

CURRICULUM VITAE

PIETROMARIA DAVOLI

SHORT PROFILE

Pietromaria Davoli (PhD 1995) holds a Full Professorship of Architectural Technology (S.S.D. ICAR/12) in the Department of Architecture (DA) at the University of Ferrara (Unife).

A great part (30 years) of the scientific career of P. Davoli has been focused on: relationships between environment, architecture (from the spontaneous pre-industrial), sustainable technologies, projects and processes, particularly for environmental/energy efficiency control and design in new buildings, as well as in the valorisation and refurbishment of existing buildings, with particular attention to the historic heritage behaviour.

In the last years the multidisciplinary Research Centre “Architettura>Energia” (A>E), DA, Unife, coordinated by P. Davoli, has elaborated, in particular, the following expertise and has developed some specific tools for the intervention planning phase and for the support in the decision-making process: coordinating of the activities for the development of the new rating system GBC Historic Building; UPPER - Urban Parametric Protocol for Energy Retrofit, an experimental method to drive expedite energy audits of the existing building stock of social housing; developing a parametric energy assessment tool to ease the planning of retrofit actions applied to historic villages; analysing energy calculation tools and corrective actions, addressed towards historic heritage; A>E group is involved in “Task 59 - Deep retrofit of historic buildings towards lowest possible energy demand and CO2 emissions (NZEB)” of the International Energy Agency SHC; research project “Sustainable Unife”, preliminary proposal for energy retrofit actions of about 50 buildings of Unife heritage.

Director (since 2014) of the A>E of the DA, Unife.

Member of “Sustainability Council” (2011-2016) and “Research Council” (2012-2016), Unife.

Coordinator of the Design Team - Unife for the scientific restoration of Tassoni Palace in Ferrara (new expansion of the DA). Funded by Ministry: 6.320.000 euro (1998-2008).

He is a member of: (since 2017) the board (Governing Council) of the Italian Society of Technology of Architecture (SITdA); (since 2017) the national group “General States of the Green Economy”, Italy.

He participates, in particular, in the following scientific boards/committees/groups: “Regional Committee for technical rules of public residential building”, Region of Emilia-Romagna (E-R) (1997); National commission “Education and scientific research” of the National Council of Architects; FutureBuild Expo/Meetings/Tour/Conference (since 2014, several Italian cities); “Recupero Tour - Refurbishment, Restoration, Retrofit”, EdicomEdizioni Eventi, 2014 (several Italian cities); program Working Group of the International Conference and Expo “Greenbuild Europe & The Mediterranean” (GBC, United States and Italy, Verona, 2015); SITdA International Conference “Producing Project/La produzione del progetto”, Reggio C., Italy, 2018 (Scientific Coordination); SITdA Conference “La tecnologia dell’architettura in una società che cambia”, Firenze, Italy, 2019.

He is director of the book series “Progettare per costruire sostenibile”, Maggioli Ed. (International scientific Committee; double blind review).

Member of the scientific national and international editorial boards and reviewer of several national and international journals.

He teaches (since 1995) several disciplines at the Faculties of Architecture (Ferrara and Parma), in particular with the course of Technology of Architecture in the Architecture Construction 1 Studio.

Coordinator (since 2013) of the integrated International Programs for a Double Master Degree (Unife/PUCPR University, Brazil).

Visiting Professor (2014) at the PUCPR.

Member of the Academic Board and PhD Candidates Supervisor of: the “International PhD Architecture and Urban Planning”, DA, UNIFE and others Universities; the International PhD “Environmental Sustainability and Wellbeing”, Unife.

He teaches at Univ. Master, post-graduate and professional education courses, Univ. Workshop and seminars, also at international level.

Scientific Coordinator, chairman and organiser of national and international conferences, seminars and Univ. design workshops. In particular: conference “New energy efficiency and environmental quality prospects for existing heritage”, 4-5 July 2016, DA, Unife. Promoters: SITdA, Unife and others; workshop “Quali(ci)ty: redesign and energy efficiency for a sustainable quality of life”, with conference and exhibit (in collaboration with the international magazine OfARCH), MADE EXPO 2012, Milan; series of conference in several editions of the “Salone del Restauro” (Ferrara Expo) about energy-environmental retrofit of existing building heritage.

He was speaker at National and International conferences, such as: “XXVII International conference Science and Cultural Heritage”, Bressanone, 2011; “I-SMC International Conference. Sustainable environment in the Mediterranean region”, Naples, 2012; “The energy efficiency of historic buildings”, organised by Politecnico di Milano, Dep. ABC, Milano, 2013; “XXXVI edition of the International Conference on Intervention in Heritage Buildings. Heritage Building and Energy Efficiency: Conflicts and Solutions”, organized by AADIPA and “Collegi d'Arquitectes de Catalunya”, 2013, Barcellona, Spain; “A requalificação efficiency and ambiental dos edificios Italianos, specialy do Patrimônio histórico. Método, estudos and projetos”, PUCPR, Curitiba, Brasil, 2014; conference “#51 AULA ABERTA”, Guimarães, Portugal, 2017, Universidade do Minho; “Innovative Energy-Environmental tools for Sustainable Energy Governance in Built Heritage”, GBC Italia, UNESCO, Ferrara (2018).

RESEARCH ACTIVITY

He participates in scientific research group at local, national and international level.

He has been member of: the inter-university research: “Designing the built environment: new integrated quality models for the compact city”, funded by the call SPINNER 2013, Region E-R; of TekneHub Lab of Tecnopolo Unife – High Technology Network Region E.R (2011-2013).

He has been scientific coordinator or co-coordinator of the following researches: DA research group for the development of “Guidelines for an hostel prototype” (2008), Region E.R; “Studies and design researches for the functional and energy recovery of an industrial building” and “Research and design advise for a new school with high energy-environmental performances”, Consorzio Ferrara Ricerche (CFR) and A>E (2010-2013); functional and energy-environmental retrofit of the ex C.A.P. e M.A.P.R.E areas, Reggio E. (A>E, promoted by international magazine OF ARCH); “Integrated study about the design strategies for the energy retrofit, the renewable energy plants integration and preliminary geological survey of the historic village Apice Vecchia” (2012), CFR, A>E and Dep. of Earth Science, Unife.; “Building integration of innovative semitransparent photovoltaic devices: a PV shed for the recharge of electrical bicycles and hotspot wi-fi” (A>E and Dep. of Physics, Unife, 2014-2015); “Development of methods and design concepts for new wooden buildings in Beijing, China, and Malta”, promoted by XLAM DOLOMITI (CFR, A>E, 2016); “Sustainable Unife - Energy screening of the building heritage of the University of Ferrara and preliminary proposals for the retrofit strategies planning phase”, A>E for Unife (2014-2017); “Heritage’s energy LivingLabs. An experimental experience to live. (#HeLivingLabs)”, A>E and Eurac Research, Bolzano (2016-2019).

Principal investigator of the research project “INNO-ZEB_INNOvative active and passive technologies for nearly Zero Energy Buildings” (2014-2016) funded by Unife (first classified).

International university’s partnerships: DA, Unife, Tianjin Univ. (China); Univ. of Auckland (New Zealand), Univ. of Minho (Portugal).

He has participated at “National Working Group (“change leader” of stakeholders core group), “GBC Italy”, for the European Project “BUILD UPON (HORIZON 2020)”, Europe Regional

Network of the World GBC (2015-2017).

Since 2016 he is responsible for UNIFE/DA team for the international university competition “Solar Decathlon Middle East 2018” (“leader institution” Univ. of Sharjah, UAE, for team “KNOW HOWse”, which has been selected and participated at world level between 21 teams for the final contest, Dubai, 2018).

He has been the Supervisor of the project “HeLLo - Heritage energy Living Lab onsite”, Marie Skłodowska-curie action (Individual Fellowships Standard), HORIZON 2020. Call: H2020-MSCA-IF-2017, DA, A>E, Unife (2018-2020).

Scientific Responsible of Project Operational Unit of the Unife, national research “PRIN 2017” (funded 2019; Scientific Coordinator: LOSASSO Mario Rosario. Project title: “TECH-START”).

AWARDS AND PRIZES

He has won several (1st PRIZE) architectural public awards. The most important:

- “IQU Prize – Innovation and Urban Quality”, section “completed buildings”, 2008 (Project for the restoration of Tassoni Palace in Ferrara);
- national competition “Eco_luoghi 2013”, Houses for Sustainable Living, promoted by Ministry of Environment et al., Rome, 2013 (project: “0+”);
- Italian Leadership Awards, section Leadership in Green Building for Public sector, GBC Italia Awards, with the project “Sustainable Unife” in 2016; and with the project “Hello - Heritage energy Living Lab on site” in 2018.

SCIENTIFIC PUBLICATIONS

He is the author or co-author of over 170 scientific papers, essays, conference proceedings and books, also with international relevance.

Selected recent publications: **20**

1. Rinaldi A., Davoli P. (2014), *BUILD THE FUTURE Progetto e costruzione dell'architettura sostenibile*, INFOWEB S.r.l., Milano, pp. tot. 137. ISBN: 9788894087406.
2. Davoli P. (a cura di) (2010), *Il recupero energetico ambientale del costruito*, Maggioli Editore, Rimini, pp. Tot. 196. ISBN 978-88-387-5756-3.
3. Davoli, P. (2017), *Complexity, information surplus and interdisciplinarity management. The Rehabilitation of Tassoni Estense Palace in Ferrara*, in: JAIN K. et al.. (a cura di): Kulbhushan Jain, *Conserving Architecture*, p. 124-145, AADI CENTRE, Ahmedabad. ISBN: 978-81-908528-2-1
4. Losasso M., Davoli P., Leone M. F. (2017), *Built environment and climate mitigation / Ambiente costruito e mitigazione climatica*, in E. Antonini F. Tucci (a cura di), *Architettura, città e territorio verso la green economy. La costruzione di un manifesto della green economy per l'architettura e la città del futuro / Architecture, city and territory towards a green economy. Building a manifesto of the green economy for the architecture and the city of the future*, Edizioni Ambiente, Milano, p. 170-185. ISBN: 9788866272168
5. Boarin P., Davoli P. (2013), *Metodi di diagnosi energetica e proposte di intervento per il miglioramento prestazionale negli aggregati storici. L'esempio dei borghi Appenninici*, in Lucchi E., Pracchi V. (a cura di), *EFFICIENZA ENERGETICA E PATRIMONIO COSTRUITO. La sfida del miglioramento delle prestazioni nell'edilizia storica*, Maggioli Editore spa, Santarcangelo di Romagna, p. 249-259. ISBN: 9788838762604
6. Calzolari M. , Davoli P. , Dias Pereira L. M. (2021), *From the heteronomy of the technological project to the evolutionary hybridization of the experimental research / Dall'eteronomia del progetto tecnologico all'ibridazione evolutiva della ricerca sperimentale*, *TECHNE: Journal of Technology for Architecture and Environment*, vol. 21, p. 133-144. ISSN: 2239-0243. DOI: 10.36253/techne-9848.

7. Andreotti M., Bottino-Leone D., Calzolari M., Davoli P., Dias Pereira L., Lucchi E., Troi A. (2020), *Applied Research of the Hygrothermal Behaviour of an Internally Insulated Historic Wall without Vapour Barrier: In Situ Measurements and Dynamic Simulations*, ENERGIES, vol. 13, p. 3362 (pag. tot. 22). ISSN: 1996-1073, doi: 10.3390/en13133362.
8. Ruggeri A. G., Calzolari M., Scarpa M., Gabrielli L., Davoli P. (2020), *Planning energy retrofit on historic building stocks: A score-driven decision support system*, ENERGY AND BUILDINGS, vol. 224, p. 1-19. ISSN: 0378-7788, doi: 10.1016/j.enbuild.2020.110066.
9. Belpoliti V., Bizzarri G., Boarin P., Calzolari M., Davoli P. (2018), *A parametric method to assess the energy performance of historical urban settlements. Evaluation of the current energy performance and simulation of retrofit strategies for an Italian case study*. JOURNAL OF CULTURAL HERITAGE, vol. 30, p. 155-167. ISSN: 1296-2074, doi: 10.1016/j.culher.2017.08.009.
10. Davoli P. (2017), *Migliorare la tutela del patrimonio culturale attraverso l'efficientamento energetico*. PARTE PRIMA, RECUPERO E CONSERVAZIONE, vol. 139, p. 29-40. ISSN: 2283-7558.
11. Boarin P., Calzolari M., Davoli P. (2016), *Nuove dinamiche di intervento nel tessuto urbano consolidato: processi di low renovation per la valorizzazione della patina del tempo / New interventions in historical and consolidated urban contexts: low renovation processes for the valorisation of the patina of the time*. TECHNE, vol. 12, p. 103-111, ISSN: 2239-0243, doi: 10.13128/Techne-19341
12. Belpoliti V., Boarin P., Davoli P., Marzot N. (2015), *Costruire nel costruito: il riciclo urbano come strategia di rigenerazione sistemica del tessuto consolidato / Densifying the city: urban recycle as a strategic system to refurbish the built environment*, TECHNE, vol. 10, p. 186-194. ISSN: 2239-0243, doi: 10.13128/Techne-17515.
13. Boarin P., Davoli P. (2015), *Riquilificazione profonda del patrimonio edilizio scolastico: l'opportunità offerta dall'Europa e la strategia adottata dall'Italia / Deep renovation of the school building stock: the European opportunity and the Italian strategy*, TECHNE, vol. 9, p. 96-105. ISSN: 2239-0243, doi: 10.13128/Techne-16110.
14. Calzolari M., Davoli P. (2014), *Instruments for the Calculation of Energy Performance in Historical Buildings, Limits of Applicability and Tuning Proposal*, SUSTAINABLE MEDITERRANEAN CONSTRUCTION, vol. 1, p. 108-114. ISSN: 2420-8213.
15. Davoli P., Belpoliti V., Boarin P., Calzolari M. (2014), *Metodi innovativi per la riquilificazione sostenibile del patrimonio edilizio esistente. Un percorso trasversale dall'housing sociale al costruito tutelato / Innovative methods for a sustainable retrofit of the existing building stock. A cross-path from social housing to the listed heritage*, TECHNE, vol. 8, p. 181-189. ISSN: 2239-0243, doi: 10.13128/Techne-15073.
16. Calzolari M., Codarin S., Davoli P. (2017), *Innovative technologies for the recovery of the architectural heritage by 3D printing processes*, in *THE NEW FRONTIERS OF CONSERVATION. Conveyances, contaminations, crossbreedings. Bressanone, 27-30 june 2017. LE NUOVE FRONTIERE DEL RESTAURO. Trasferimenti, contaminazioni, ibridazioni. Bressanone, 27-30 giugno 2017*, EDIZIONI ARCADIA RICERCHE Srl, Marghera Venezia. p. 669-680. ISBN: 978-88-95409-21-4.
17. Belpoliti V., Bizzarri G., Calzolari M., Cattani E., Davoli P., Pitzianti S., Rinaldi A. (2016), *Energy screening of wide building stock*, in *41st IAHS World Congress on Housing Sustainability and Innovation for the Future September 13 to 16, 2016 Albufeira, Algarve, Portugal_Proceedings*, ITeCons (Ed), p. 1-10. ISBN: 978-989-98949-4-5.
18. Davoli P., Belpoliti V., Boarin P., Calzolari M. (2015), *Towards a systemic sustainability. An approach for the development and refurbishment at urban scale*, in *Abitare insieme / Living together. 3° EDIZIONE DI "ABITARE IL FUTURO". 3° EDITION OF "INHABITING THE FUTURE" Giornate Internazionali di Studio - International*

Conference. *ABITARE IL FUTURO*, CLEAN, Napoli, p. 1307-1318. ISBN: 9788884975447.

19. Davoli P., Boarin P., Martinez A., Arieti F. (2014), *From preliminary audit to sustainable retrofit strategies for historic settlements. A case study*, In *Quale sostenibilità per il restauro? Atti del 30° Convegno Internazionale Scienza e Beni culturali*, Bressanone, 1-4 luglio 2014, Arcadia Ricerche, Venezia, p. 177-187. ISBN: 9788895409184.
20. Boarin P., Davoli P., *A Systemic Approach for Preliminary Proposals of Sustainable Retrofit in Historic Settlements - The Case Study of Villages Hit by Earthquake*, in *The International Academic Forum (IAFOR), The European Conference on Sustainability, Energy and the Environment. Official conference proceedings*, vol. 1, Brighton (UK), 4-7 luglio 2013, The International Academic Forum (IAFOR), Nagoya, Japan, 2013, p. 280-296. ISSN: 2188-1146.