Curriculum Vitae

Andrea Gasparella

CURRENT POSITION AND SUMMARY OF ONGOING ACTIVITIES

Appointment	**From**
Full professor of Building Physics and Building Energy Systems, Faculty of Science and Technology, Free University of Bozen-Bolzano, Italy	..... Jan-2015
Service	
Dean of the Faculty of Engineering	.... March-2023
Member of the steering committee of the Klimahaus Agency (South Tyrolean Energy and Building Certification Agency) – App. by the Province of Bolzano	..... Aug-2017
Membership	
Director at large of the International Building Performance Simulation Association (IBPSA)	..... Sept-2018
President of IBPSA Italy	..... Jan-2019
Teaching	
Engineering Thermodynamics and Thermal Science (Bachelor) 30 h	.....Oct-2012
Advanced Applications of Building Physics (Master) 90 h	.....Oct-2012
Modelling Methods for Applied Sciences (PhD) 30 h	.....Oct-2011
Research	
Leader of the Building Physics Research Group (1 Associate Professor 1 Assistant Professor, 3 Research Assistants, 6 PhD students)	.....Oct-2010
Responsible for the Building Physics Laboratories of the Free University of Bozen-Bolzano	.....Oct-2010

Editorial and conferences	
Member in the Editorial Board of the ASME Journal of Engineering for Sustainable Buildings and Cities	2022
Member in the Editorial Board of the Journal of Building Performance Simulation	2017
Co-chair of Building Simulation BS2026 – IBPSA International Conference Conference Chair and Editor of the Proceedings (Scopus indexed) of the Building Simulation Applications-BSA Series of Conferences (editions 2013, 2015, 2017, 2019, 2022, 2024), co-organized by IBPSA Italy	2024
Reviewer for several scientific journals	

Grants and Funding	
Main responsible for the capacity building funding agreement for the establishment of new labs in Building Physics and Renewable Energy Production in the NOI Techpark	.....Nov-2013
Responsible for the University in a European Regional Development Fund ERDF	

EDUCATION

PhD	**Period**
Ph.D. in Energy Engineering, Department of Management Engineering, University of Padua Thesis: “Deumidificazione chimica e risparmio energetico: sperimentazione ed applicazioni” (Chemical dehumidification and energy saving: experiments and applications)	 1995-98
M.S.	 1990-95
M.S. in Management Engineering, Department of Management Engineering, University of Padua	

PREVIOUS ACADEMIC POSITIONS

	Period
Associate Professor of Building Physics and Building Energy Systems Faculty of Science and Technology, Free University of Bozen-Bolzano, Italy	 2010-2014

Assistant Professor of Building Physics and Building Energy Systems, Department of Management and Engineering, University of Padua 1997-2010

PREVIOUS ACADEMIC SERVICES

	..... Period
Vice-dean for Studies (second term) Member of the Study Commission of the Free University of Bozen-Bolzano Director of the bachelor program in Industrial Mechanical Engineering Director of the post-graduate Master in Building, Energy and Environment	 2014-2023
Director of the PhD program Sustainable Energy and Technology	 2011-2023
Member of the steering committee of the Klimahaus Agency (South Tyrolean Energy and Building Certification Agency) – App. by the Province of Bolzano	 2017-2023
Member in the Quality Assurance Committee of the Free University of Bozen-Bolzano	... 2013-2014
Co-Director of the master program in Energy Engineering	 2012-2014
Faculty Research Commission - reference person for the macro area Energy Efficiency and Production	 2010-2014
Responsible for the establishment of the master program in Energy Engineering (joint program with the University of Trento)	 2010-2012
Member and Representative for the Assistant Professors in the board of the Department of Management Engineering, University of Padua	 2004-2006

PREVIOUS MEMBERSHIP

Vice-president of IBPSA Italy	 2015-2018
Director at large of the International Building Performance Simulation Association (IBPSA)	 2016-2018
Director at large of the International Building Performance Simulation Association (IBPSA)	 2014-2015

RESEARCH

Free University of Bozen-Bolzano (ongoing) . 2010-ongoing

Research vision:
Starting from the level of the (i) **building** and the HVAC systems, the research field has extended to the boundary conditions (ii) **outdoor**, with the analysis of the environmental **context** and (iii) **indoor**, with the study of the comfort conditions and interactions with the **occupant**. From a technical analysis at a component level, the vision has broadened to a **holistic** and **human centric approach**.

Research aims:
The research aims at (i) increasing the knowledge and (ii) investigating possible application opportunities, with respect to three crucial features on each of the three levels - 1. Occupant/human, 2. Building/HVAC, 3. Outdoor context - namely:

1. **Dynamicity**: the short and long term variability of the boundary conditions and the increasingly demanding performance requisites, impose to analyze and describe the involved systems and components in their time variability.
2. **Complexity**: each of the levels includes different and contrasting performance domains. At the occupant level, indoor environmental quality results from the contribution of different factors (thermal, visual, acoustical and air environments). Mirrored at the building level, the overall performance optimization requires to trade-off contrasting needs (energy saving, use of natural resources, reduce the overall environmental impact, minimize costs). At the context level overall sustainability is also matter of interactions between conflicting domains (environmental, economic, social, political)
3. **Interrelationship**: between-level interactions also affect the overall performance bi-directionally. While interactions from the context to the building and to the occupant are more evident, the opposite ones are more complex and crucial. Occupant satisfaction affects adaptation and behavioral interactions with the building and with the context. Building features and performance impact on the local and global environmental conditions.

Research techniques:
Part of the research includes the improvement of approaches and methods, including:

1. **Experimental techniques**: (i) Laboratory tests, (ii) On site measurements (living labs, real buildings, virtual environment), (iii) Surveys and questionnaires (paper-based or digital)
2. **Simulation techniques**: (i) Model development and validation, (ii) Parametric, sensitivity analysis, and statistical inference, (iii) Calibration and Multi-Objective Optimization (MOO), (iv) Multi-domain and co-simulation.
3. **Combined approaches**: (i) Use of simulation to generalize and extend experimental results, (ii) Extension of the use simulation from the design phase to the operative phase (fault detection, virtual sensing, towards predictive control)

Research outcomes:

1. **Occupant/human**:
   Experimental: Setup of monitoring systems (permanent in university living labs, moveable in external buildings), test of new comfort assessment techniques (IR imaging for thermal comfort), and definition of questionnaires for special environments (classrooms, physiotherapy clinics) to investigate thermal, visual and acoustic comfort, air quality and subjects' performance (listening efficiency) and possible interactions in real and lab environments.
   Numerical: Implementation of solar radiation sensitive thermal comfort models (steady and dynamic). Inclusion of thermal and visual comfort aspects in the multi-domain analysis of glazing and shading systems and in multi-objective optimization of retrofit measures. Definition of long-term and spatial representation metrics for comfort analysis. Use of calibrated thermal simulation to investigate thermal comfort in real buildings.
   Collaborations: DTU (Bjarne Olesen), Purdue University (Athanasios Tzempelikos), TU Wien (Ardeshir Mahdavi), University of Ferrara (Nicola Prodi), University IUAV of Venice (Francesca Cappelletti), University of Trento (Alessandro Prada).
2. **Building/HVAC**:
   Experimental: design and operation of a system for steady and dynamic tests on opaque components; test of shading and glazing systems in real applications; design and installation of an HVAC systems test system; design of new laboratory facilities for dynamic testing of thermal and acoustical properties of envelope components, and for heating and ventilation systems.
   Numerical: proposal for improvement of technical standards (thermal bridges of windows, dynamic transfer properties); modelling of liquid desiccant systems; multi-domain parametric analysis (thermal and visual) of windows systems; multi-objective optimization (optimization methods and applications to retrofit to investigate different aspects: location, incentives, behavior)
   Collaborations: Purdue University (Athanasios Tzempelikos), University of Colorado Boulder (Moncef Krarti), University IUAV of Venice (Francesca Cappelletti, Piercarlo Romagnoni), University of Padua (Giovanni A. Longo), University of Trento (Alessandro Prada, Paolo Baggio).
3. **Outdoor context**: External Climatic and non Climatic (urban) conditions
   Experimental: solar radiation measurement setup.
   Numerical: recasting of technical standards on weather data; sensitivity analysis of MOO in retrofit on TRY (Typical Reference Years), ERY (Extreme Reference Years), solar radiation models; potential of ventilation heat recovery in different climates (sensible heat recovery, total heat recovery); multi-objective optimization for urban areas (applications to retrofit and public incentives); synergies and trade-offs between district heating and building retrofit; new approaches to define TRY and ERY; new approaches to define climatic regions for building and HVAC performance analysis.
   Collaborations: TU Eindhoven (Jan Hensen), TU Wien (Ardeshir Mahdavi), University of Trento (Alessandro Prada).

Main interdisciplinary research at Free University of Bozen-Bolzano:

Energy efficiency in the industrial sector, with the group on Applied Mechanics and Mechatronics, Automation (Renato Vidoni).

CHP in combination with District Heating, with the groups Biomass to Energy Processes (Marco Baratieri) and Fluid Machines (Massimiliano Renzi)

AWARDS AND HONOURS

	Period
Ray W. Herrick Laboratories – Purdue University	
Distinguished Service Award for continuous support of Herrick Conferences and dedicated service to the International High Performance Buildings Conference.	2018
Italiadecide	
Honorable Mention within the Award Italiadecide "Amministrazione, Cittadini, Imprese" for Innovation in teaching and higher education, for the Massive Online Open Course "Building Energy and Environment – BEE Basic", presented at the Italian House of Representatives at the presence of the President of the Italian Republic Sergio Mattarella.	2018

KEYNOTES

	Period
Aicarr	
Use of extreme reference years in building retrofit optimization	2018
49th International Congress and Exhibition on Heating, Refrigeration and Air-Conditioning, Belgrade, 5-7 December 2018	2017
Analysis of optimal solutions from a multi-objective optimization of energy efficiency measures in residential buildings 48th International Congress and Exhibition on Heating, Refrigeration and Air-Conditioning, Belgrade, 6-8 December 2017	

EDITORIAL AND CONFERENCES

Guest-editor	Period
Special Issue "Building Simulation", Science and Technology for the Built Environment, 2018, 24(5)	2018
Co-editor	
Building Simulation Applications BSA 2024 – Proceedings	2024
Building Simulation Applications BSA 2022 – Proceedings	2022
Building Simulation Applications BSA 2019 – Proceedings	2019
Building Simulation Applications BSA 2017 – Proceedings	2017
Building Simulation Applications BSA 2015 – Proceedings	2015
Building Simulation Applications BSA 2013 – Proceedings	2013

Previous membership in scientific committees of international conferences

Ad hoc Advisory Committee, Purdue International Conferences 2024 - Compressor Engineering, Refrigerant and Air Conditioning, High Performance Buildings, Purdue University, W. Lafayette, Indiana (USA) 15-18	2024
Ad hoc Advisory Committee, Purdue International Conferences 2022 - Compressor Engineering, Refrigerant and Air Conditioning, High Performance Buildings, Purdue University, W. Lafayette, Indiana (USA) 10-14	2022
Ad hoc Advisory Committee, Purdue International Conferences 2020 - Compressor Engineering, Refrigerant and Air Conditioning, High Performance Buildings, Purdue University, W. Lafayette, Indiana (USA) 13-16	2020
49th KGH – International Congress and Exhibition on Heating, Refrigeration and Air Conditioning, Belgrade (Serbia) 5-7 December 2018	2017
Ad hoc Advisory Committee, Purdue International Conferences 2018 - Compressor Engineering, Refrigerant and Air Conditioning, High	2017

Performance Buildings, Purdue University, W. Lafayette, Indiana (USA) 9-12 July 2018 2017
48th KGH – International Congress and Exhibition on Heating, Refrigeration and Air Conditioning, Belgrade (Serbia) 6-8 December 2017 2017
EnviBuild - Buildings and Environment International Conference 2017, Vienna University of Technology, Vienna (Austria), 7-8 September 2017 2017
Building Simulation Applications BSA 2017, February 8-10 2017, Free University of Bolzano 2016
47th KGH – International Congress and Exhibition on Heating, Refrigeration and Air Conditioning, Belgrade (Serbia) 30 November-2 December 2016 2016
Ad hoc Advisory Committee, Purdue International Conferences 2016 - Compressor Engineering, Refrigerant and Air Conditioning, High Performance Buildings, Purdue University, W. Lafayette, Indiana (USA) 11-14 July 2016 2016
SBE16 - Sustainable Synergies from Buildings to the Urban Scale, Thessaloniki, Greece, 17-19 October 2016 2015
International Building Physics Conference 2015, Turin 14-17 June 2015 (national scientific committee) 2015
Building Simulation Applications BSA 2015, February 4-6 2015, Free University of Bolzano 2013
Building Simulation Applications BSA 2013, January 31 - February 2 2013, Free University of Bolzano

Reviewer for

Applied Energy, Applied Thermal Engineering, Building and Environment, ASME Journal of Engineering for Sustainable Buildings and Cities, Energy, Energy and Buildings, Energy Conversion and Management, Experimental Thermal and Fluid Science, International Journal of Refrigeration, Journal of Building Performance Simulation, Journal of Building Engineering, Journal of Thermal Biology, Science and Technology for the Built Environment (former HVAC&R Research)

PUBLICATIONS

Andrea Gasparella is co-author of more than 400 publications among which 122 journal papers. Scopus bibliometrics (last update February 1, 2026): Indexed Publications: 265, Citations: 4573, H-index: 41

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