the University of Campania “Luigi Vanvitelli” (XXVII<sup>th</sup> and XXVIII<sup>th</sup> cycles).

3) *from 01/11/2013 up to date:*

Member of teachers’ board of the Doctorate course “Architecture, Industrial Design and Cultural Heritages” of the University of Campania “Luigi Vanvitelli” (XXIX<sup>th</sup>, XXX<sup>th</sup>, XXXI<sup>st</sup>, XXXII<sup>nd</sup>, XXXIII<sup>rd</sup>, XXXIV<sup>th</sup>, XXXV<sup>th</sup> cycles).

4) *year 2012:*

- Member of the examination board for assigning a yearly postdoctoral scholarship at the Department of Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli”.
- 5) *from year 2013 to year 2016:*  
Member of joint committee students-teachers for the master’s degree course “Architecture - Interior Design and for Autonomy” at the University of Campania “Luigi Vanvitelli”.
  - 6) *year 2015:*  
Member of the examination board for assigning a 3 months scholarship at the Department of Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli”.
  - 7) *from 25/06/2015 up to 18/09/2018:*  
Delegate for “Technology Transfer” of the Department of Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli”
  - 8) *from 15/10/2015 up to al 23/10/2018:*  
Delegate for “Job Placement & Liaison Office” of the Department of Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli”.
  - 9) *from 2015 up to 29/01/2019:*  
Member of the board for evaluating the Research Quality of the Department of Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli”.
  - 10) *from 24/10/2018 up to date:*  
Delegate for Research Quality of the Department of Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli”.
  - 11) *year 2016:*  
External Examiner of PhD Thesis titled “Developing a methodology for assessing the energy potential of residential micro-cogeneration systems” submitted by Dr. Geoffrey Johnson – Department of Mechanical Engineering - Carleton University - Ottawa (Canada).
  - 12) *year 2017:*  
External Reviewer of PhD Thesis titled “OPERATION OPTIMIZATION AND DYNAMIC SIMULATION OF COGENERATION SYSTEMS WITH THERMAL ENERGY STORAGE BASED ON AN INNOVATIVE OPERATION STRATEGY FOR RESIDENTIAL APPLICATIONS” submitted by Dr. Martina Caliano – Department of Industrial Engineering – University of Naples FEDERICO II.
  - 13) *year 2017:*  
Member of the Electoral Panel for the election of the Board of the “Scuola Politecnica e delle Scienze di Base (Polisciba)” - University of Campania “Luigi Vanvitelli”.
  - 14) *year 2017:*  
Member of the Examining Panel for a public selection procedure for the assignment of no. 2 fellowships funded by the Italian project named “Potenziamento e analisi critica dell’Anagrafe dell’Edilizia scolastica della Regione Campania”.
  - 15) *year 2017:*  
Member of the Examining Panel for a public selection procedure for the recruitment of no. 1 three-year university researcher belonging to the disciplinary-scientific sector “ING-IND/10 – Industrial Technical Physics”, Department of Industrial Engineering – University of Naples FEDERICO II.
  - 16) *year 2017:*  
Member of the Examining Panel for a public selection procedure for the recruitment of no. 1 three-year assistant professor belonging to the disciplinary-scientific sector “ING-IND/11 – Environmental Technical Physics”, Department of Industrial Engineering – University of Naples FEDERICO II.
  - 17) *year 2018:*  
Member of the board for evaluating the PhD Thesis titled “RADIATIVE PROPERTIES COMPUTATIONAL MODELING OF POROUS CELLULAR MATERIALS” submitted by

Dr. Salvatore Cunsolo – University of Lyon (France) under a co-tutelle agreement with the University of Naples (Italy).

- 18) *year 2018:*  
External Examiner of PhD Thesis titled “EFFICIENT ENERGY USE IN TERTIARY AND RESIDENTIAL APPLICATIONS” submitted by Dr. Elisa Marrasso – Department of Engineering – University of Sannio (Benevento, Italy).
- 19) *year 2018:*  
Member of the board for evaluating the PhD Thesis titled “Dynamic simulation of polygeneration systems for buildings” submitted by Dr. Maria Vicidomini - DIPARTIMENTO DI INGEGNERIA INDUSTRIALE - Università degli Studi di Napoli FEDERICO II (Napoli, Italy).
- 20) *anno 2018:*  
Member of the board for evaluating the PhD Thesis titled “Sistema di Ormeaggio e Criticità” submitted by Dr. Alfredo Della Gatta - DIPARTIMENTO DI INGEGNERIA INDUSTRIALE - Università degli Studi di Napoli FEDERICO II (Napoli, Italy).
- 21) *from 14/01/2019 up to date:*  
Elected member of the board of the Department of Architecture and Industrial Design of the University of Campania as delegate of Associate Professors.
- 22) *year 2019:*  
External Examiner of PhD Thesis titled “INNOVATIVE APPLICATIONS OF EXERGY ANALYSIS AND THERMOECONOMICS IN CHEMICAL, THERMAL AND COOLING ENERGY CONVERSION SYSTEMS” submitted by Dr. PIETRO CATRINI - Dipartimento di Energia, Ingegneria dell’Informazione e Modelli Matematici - Università degli Studi di Palermo (Palermo, Italy).
- 23) *year 2019:*  
Member of the board for evaluating the PhD Thesis titled “SMART LIGHTING CONTROLS FOR ENERGY EFFICIENCY AND VISUAL COMFORT” submitted by Dr. Francesca Fragliasso - DIPARTIMENTO DI INGEGNERIA INDUSTRIALE - Università degli Studi di Napoli FEDERICO II (Napoli, Italy).
- 24) *anno 2019:*  
Member of the board for evaluating the PhD Thesis titled “Analisi tecnico-economica di impianti per la produzione di biogas ed il relativo up-grading a biometano per cogenerazione e/o autotrazione” submitted by Dr. Giulio de Notaristefani di Vastogirardi - DIPARTIMENTO DI INGEGNERIA INDUSTRIALE - Università degli Studi di Napoli FEDERICO II (Napoli, Italy).
- 25) *year 2020:*  
External Examiner of PhD Thesis titled “Thermophysical properties of environmentally friendly refrigerants and their blends: a theoretical and experimental study” submitted by Dr. Sebastiano Tomassetti - DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E SCIENZE MATEMATICHE - Università Politecnica delle Marche (Ancona, Italy).
- 26) *year 2020:*  
External Examiner of PhD Thesis titled “Compressor and hybrid ejector systems: assessment of performance and costs based on current technology via experiments and models” submitted by Dr. Gianluca Lillo - DIPARTIMENTO DI INGEGNERIA INDUSTRIALE - Università degli Studi di Napoli FEDERICO II (Napoli, Italy).

## **DIDACTIC ACTIVITIES**

- 1) *from 01/01/2006 to 31/12/2008:*  
Academic collaboration (practice exercises, seminars and tutorial assistance) and member of the examination boards for the courses of “Thermodynamics” and “Refrigerating Systems” for undergraduate engineering students at the University of Naples Federico II (Italy).



- 2) *year 2008:*  
Tenured teacher of the course “Thermodynamics” for undergraduate civil engineering students at the Air University of Pozzuoli (Italy).
- 3) *academic year 2010-2011:*  
Tenured teacher of the course “Energetics and Environmental Control” for students of the master’s degree course “Design for Innovation” at the University of Campania “Luigi Vanvitelli”.
- 4) *academic year 2011-2012:*  
Tenured teacher of the course “Special Plants” for students of the master’s degree course “Architecture and Civil Engineering” at the University of Campania “Luigi Vanvitelli”.
- 5) *academic years 2012-2013, 2013-2014, 2014-2015, 2015-2016, 2016-2017, 2017-2018, 2018-2019:*  
Tenured teacher of the course “Design of built environment control and energetic systems” (in English) for students of the master’s degree course “Architecture - Interior Design and for Autonomy” at the University of Campania “Luigi Vanvitelli”.
- 6) *academic year 2019-2020:*  
Tenured teacher of the course “Design and control of built environment” (in English) for students of the master’s degree course “Architecture - Interior Design and for Autonomy” at the University of Campania “Luigi Vanvitelli”.
- 7) *academic years 2015-2016 and 2016-2017:*  
Tenured teacher of the course “Built Environment Control Technique” for students of the master’s degree course “Architecture” at the University of Campania “Luigi Vanvitelli”.
- 8) *academic years 2017-2018, 2018-2019, 2019-2020:*  
Tenured teacher of the course “Applied Physics” for students of the master’s degree course “Architecture” at the University of Campania “Luigi Vanvitelli”.
- 9) *2013-2016:*  
Supervisor of a PhD thesis (cycle XXIX) at the Department and Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli”. PhD thesis’ title: “ENERGY, ENVIRONMENTAL AND ECONOMIC ANALYSIS OF MICRO-POLYGENERATION SYSTEMS FOR RESIDENTIAL BUILDINGS” (PhD Student: Giovanni Ciampi).
- 10) *2017-2020:*  
Supervisor of a PhD thesis (cycle XXXIII) at the Department and Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli”. PhD thesis’ title: “ANALISI ENERGETICA, AMBIENTALE ED ECONOMICA DI SISTEMI DI RISCALDAMENTO E RAFFRESCAMENTO INNOVATIVI BASATI SULL’UTILIZZO DELL’ENERGIA SOLARE” (PhD Student: Antonio Ciervo).
- 11) *2019-2022:*  
Supervisor of a PhD thesis (cycle XXXIV) at the Department and Architecture and Industrial Design of the University of Campania “Luigi Vanvitelli” in cooperation with CanmetENERGY Research Centre (Natural Resources Canada, Ottawa, Canada) and Centro Italiano Ricerche Aerospaziali C.I.R.A. (Capua, Italy). PhD thesis’ title: “APPLICAZIONE DI TECNICHE DI INTELLIGENZA ARTIFICIALE PER LA SIMULAZIONE E MANUTENZIONE DI IMPIANTI TECNOLOGICI INNOVATIVI” (PhD Student: Francesco Guarino).
- 12) *2006 up to date:*
  - Co-supervisor of 8 master’s degree theses for undergraduate mechanical engineering students at the University of Naples Federico II (Italy).
  - Supervisor or co-supervisor of 5 master’s degree theses for undergraduate students of the master’s degree course “Architecture and Civil Engineering” at the University of Campania “Luigi Vanvitelli”.

- Co-supervisor of 2 bachelor's degree theses for undergraduate Energetic Engineering students at the University of Sannio (Italy).
- Co-supervisor of 4 master's degree theses for undergraduate Energetic Engineering students at the University of Sannio (Italy).
- Supervisor of 7 master's degree theses, in English, for undergraduate students of the master's degree course "Architecture – Interior Design and for Autonomy" at the University of Campania "Luigi Vanvitelli".
- Co-supervisor of 4 master's degree theses for undergraduate students of the master's degree course "Architecture" at the University of Campania "Luigi Vanvitelli".
- Co-supervisor of 1 bachelor's degree thesis for undergraduate students of the bachelor's degree course "Design and Communication" at the University of Campania "Luigi Vanvitelli".

### **ATTENDANCE OR ORGANIZATION OF NATIONAL AND INTERNATIONAL MEETINGS/CONFERENCES**

- 1) *September 12-15, 2006:*  
Attended, with oral presentation, the 61<sup>st</sup> national congress of Italian thermotechnical association (ATI) organized by the University of Perugia (Italy).
- 2) *June 21-23, 2006:*  
Attended the XXIV congress of Italian association of thermofluidynamics (UIT) organized by the University of Naples (Italy).
- 3) *September 11-14, 2007:*  
Attended, with oral presentation, the 62<sup>nd</sup> national congress of Italian thermotechnical association (ATI) organized by the University of Salerno (Italy).
- 4) *September 23-26, 2008:*  
Attended, with oral presentation, the 63<sup>rd</sup> national congress of Italian thermotechnical association (ATI) organized by the University of Palermo (Italy).
- 5) *June 4, 2009:*  
Attended, with oral presentation, the seminar of the Italian association for air-conditioning heating and refrigeration AICARR titled "New generation synthetic refrigerants with low greenhouse effect" organized by the University of Padova (Italy).
- 6) *Aprile 4-6, 2011:*  
Attended the international congress "MICROGENII - The 2<sup>nd</sup> International Conference on Microgeneration and Related Technologies" organized by the University of Strathclyde (Glasgow, Scotland).
- 7) *April 6-8, 2011:*  
Attended, with oral presentation, the third expert meeting for the working group "Annex 54 - Integration of Micro-Generation and Related Energy Technologies in Buildings" of the International Energy Agency (IEA) organized by the University of Strathclyde (Glasgow, Scotland).
- 8) *September 20-23, 2011:*  
Attended, with oral presentation, the fourth expert meeting for the working group "Annex 54 - Integration of Micro-Generation and Related Energy Technologies in Buildings" of the International Energy Agency (IEA) organized by the University of Campania "Luigi Vanvitelli"/University of Sannio (Italy).
- 9) *April 23-25, 2012:*  
Attended, with oral presentation, the fifth expert meeting for the working group "Annex 54 - Integration of Micro-Generation and Related Energy Technologies in Buildings" of the International Energy Agency (IEA) organized by National Research Council of Canada (Ottawa, Canada).
- 10) *October 9-12, 2012:*

Attended, with oral presentation, the sixth expert meeting for the working group “Annex 54 - Integration of Micro-Generation and Related Energy Technologies in Buildings” of the International Energy Agency (IEA) organized by the University of Tokyo (Tokyo, Japan).

11) *April 15-17, 2013:*

Attended, with oral presentations, the international congress “MICROGENIII - The 3<sup>rd</sup> edition of the International Conference on Microgeneration and Related Technologies” the University of Campania “Luigi Vanvitelli”/University of Sannio (Italy).

12) *April 15-17, 2013:*

Chairman of a technical session at the international conference “MICROGENIII - The 3<sup>rd</sup> edition of the International Conference on Microgeneration and Related Technologies”, Naples (Italy).

13) *April 15-17, 2013:*

Member of Organizing Committee of the international conference “MICROGENIII - The 3<sup>rd</sup> edition of the International Conference on Microgeneration and Related Technologies” Naples (Italy).

14) *April 18-19, 2013:*

Attended, with oral presentation, the seventh meeting for the working group “Annex 54 - Integration of Micro Generation and Related Energy Technologies in Buildings” of the International Energy Agency (IEA) organized by Italian National Agency for New Technologies, Energy and Sustainable Economic Development ENEA, (Rome, Italy).

15) *September 18-20, 2013:*

Attended, with oral presentation, to the eighth expert meeting for the working group “Annex 54 - Integration of Micro-Generation and Related Energy Technologies in Buildings” of the International Energy Agency (IEA) organized by the Technical University of Munich (Munich, Germany).

16) *October 28-30, 2015:*

Attended, with oral presentation, to the international conference “MICROGENIV - The 4<sup>th</sup> International Conference on Microgeneration and Related Technologies” organized by the University of Tokyo (Tokyo, Japan).

17) *October 28-30, 2015:*

Chairman of a technical session at the international conference “MICROGENIV - The 4<sup>th</sup> International Conference on Microgeneration and Related Technologies”, Tokyo (Japan).

18) *October 28-30, 2015:*

Member of the International Advisory Committee of the international conference “MicrogenIV - The 4<sup>th</sup> International Conference on Microgeneration and Related Technologies”, Tokyo (Japan).

19) *June 9-10, 2016:*

Member of the local organizing committee of the international conference “1<sup>st</sup> AIGE-IIETA International Conference and 10<sup>th</sup> AIGE Conference”, Naples (Italy).

20) *June 16-18, 2016:*

Chairman of a technical session at the international conference “Le vie dei Mercanti - XIV International Forum”, Napoli/Capri (Italy).

21) *September 11-13, 2016:*

Attended, with oral presentation, to the international conference “Sustainability in Energy and Buildings, SEB-16”, Turin (Italy).

22) *September 11-13, 2016:*

Chairman of a technical session at the international conference “Sustainability in Energy and Buildings, SEB-16”, Turin (Italy).

23) *September 11-13, 2016:*

Member of International Programme committee of the International conference “Sustainability in Energy and Buildings, SEB-16”, Turin (Italy).

- 24) *May 28-June 2, 2017:*  
Member of the local organizing committee of the international conference “7<sup>th</sup> International Symposium on Advances in Computational Heat Transfer, CHT-17”, Naples (Italy).
- 25) *August 7-10, 2017:*  
Attended to the international conference “International Sorption Heat Pump Conference (ISHPC2017)”, Waseda University (Tokyo, Japan).
- 26) *September 9-12, 2018:*  
Attended, with oral presentation, to the international conference “16<sup>th</sup> International Symposium on District Heating and Cooling - DHC2018”, HafenCity Universität (Hamburg, Germany).
- 27) *September 30-October 4, 2018:*  
Attended, with 3 oral presentations, to the international conference “The 13<sup>th</sup> Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES Conference”, Palermo (Italy).
- 28) *October 2, 2018:*  
Chairman of a technical session at the international conference “The 13<sup>th</sup> Conference on Sustainable Development of Energy, Water and Environment Systems - SDEWES Conference”, Palermo (Italy).
- 29) *October 17-19, 2018:*  
Attended, with oral presentation, to the international conference “BEYOND ALL LIMITS CONGRESS 2018 - 1<sup>st</sup> International Congress on Sustainability in Architecture, Planning, and Design”, Çankaya University (Ankara, Turkey).
- 30) *October 17, 2018:*  
Chairman of a technical session at the international conference “BEYOND ALL LIMITS CONGRESS 2018 - 1<sup>st</sup> International Congress on Sustainability in Architecture, Planning, and Design”, Çankaya University (Ankara, Turkey).
- 31) *May 15-17, 2019:*  
Attended, with oral presentation, to the international conference “5<sup>th</sup> International Conference on Polygeneration (ICP 2019), Kyushu University (Fukuoka, Japan).
- 32) *October 1-6, 2019:*  
Attended, with 2 oral presentations, to the international conference “14<sup>th</sup> SDEWES conference” (Dubrovnik, Croatia).

## RESEARCH PROJECTS

- 1) *year 2006:*  
Scientific participation to the research project funded on the basis of a public competition named: “Progetto di ricerca L. R. 28/03/2002 n.5 - Regione Campania”. Title of the research project: “ Energetic optimization of domestic freezers”. Duration of the research project: 12 months. Role: member of the research group.
- 2) *from 20/04/2011 to 20/10/2011:*  
Scientific coordinator of a research agreement between the University of Campania “Luigi Vanvitelli” and the multinational company “DENSO THERMAL SYSTEMS S.p.A.”. Aim of the research agreement: developing a Matlab simulation code for predicting the performance of air-cooled condensers for automotive application. Duration of the research contract: 6 months. Cost: 10.000,0 € + VAT.
- 3) *year 2011:*  
Scientific participation to the 1-year research agreement titled “Setting up of a virtual power plant for the analysis of micro-polygeneration systems” between the Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) and the Department of Engineering of the University of Sannio.
- 4) *from 14/05/2012 to 14/10/2012:*

Scientific coordinator of a research agreement between the University of Campania “Luigi Vanvitelli” and the multinational company “DENSO THERMAL SYSTEMS S.p.A.”. Aim of the research agreement: optimization of a Matlab simulation code for predicting the performance of air-cooled condensers for automotive application developed during a previous research agreement. Duration of the research contract: 5 months. Cost: 10.000,0 € + VAT.

5) *year 2012:*

Scientific participation to the 1-year research agreement titled “Development and experimental validation of control strategies for a real grid of micro-polygeneration systems” between the Italian National Agency for New Technologies, Energy and Sustainable Economic Development (ENEA) and the Department of Engineering of the University of Sannio.

6) *from 10/10/2013 to 10/01/2014:*

Scientific coordinator of a research agreement between the University of Campania “Luigi Vanvitelli” and the multinational company “DENSO THERMAL SYSTEMS S.p.A.”. Aim of the research agreement: 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. Duration of the research contract (in progress): 3 months. Cost: 3.500,0 € + VAT.

7) *years 2013-2015:*

Scientific participation to a research project in implementation of the Operational Objectives 2.1 and 2.2 of the ERDF Operational Programme Campania 2007/2013. Title of the project: Urban eco-tourism for sustainable use of cultural heritage. Duration of the project: 24 months.

8) *2017-2020:*

Member of the research unit of the research project titled “WALLED – “Smart LED&OLED” per Lighting e MediaBuilding” in cooperation with the Italian companies TELANIA s.r.l. and RIEL.CO. Impianti s.r.l., funded by the public competition named “PON I&C 2014-2020 HORIZON2020” financed by the Italian Ministry of Education, University and Research (MIUR).

Start date: 1/04/2017.

Duration: 36 mesi.

Funding obtained: 1.200.000 €.

9) *2019-2021:*

Principal Investigator of the research project titled “Solar smart Energy Networks integrated with borehole thermal Energy storages serving small-scale districts in the CAMpania region (S.E.N.E.CA.)”, funded by the Italian public competition “Programma intra-Ateneo V:ALERE 2019” financed by the University of Campania “Luigi Vanvitelli”.

Start date: 02/12/2019.

Duration: 24 months.

Funding obtained: 127.500 €.

10) *2019:*

Principal Investigator of the research project titled “Impatto delle Nuove TECnologie per la Sostenibilità energetica e ambientale negli interventi di retrofit delle Aree urbane (I.N.T.E.S.A.)”, funded by the Italian Ministry of Education, University and Research (MIUR) and submitted to the public competition “FISR - Fondo Integrativo Speciale per la Ricerca” in cooperation with the two Italian Universities: Politecnico di Torino (Torino, Italy) and Università degli Studi della Tuscia (Viterbo, Italy).

Duration: 24 months.

Funding requirement: 1.016.920,32 €.

11) *2019 – 2022:*

Tutor of a PhD Student with fellowship funded by the Italian public competition “Programma Operativo Nazionale FSE-FESR “Ricerca e Innovazione 2014-2020” del MIUR” - “Dottorati

Innovativi con caratterizzazione industriale” for a research project titled “Applicazione di tecniche di intelligenza artificiale per la simulazione e manutenzione di impianti tecnologici innovativi”.

## RESEARCH AGREEMENTS

- 1) *from 18/06/2015 to 31/12/2015:*  
Co-supervisor of research agreement, titled “Numerical Simulation of Integrated Heating, Cooling and Power Systems Using Adsorption Chillers and Micro-Cogeneration Units for Italian and Japanese Climates”, signed with the research group of “Tokyo University of Agriculture and Technology” (Tokyo, Japan) guided by Prof. A. Akisawa.
- 2) *from 1/07/2015 to 31/12/2016:*  
Co-supervisor of a research agreement, 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 with the research group “Renewable Energy, Heat and Power Laboratory Buildings and Renewables Group” of “CanmetEnergy Research Centre” of “Natural Resources Canada” (Ottawa, Canada) guided by Dr. Prof. E. Entchev and Dr. Wahiba Yaïci.
- 3) *from 1/12/2017 to 31/03/2019:*  
Co-supervisor of a research agreement, titled “Modeling of Integrated Solar-powered Heating and Cooling Systems for Italian and Japanese Climates”, signed with the research group of “Tokyo University of Agriculture and Technology” (Tokyo, Japan) guided by Prof. A. Akisawa.
- 4) *from 1/12/2017 to 31/03/2019:*  
Co-supervisor of a research agreement with the research group of “Tokyo University of Agriculture and Technology” (Tokyo, Japan) guided by Prof. A. Akisawa and with Prof. Adiyabat Amarbayar of “National University of Mongolia”, titled “Development of simulation models and control strategies for investigating the impact of dust on the performance of solar thermal applications”.
- 5) *from 13/05/2019 to 31/12/2020:*  
Co-Project Coordinator of the research agreement, titled “PERFORMANCE ASSESSMENT OF SOLAR COOLING SYSTEMS FOR JAPANESE AND ITALIAN BUILDINGS”, signed with the research group of the “Tokyo University of Agriculture and Technology” (Tokyo, Japan) guided by Prof. Akisawa.

## RESEARCH ACTIVITIES

The research activities are performed as member of the following Research Groups of the Department of Architecture and Industrial Design:

- *Energy Efficiency & Environment (E3)* – Scientific Coordinator: Prof. Sergio Sibilio;
- *Acustica, Vibrazioni e Interazioni Multisensoriali (ACOUVI)* - Scientific Coordinator: Prof. Luigi Maffei.

The main research activities can be summarized as follows:

- analysis of district heating and cooling systems, serving small/micro-scale typical Italian districts, based on the exploitation of solar energy and integrated with a seasonal borehole thermal energy storage. The research activities are performed from a simulation point of view by means of the dynamic simulation software TRNSYS upon varying the boundary conditions (size and technology of components, control logics, thermo-physical properties, back-up systems, climatic conditions, layout of components, etc.).
- development and application of a methodology for the Fault analysis, fault detection and fault identification of heating, ventilation and air-conditioning plants. The methodology is based on the comparison between the on-site experimental behavior of the systems and the

performance predicted by mathematical models developed through Artificial Intelligence techniques and dynamic simulation models.

- experimental analysis and/or dynamic simulation of performance during both steady-state and transient operation of internal combustion engine-based micro-cogeneration systems, absorption chillers for domestic application, vapor compression electric refrigeration systems and gas heat pumps under different operating conditions.
- analysis and characterization of the building envelope performances, as well as on the development of adaptive and interactive dynamic (SMART) façades. In particular, the research aim is to analyze and characterize all building envelope components that help in reaching the built environment thermo-hygrometric comfort and reducing the energy consumption, while developing methodologies and simulation models for the innovative dynamic and bioclimatic components, such as the ventilated façade. The research line also investigates the "intelligent" façades and their components, studying how they can take advantages of sources and dynamic natural energy, their adaptiveness to the external stimuli, as well as how it is possible to transmit interactive messages into urban scenarios.
- Experimental analysis and dynamic simulation of "smart windows", with particular reference to electrochromic windows.

The research activities are performed in the "Built environment control laboratory Ri.A.S." as well as in the "SENS i-Lab" of the Department of Architecture and Industrial Design.

Research activities have been/are carried out in co-operation with:

- Renewable Energy, Heat and Power Laboratory Buildings and Renewables Group, CanmetEnergy Research Centre, Natural Resources Canada, Ottawa, Canada (<https://www.nrcan.gc.ca/energy/offices-labs/canmet/ottawa/5753>);
- Tokyo University of Agriculture and Technology, Tokyo, Japan (<http://www.tuat.ac.jp/en/>);
- Centro Italiano Ricerche Aerospaziali CIRA (<https://www.cira.it/en/>);
- RIEL.CO Impianti s.r.l. (<https://www.rielco.it/>);
- TELANIA s.r.l. ([http://www.telenia-srl.com/en\\_GB/](http://www.telenia-srl.com/en_GB/)).

## SCIENTIFIC PUBLICATIONS

Author of more than 100 publications on peer-reviewed national and international Journals as well as proceedings of peer-reviewed national and international conferences. Author of 1 book chapter and 8 research reports.

Link to publications:

[https://iris.unina2.it/browse?type=author&authority=rp00078&sort\\_by=2&order=ASC&rpp=100&etal=0&submit\\_browse=Aggiorna&rand=0.9740690790517272#.WgG1smjWzIU](https://iris.unina2.it/browse?type=author&authority=rp00078&sort_by=2&order=ASC&rpp=100&etal=0&submit_browse=Aggiorna&rand=0.9740690790517272#.WgG1smjWzIU)