

University Academic Curriculum Vitae

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Place and –date of birth: Malo (Vicenza) – 23.07.1971
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Education since leaving school

- Master Degree in Management Engineering (University of Padova)
- PhD in Energetics (University of Padova)

Present appointment

- Full professor
- 1.1.2015
- Free University of Bozen-Bolzano, Faculty of Science and Technology

Professional experience	from	to	Academic Institution	Position	Responsibilities
	12.12.1997	30.09.2010	Università degli Studi di Padova	Assistant professor	Teaching, Research, Organization
	1.10.2010	31.12.2014	Free University of Bozen-Bolzano	Associate professor	Teaching, Research, Organization

Experience in academic teaching

- **1997-2002** Support activities for the courses: Engineering Thermodynamics and Thermal Science; Acoustics
Faculty of Engineering, University of Padova
- **2002-2012** Contract professor for the courses: Engineering Thermodynamics and Thermal Science; Thermal design and evaluation
Faculty of Engineering, University of Padova
- **2004-2006** Contract professor for the course: HVAC Systems
Faculty of Engineering, University of Trento
- **2006-2008** Aggregate professor for the course: Energy Management
Faculty of Engineering, University of Padova
- **2010-ongoing** Professor:
Engineering Thermodynamics and Thermal Science; Physics (2011-12, Bachelor in Agriculture Science and Technology); Dynamic Simulation for Thermotechnical Systems (2011-12, Bachelor in Logistics and Production Engineering); Modelling Methods for Applied Physics (PhD Program in Sustainable Energy and Technology)
Faculty of Science and Technology, FU of Bozen-Bolzano
- **2012-ongoing** Professor:
Advanced Applications of Building Physics (Master Degree in Energy Engineering)
Faculty of Science and Technology, FU of Bozen-Bolzano

Other activities

- **2002-ongoing** Supervisor:
more than 100 Theses/Dissertations (bachelor programs, 5-year programs or MD programs, postgraduate master)
- **2011** Member in the final exam commission of the PhD in Environmental Engineering, University of Trento
- **2015** Member in the final exam commission of the PhD in Innovazione Tecnologica per l'Ambiente Costruito, Politecnico di Torino
- **2009-ongoing** supervisor of 8 PhD students
co-supervision of 6 PhD students

Other academic responsibilities

- Internal appointments to faculty and university boards:
 - Didactic commission for the Bachelor in Industrial Mechanical Engineering
 - Faculty research commission - reference person for the macro area Energy Efficiency and Production (2010-2014)
 - Faculty laboratory commission (2010-2012)
 - Director of the Study Council of the PhD Program SET (XXVII-XXXII cycles – 2011 ongoing)
 - Director of the Study Council of the Bachelor Degree Program in Industrial Mechanical Engineering and member in the inter-university commission Bozen/Trento for the Master Program in Energy Engineering (2014 - ongoing)
 - Director of the Study Council of the Master Degree Program in Energy Engineering and member in the inter-university commission Bozen/Trento for the Master Program in Energy Engineering (2012-ongoing)
 - Coordinator of the postgraduate Master in Building Energy Performance. Design, Optimization and Service – Klimahaus/Casaclima (2013-14)
 - Coordinator for implementation of the funding agreement between Autonomous Province of Bozen, Free University of Bozen-Bolzano and Eurac for the area “Klimahaus – Energy Efficiency in Buildings and Energy Production” for the development of scientific research in the new Technology Park.
 - Vice Dean for Studies of the Faculty of Science and Technology (2014-ongoing)
- Responsibilities for organizing conferences:
 - Building Simulation Applications BSA 2013, January 31st - February 2nd 2013, Free University of Bolzano
 - Building Simulation Applications BSA 2015, February 4th – February 6th 2015, Free University of Bolzano

Memberships

- Member in the scientific committee:
 - Building Simulation Applications BSA 2013, January 31st - February 2nd 2013, Free University of Bolzano
 - Building Simulation Applications BSA 2015, February 4th – February 6th 2015, Free University of Bolzano
 - International Building Physics Conference 2015, Turin 14-17 June 2015 (national scientific committee)
 - 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
 - SBE16 - Sustainable Synergies from Buildings to the Urban Scale, Thessaloniki, Greece, 17-19 October 2016
- Other memberships:
 - Director at Large of the International Building Performance

- Simulation Association IBPSA (2014-15 and 2016-18)
- Vice president of the regional affiliate IBPSA Italy

Research and scholarships

- Current research activity:

The activity is conducted and coordinated within a research group involving some PhD students and some Research Assistants. The research field is “Building Physics and HVAC Systems” from the occupant to the urban scale.

The main focus and original contribution of the research conducted deal with an *“Integrated experimental and modelling approach to the enhancement of buildings dynamics and overall performance”*

The research focuses on:

- The method, i.e. the integration of field and lab measurement and building simulation. This means both finding novel measurement approaches which could integrate some modelling phases, and novel applications for measurements and building simulation, to enhance building performance in the design, operative or renovation phase.
- The building and systems dynamics, which needs to be considered in both the southern climates and the applications with high fluctuation of internal gains.
- The overall performance, which is the subject of the analysis and the target to maximize/optimize. Its manifold nature includes different aspects, from energy to global comfort and from sustainability to the occupant’s satisfaction, performance and interaction with the building.

Applications of interest are in the field of:

- Building envelope: dynamic performance opaque envelope - simulation for sensitivity analysis, measurements in lab of dynamic heat transfer characteristics, towards module field measurements - dynamic performance of transparent components - simulation of overall performance of glazing and shading systems, towards measurements for dynamic performance evaluation and definition of control strategies -
- HVAC systems: ventilation systems - modelling of heat recovery systems, simulation for the evaluation of control strategies and application potential of the technology, lab measurements of HVAC systems and in particular ventilation heat recovery systems, economy cycles, desiccant based air dehumidification systems -
- Environmental design: quality of the built environment, from thermal, visual, acoustics comfort and indoor air quality to the interactions between occupants and buildings.
- Building systems and urban energy systems: dynamic performance of the entire building - simulation for sensitivity analysis to model approach, weather data, building characteristics, for model calibration in combination with field measurements, for optimization of building design or of refurbishment measures, for predictive control - and integration within the urban energy systems - from district heating systems to thermal smart grids -

Further research lines deal with the energy efficiency in the industrial sector and are conducted on a multidisciplinary context (including Electrical converters, drives and actuators, Applied Mechanics and Mechatronics, Automation).

- Previous research activities:

The research activity started at the University of Padua, considering in

particular sorption systems (open and closed cycle heat pumps) and renewable energy sources (solar and ground source)
Special attention was paid to the applications of the desiccant based systems to industrial and agriculture systems and to the building air conditioning.

A large part of the research has been developed within regional (DOCUP 2.3), national (MURST ex 40%, MIPAAF Bando OIGA), or European Project (EU Non-nuclear Energy RTD Programme, 5th Framework Programme).

Some more topics have been adding to the above described, concerning building physics and HVAC systems, and in particular the validation and application of calculation and simulation models, the energy certification of buildings and the implementation of the EU directive 2010/31/UE.

Part of those activities have been conducted within national (PRIN 2008) or locally (Provincia di Trento, Provincia di Vicenza and Regione Veneto) funded research projects.

Publications

- Books – Edited: 2
- Chapters in books: 5
- Journal papers in professional/national journals: 9
- Conference Papers (mostly peer reviewed): 161
- Journal Papers in refereed academic journals (with DOI whenever possible): 46

Reviewer for (among others): Applied Energy, Applied Thermal Engineering, Building and Environment, Energy Conversion and Management, Energy, Energy and Buildings, Experimental Thermal and Fluid Science, International Journal of Refrigeration, International Journal of Building Performance Simulation

Journal papers

Patuzzi, F., Prando, D., Vakalis, S., Rizzo, A.M., Chiamonti, D., Tirlor, W., Mimmo, T., Gasparella, A., Baratieri, M.

Small-scale biomass gasification CHP systems: Comparative performance assessment and monitoring experiences in South Tyrol (Italy)
(2016) Energy, 112, pp. 285-293.

Atzeri, A.M., Cappelletti, F., Tzempelikos, A., Gasparella, A.

Comfort metrics for an integrated evaluation of buildings performance
(2016) Energy and Buildings, 127, pp. 411-424.

Carlone, E., Schwarz, M., Prada, A., Golicza, L., Verma, V.K., Baratieri, M., Gasparella, A., Haslinger, W., Schmidl, C.

On-site monitoring and dynamic simulation of a low energy house heated by a pellet boiler
(2016) Energy and Buildings, 116, pp. 296-306.

Longo, G.A., Gasparella, A.

Experimental measurement of thermophysical properties of H₂O/KCOOH (potassium formate) desiccant
(2016) International Journal of Refrigeration, 62, pp. 106-113.

Roberti, F., Oberegger, U.F., Gasparella, A.

Calibrating historic building energy models to hourly indoor air and surface temperatures: Methodology and case study
(2015) Energy and Buildings, 108, pp. 236-243.

Penna, P., Prada, A., Cappelletti, F., Gasparella, A.

Multi-objectives optimization of Energy Efficiency Measures in existing buildings
(2015) Energy and Buildings, 95, pp. 57-69.

Arambula, R., Pernigotto, G., Cappelletti, F., Romagnoni, P., Gasparella, A.

Energy audit of schools by means of cluster analysis
(2015) Energy and Buildings, 95, pp. 160-171.

Prando, D., Renzi, M., Gasparella, A., Baratieri, M.
Monitoring of the energy performance of a district heating CHP plant based on biomass boiler and ORC generator
(2015) Applied Thermal Engineering, 79, pp. 98-107.

Longo, G.A., Gasparella, A.
Three years experimental comparative analysis of a desiccant based air conditioning system for a flower greenhouse: Assessment of different desiccants
(2015) Applied Thermal Engineering, 78, pp. 584-590.

Penna, P., Prada, A., Cappelletti, F., Gasparella, A.
Multi-objective optimization for existing buildings retrofitting under government subsidization
(2015) Science and Technology for the Built Environment, 21 (6), pp. 847-861.

Penna, P., Cappelletti, F., Gasparella, A., Tahmasebi, F., Mahdavi, A.
Multi-stage calibration of the simulation model of a school building through short-term monitoring
(2015) Journal of Information Technology in Construction, 20, pp. 132-145.

Prando, D., Prada, A., Ochs, F., Gasparella, A., Baratieri, M.
Analysis of the energy and economic impact of cost-optimal buildings refurbishment on district heating systems
(2015) Science and Technology for the Built Environment, 21 (6), pp. 876-891.

Shen, H., Tzempelikos, A., Atzeri, A.M., Gasparella, A., Cappelletti, F.
Dynamic Commercial Façades versus Traditional Construction: Energy Performance and Comparative Analysis
(2015) Journal of Energy Engineering, 141 (4), art. no. 04014041, .

Pernigotto, G., Prada, A., Gasparella, A., Hensen, J.L.M.
Analysis and improvement of the representativeness of EN ISO 15927-4 reference years for building energy simulation
(2014) Journal of Building Performance Simulation, 7 (6), pp. 391-410.

Prando, D., Patuzzi, F., Pernigotto, G., Gasparella, A., Baratieri, M.
Biomass gasification systems for residential application: An integrated simulation approach
(2014) Applied Thermal Engineering, 71 (1), pp. 152-160.

Pernigotto, G., Prada, A., Cóstola, D., Gasparella, A., Hensen, J.L.M.
Multi-year and reference year weather data for building energy labelling in north Italy climates
(2014) Energy and Buildings, 72, pp. 62-72.

Prada, A., Cappelletti, F., Baggio, P., Gasparella, A.
On the effect of material uncertainties in envelope heat transfer simulations
(2014) Energy and Buildings, 71, pp. 53-60.

Cappelletti, F., Prada, A., Romagnoni, P., Gasparella, A.
Passive performance of glazed components in heating and cooling of an open-space office under controlled indoor thermal comfort
(2014) Building and Environment, 72, pp. 131-144.

Patuzzi, F., Gasparella, A., Baratieri, M.
Thermochemical and fluid dynamic model of a bench-scale torrefaction reactor
(2014) Waste and Biomass Valorization, 5 (2), pp. 165-173.

Pernigotto, G., Gasparella, A.
Extensive comparative analysis of building energy simulation codes: Heating and cooling energy needs and peak loads calculation in TRNSYS and EnergyPlus for southern Europe climates
(2013) HVAC and R Research, 19 (5), pp. 481-492.

Patuzzi, F., Mimmo, T., Cesco, S., Gasparella, A., Baratieri, M.
Common reeds (*Phragmites australis*) as sustainable energy source:
Experimental and modelling analysis of torrefaction and pyrolysis processes
(2013) *GCB Bioenergy*, 5 (4), pp. 367-374.

Longo, G.A., Gasparella, A.
Comparative experimental analysis and modelling of a flower greenhouse
equipped with a desiccant system
(2012) *Applied Thermal Engineering*, 47, pp. 54-62.

Gasparella, A., Pernigotto, G., Baratieri, M., Baggio, P.
Thermal dynamic transfer properties of the opaque envelope: Analytical and
numerical tools for the assessment of the response to summer outdoor
conditions
(2011) *Energy and Buildings*, 43 (9), pp. 2509-2517.

Cappelletti, F., Gasparella, A., Romagnoni, P., Baggio, P.
Analysis of the influence of installation thermal bridges on windows
performance: The case of clay block walls
(2011) *Energy and Buildings*, 43 (6), pp. 1435-1442.

Gasparella, A., Pernigotto, G., Cappelletti, F., Romagnoni, P., Baggio, P.
Analysis and modelling of window and glazing systems energy performance
for a well insulated residential building
(2011) *Energy and Buildings*, 43 (4), pp. 1030-1037.

Longo, G.A., Gasparella, A.
Experimental analysis on desiccant regeneration in a packed column with
structured and random packing
(2009) *Solar Energy*, 83 (4), pp. 511-521.

Baggio, P., Baratieri, M., Gasparella, A., Longo, G.A.
Energy and environmental analysis of an innovative system based on
municipal solid waste (MSW) pyrolysis and combined cycle
(2008) *Applied Thermal Engineering*, 28 (2-3), pp. 136-144.

Longo, G.A., Gasparella, A.
Heat transfer and pressure drop during HFC refrigerant vaporisation inside a
brazed plate heat exchanger
(2007) *International Journal of Heat and Mass Transfer*, 50 (25-26), pp. 5194-
5203.

Longo, G.A., Gasparella, A.
HFC-410A vaporisation inside a commercial brazed plate heat exchanger
(2007) *Experimental Thermal and Fluid Science*, 32 (1), pp. 107-116.

Longo, G.A., Gasparella, A.
Refrigerant R134a vaporisation heat transfer and pressure drop inside a small
brazed plate heat exchanger
(2007) *International Journal of Refrigeration*, 30 (5), pp. 821-830.

Longo, G.A., Gasparella, A.
Experimental analysis on chemical dehumidification of air in a packed column
by hygroscopic salt solution: Comparison between structured and random
packings
(2006) *HVAC and R Research*, 12 (3 B), pp. 713-729.

Longo, G.A., Gasparella, A.
Experimental and theoretical analysis of heat and mass transfer in a packed
column dehumidifier/regenerator with liquid desiccant
(2005) *International Journal of Heat and Mass Transfer*, 48 (25-26), pp. 5240-
5254.

Longo, G.A., Gasparella, A., Zilio, C.
Analysis of an absorption machine driven by the heat recovery on an I.C.
reciprocating engine
(2005) *International Journal of Energy Research*, 29 (8), pp. 711-722.

- Gasparella, A., Longo, G.A., Marra, R.
Combination of ground source heat pumps with chemical dehumidification of air
(2005) Applied Thermal Engineering, 25 (2-3), pp. 295-308.
- Longo, G.A., Gasparella, A., Sartori, R.
Experimental heat transfer coefficients during refrigerant vaporisation and condensation inside herringbone-type plate heat exchangers with enhanced surfaces
(2004) International Journal of Heat and Mass Transfer, 47 (19-20), pp. 4125-4136.
- Longo, G.A., Gasparella, A.
Experimental analysis on chemical dehumidification of air by liquid desiccant and desiccant regeneration in a packed tower
(2004) Journal of Solar Energy Engineering, Transactions of the ASME, 126 (1), pp. 587-591.
- Longo, G.A., Gasparella, A.
Unsteady state analysis of the compression cycle of a hermetic reciprocating compressor
(2003) International Journal of Refrigeration, 26 (6), pp. 681-689.
- Gasparella, A., Longo, G.A.
Indirect evaporative cooling and economy cycle in summer air conditioning
(2003) International Journal of Energy Research, 27 (7), pp. 625-637.
- Lazzarin, R.M., Gasparella, A., D'Ascanio, A.
Analysis of a green roof application to an industrial building
(2003) International Journal of Ambient Energy, 24 (1), pp. 35-43.
- Lazzarin, R.M., Gasparella, A., Longo, G.A.
Chemical dehumidification by liquid desiccants: Theory and experiment
(1999) International Journal of Refrigeration, 22 (4), pp. 334-347.
- Lazzarin, R.M., Gasparella, A.
Technical and economical analysis of heat recovery in building ventilation systems
(1998) Applied Thermal Engineering, 18 (1-2), pp. 47-67.
- Lazzarin, R.M., Gasparella, A.
New ideas for energy utilisation in combined heat and power with cooling: II. Applications
(1997) Applied Thermal Engineering, 17 (5), pp. 479-500.
- Lazzarin, R.M., Gasparella, A.
New ideas for energy utilisation in combined heat and power with cooling: I. Principles
(1997) Applied Thermal Engineering, 17 (4), pp. 369-384.
- Lazzarin, R.M., Longo, G.A., Gasparella, A.
Theoretical analysis of an open-cycle absorption heating and cooling system
(1996) International Journal of Refrigeration, 19 (3), pp. 160-167.
- Lazzarin, R.M., Gasparella, A., Longo, G.A.
Ammonia-water absorption machines for refrigeration: Theoretical and real performances
(1996) International Journal of Refrigeration, 19 (4), pp. 239-246.
- Lazzarin, R.M., Gasparella, A., Romagnoni, P.
Experimental report on the reliability of ammonia-water absorption chillers
(1996) International Journal of Refrigeration, 19 (4), pp. 247-256.

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Signature
