

# introduction

architettura>energia research centre



**architettura>energia**

research centre - faculty of architecture - ferrara



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address | via Ghiara, 36 - 44121 Ferrara - IT  
phone/fax | +39 0532 293631  
e-mail | ae@unife.it  
web | www.unife.it/centro/architetturaenergia



**Faculty of Architecture**  
University of Ferrara  
www.unife.it/architettura



**Department of Architecture**  
University of Ferrara  
www.unife.it/dipartimento/architettura

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## INTRODUCTION

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Architettura>Energia is a Research Centre of the Department of Architecture, University of Ferrara, Italy.

It was born in February 2009 as unification of four synergistic reality already active within that Department from 2005: *A>E*, a structure for the organization of training courses and further trainings, the *Observatory on buildings environmental sustainability certification*, the *TS-Technologies for Sustainable redevelopment Laboratory* and *eFAF-Laboratory of Energy*.

Architettura>Energia has a strong interdisciplinary character and is involved in research, design consulting, training and services for public administrations, businesses and privates for issues related to energy efficiency and environmental quality of buildings and urban spaces.

Fields of interest are urban and building scale, both in new buildings and in the recovery and redevelopment of existing ones, even in cases of high historic values, with a recent interest to the industrial sites, school buildings, social housing construction and historic heritage.

The Research Centre provides design and operating guidelines for buildings and urban planning, performance enhancements, testing and collection of technologies, procedures and models of intervention aimed at achieving high standards of environmental sustainability and energy efficiency, research applied to special plants and technologies fed by renewable energy sources, local and regional energy planning, experimentation within the instrumental energy audit. *A>E* also operates in scientific management, promotion and organization of training activities and scientific dissemination such as training and further training, masters, workshops and conferences in a strategic sector for the contemporary society.

## RESEARCH TEAM

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Architettura>Energia Research Centre is composed by a team of experts with various skills and expertise to help you develop applied and integrated research activities extended to the building and plant system. The team members are teachers of the Faculty of Architecture, University of Ferrara, who carry out research within the Department, or professionals with wide experiences gained in the areas of interest that collaborate with continuity on research activities.

**Director:** Andrea Rinaldi

**Architecture Section:** Pietromaria Davoli (*vice-director*), Marcello Balzani, Paola Boarin, Silvia Brunoro, Valeria Farinelli, Alessandro Gaiani, Maria Cristina Garavelli, Gabriele Lelli, Luca Magarotto, Nicola Marzot, Gianluca Minguzzi, Valentina Modugno, Valentina Radi, Paolo Rava, Graziano Trippa, Theo Zaffagnini.

**Energy Section:** Giacomo Bizzarri (*vice-director*), Vittorino Belpoliti, Michele Bottarelli, Laura Gabrielli, Marta Calzolari, Roberto Capra, Enrico Lambertini, Alex Lambruschi, Amedeo Papi.

### ► CURRICULUM | DIRECTOR



#### **Andrea Rinaldi**

Andrea Rinaldi was born in Reggio Emilia in 1964. In 1991 he graduated at the Faculty of Architecture of Florence with full marks (110/110 cum laude) with a thesis of urban redevelopment (prof. Mario Zaffagnini as supervisor), published in *Costruire in Laterizio* N. 32. In 1992 he qualified to practice as architect and began working at the Faculty of Architecture of Ferrara, where in 1995 he was appointed Professor of the *Urban Morphology and building types* course, from 1996 to 2005 he is Professor of *Architectural Composition 1* and Head of the *Laboratory of Architectural Design 1*. He is author of articles in books and of several articles in specialised magazines.

Since 1997 he is collaborating to the educational activities of the *Laboratory of Architecture Construction 1*, head prof. Graziano Trippa. In 1994 he received the *ANDIL Opera Prima Award* (in collaboration). In the same year he founded the *Laboratorio di Architettura*, a structure for research and projects in the field of architectural design. Since 2005 he is Professor in *Urban and Architectural Composition* at the Faculty of Architecture of Ferrara, Professor of *Architectural Composition 1* and Head of the *Laboratory of Architectural Design 1B*. He carries out its research and experimentation in the field of architectural design, and studies on the relationship between design and construction as well as the relationship between architectural design, sustainability and energy. From the same year, he is appointed as *CasaClima® Expert*. Since 2006 he is Director of the post-graduate specialization Course *Architecture>Energy*, held by the University of Ferrara in collaboration with the University of Modena and Reggio Emilia and the Province of Ferrara, coordinator of training courses and teacher to Master on the relationship between architecture and energy. From the same year he was Director of the architectural magazine *Architettare* of the Reggio Emilia Order of Architects (Maggioli Publisher). Since 2007 he is Scientific Director of the training course *Ecoabita®*, a system of energy certification of the Province of Reggio Emilia. Since autumn 2008 he is Director of the Architettura>Energia Research Centre of the Faculty of Architecture of Ferrara.

[andrea.rinaldi@unife.it](mailto:andrea.rinaldi@unife.it)

## ► CURRICULA | ARCHITECTURE SECTION



### **Pietromaria Davoli (vice-director)**

Pietromaria Davoli is Full Professor of Architectural Technology at the Faculty of Architecture, University of Ferrara and vice-director of the Architettura>Energia Research Centre, section Architecture.

He graduated with honours in Architecture and the dignity of print (1990) and received his PhD in Architectural Technology (1995).

His main research and editorial production fields are: the relationships between environment, architecture (from the spontaneous pre-industrial) and sustainable technologies, in particular for the control of energy efficiency in new buildings; technological innovation with particular interest in building systems made by wood construction; environmentally sustainable and energy efficient recovery, requalification and functionalization of historical heritage.

He is member of the scientific board of the Ph.D. in Architectural Technologies in the Faculty of Architecture, University of Ferrara. He is member of the *Laboratorio di Architettura* Associated Architects in Reggio Emilia.

[pietromaria.davoli@unife.it](mailto:pietromaria.davoli@unife.it)



### **Marcello Balzani**

Marcello Balzani was born in Forlì on August 5<sup>th</sup>, 1962.

Associate Professor of *Drawing* (ICAR17) at the Faculty of Architecture, University of Ferrara, he has taught at the Universities of Florence, Ferrara and Milan the subjects of *Design, Survey, Techniques for Representation of Architecture* and the *Automatic Drawing* related to the scientific subject.

As Director of the *Centre for Development of Integrated Automatic Procedures for Restoration of Monuments - DIAPReM* of the University of Ferrara he is responsible for dozens of national and international scientific research projects involving its activity in different archaeological sites (Pompeii, Benevento, Rome), monumental contexts (Piazza dei Miracoli in Pisa, Michelangelo in Florence, Leon Battista Alberti in Mantua, Ferrara, Florence and Rimini, in Malta and abroad in the fortified city of Gozo, City Mexico, Salvador de Bahia and in Cairo.) and in relation to the problems of various small towns in many regions of the Italian peninsula. In those years of direction of the *DIAPReM*, he contributed the development of agreements with Research Centers, Ministries and Superintendents, Study Centres and involved *DIAPReM* in a scientific active collaboration with industrial agreements and training agencies in Italy and abroad.

Since June 2008, he is Deputy Director of the Department of Architecture University of Ferrara. Since March 2010 he was Head of the Scientific Laboratory of the University of Ferrara *TekneHub* related to the *Construction Platform of Emilia-Romagna High Technology Network* and Scientific Director of *Construction Platform* since October. He is member of the *Italian Union for Drawing*, of the *National Institute of Urban Planning* and of the *Focus Area Cultural Heritage, Horizontal Issues Archaeology*, of the *European Construction Technology Platform*. He was a member of the jury and jury president in national and international architectural competitions awards, including *Innovation and Urban Quality Award*, the *Sustainable Architecture International Prize*, the *Domus Architectural Restoration International Award* which he helped founding and supporting. He is member of the *Architettura>Energia* Research Centre team and scientific director of *WebgisLab* of the Ferrara Ricerche Consortium. He is Director *Paesaggio Urbano* and *Architetti, idee cultura e progetto* architecture magazines (Maggioli Publisher).

[marcello.balzani@unife.it](mailto:marcello.balzani@unife.it)



### Paola Boarin

Architect and PhD in Architectural Technology. Contract Professor at Faculty of Architecture, Ferrara. Her research fields are sustainability, energy efficiency and environmental quality of buildings, both in urban and building scale, with specialization in requalification of historic building and villages and educational buildings.

She graduated in March 2005 at the Faculty of Architecture of the University of Ferrara and she is registered architect in the same year. Since 2005 she is Honorary Fellow in "Architectural Technology" and in 2006 she won the University project "Young Researchers" with a research concerning the "Observatory on environmental sustainability of buildings", starting a process of specialization on assessing and rating tools for environmental performance verification of buildings. In March 2009 she earned the title of Doctor of Philosophy in Architectural Technology with a thesis entitled "Energy and environmental requalification of educational buildings. Examples, goals, strategies, opportunities". Since 2009 she is Senior Professor at many professional courses on sustainability and energy certification of buildings and Contract Professor of "Environmental Design" and "Technology of Architecture" at Faculty of Architecture of Ferrara. Starting from the same year, she is member of the Architettura>Energia Research Centre of the Faculty of Architecture of Ferrara working and coordinating researches in the field of energy efficiency and environmental sustainability, with particular interest in energy and environmental refurbishment of historic buildings and villages, educational buildings and social housing.

Vice-chair of Green Building Council Italia Technical Advisor Group, section "Material and Resources" since 2011, Chair of the TAG "Historic Building" and member of the Educational Group since April 2012.

She is consultant for Public Administrations and professionals for what concerns sustainability, energy efficiency and environmental quality of buildings. She is author of several articles on the main specialized scientific magazines and congresses about the issues of energy efficiency and performance upgrading of existing buildings, in particular educational buildings and built heritage in the Mediterranean environment.

[paola.boarin@unife.it](mailto:paola.boarin@unife.it)



### Silvia Brunoro

Graduated at the faculty of Architecture of Ferrara, Silvia Brunoro is an architect and PhD in Technology of Architecture.

Since 2004 she is member of the *LEM - Laboratory of research on Estate & environment Management* at the Faculty of Architecture of Ferrara.

Since 2000 she is assistant professor in the *Laboratories of Construction Technologies 1 and 2*. Since 2007 she is contract professor of *Design of construction systems*, module of the course *Energetic Management of Buildings*.

She has been involved in numerous national and European researches. Main field of research are sustainable refurbishment, energy efficiency and innovation of technologies and materials.

Since 2003 to 2007 she has been involved in the ACTION COST C16 *Improving the quality of existing urban building envelopes* on the refurbishment of non traditional building envelopes in Europe.

Since 2008 she is Management Committee member of the ACTION COST TU0701 *Improving the quality of Suburban building stock* on the refurbishment and valorisation of not historical suburban areas in Europe.

Since 2004 to 2006 she has been involved in the INTERREG II B project *Villas- stately homes and castles* on the sustainable valorisation of rural buildings in Emilia Romagna.

She is author of several publication concerning energy efficiency and sustainable design, mainly related to the envelope of the building. In 2006 she has published the text *Energy efficiency of façades. Standards, needs and examples for the refurbishment*.

[silvia.brunoro@unife.it](mailto:silvia.brunoro@unife.it)



### Valeria Farinelli

Valeria Farinelli was born in Portomaggiore (Fe), on 24<sup>th</sup> April 1987. In 2006 she graduated in Classical Studies at the High School "Ludovico Ariosto" in Ferrara getting 100/100. In September of the same year she enrolled at the Faculty of Architecture of Ferrara. She got her degree, 110/110 with honors, on 10<sup>th</sup> February 2012 discussing the thesis "*A window between history and future \_ Recovery and renovation of the architectural complex of SS. Mauro and Augustine, Comacchio (Fe)*". In July of the same year she obtained the professional qualification of Architect.

Since September 2010 she has taken part in the didactic work, first as a student tutor then as an assistant, at the *Laboratory of Architectural Construction I* and since November 2012 she is an assistant at the course of *Economy and Evaluation*, at the Faculty of Architecture of Ferrara.

Since June 2012 she joined the research activities of the Centre for Research Architecture > Energy of the Department of Architecture of Ferrara.

Currently, she is a PhD student in *Evaluation and Land Economy* at the Graduate School "Management Engineering and Valuation", University of Padova, (partner universities: University of Ferrara, University of Parma and University of Udine).

[valeria.farinelli@unife.it](mailto:valeria.farinelli@unife.it)



### Alessandro Gaiani

Born in Bologna on March 1<sup>st</sup> 1963.

Graduated in Architecture on March 23<sup>rd</sup> 1989 at the Faculty of Architecture of the University of Florence (supervisor Prof. M. Zaffagnini). Since graduating, he conducts research and teaches at the Department of Production Processes and Methods of Construction of the Faculty of Architecture, University of Florence until the academic year 1992/93 as an expert on the subject of *Environmental Design*. From the academic year 1992/93 he conducts research and teaching at the Institute of Architecture Faculty of Architecture University of Ferrara, as an expert on the subject of *Architectural Composition 2* A.A. 1992/93, as Honorary Fellow in *Architectural Composition 1* for A.A. 1993/94 and in *Urban Morphology and building types* for AA 1994/95 and 1995/96, taking communications courses and exercises. From the A. A. 1994/95 to 1998/99 he is Adjunct Professor at the Faculty of Architecture University of Ferrara, teaching *Architectural Composition*, as main discipline in the *Laboratory of Architectural Design I*. Awarded in various design competitions and winner of the European 3 in 1994. Since 1999 he is researcher in *Architectural and urban composition* at the Faculty of Architecture of Ferrara.

[alessandro.gaiani@unife.it](mailto:alessandro.gaiani@unife.it)



### Maria Cristina Garavelli

Maria Cristina Garavelli, got her Architectural degree in 1998 at the University of Ferrara.

Since 2001 she works in Bologna with Mario Cucinella Architects Srl ([www.mcarchitects.it](http://www.mcarchitects.it)) a company with a solid experience in architectonic design where sustainability is a central concern.

During her collaboration with the Research and Development Department of MCA organization, she worked in several projects and competitions like: the masterplan Cascina Merlata in Milano, ISTAT head office building in Roma, Campidoglio 2 project in Roma, the Altener and PHDEC European Research Project, the SIEEB in Pechino. She has also been in charge of: guide-plan of new PEEP in Cesena, the Renco new office building in Pesaro, the new Chiesi office building in Parma and the research project Casa 100k. She represented in 2008-2009 MCA in the IEQ - Committee LEED-GBC Italia and is responsible of the Company Quality Assurance. She wrote for MC A reports and for specialized publications when sustainability and energy saving were involved. She participated, for instance, to the draft of *The guide-lines for the sustainable development of the area assigned in the Arcipelago della Maddalena* making the *Libro bianco dell'Energia*. She attended as lecturer many congresses and conferences. With MC A she participated in many Research European Projects like Altener II *Solar passive heating and cooling* and *PHDC promotion and dissemination of Passive and Hybrid Downdraft Cooling in buildings*.

The architect Maria Cristina Garavelli, before joining MCA, got a specialization degree in Bioclimatic Architecture (DAPT, Facoltà di Ingegneria, Bologna) and kept improving thereafter her research activity in the energy saving field. Maria Cristina Garavelli is since 1999 a qualified lecturer for Environmental Design at the Faculty of Architecture of Ferrara. She has been also a teacher in the Master Architecture>Energy, organised by the Architettura>Energia Research Centre. Maria Cristina Garavelli works also as a free professional architect in competitions and getting commitments in energetic retraining and environmental consulting.

[christinagaravelli@virgilio.it](mailto:christinagaravelli@virgilio.it)



### Gabriele Lelli

Gabriele Lelli (Faenza, 1964) graduated at the Faculty of Architecture of Florence with Professor Adolfo Natalini as supervisor. Since 1993 he is Adjunct Professor in *Architecture and Urban Composition* and currently is responsible for the *Final Synthesis Laboratory A2* at the Faculty of Architecture of Ferrara. He did critics at Syracuse University (1998), and was responsible for the *Seminario Internacional de Arquitectura industrial*, Pais Vasco, Vitoria (1998, 1999). He contributed to the teaching and research activities at IUAV with Massimo Carmassi, and collaborates with the Atelier Peter Zumthor.

Since 1992 he opened a studio with Arch. David Cristofani. They have received the *ANDIL Opera Prima Award* (2000, first place), the *Luigi Cosenza Award* (2000, honorable mention), the *International Prize Daedalus Minos* (2001, under 40, first place), the *International Borromini Award for Young* (2001, three nominations). In 2001, selected and invited to participate in international competition *Projektwettbewerb Opera House* in Zurich (with D. Moderini) and won the national competition for the design of the square in the historical citycentre of Gonzaga (MN). In 2002 they are among those invited to the project *Novoli*, Florence, west area (published in *Casabella* n. 703, 2002) and the *Biennale of Architecture* in Venice (*Lonely Living* and *Next City*). Recently published in *Casabella. Young Italian architects. Almanac of Italian Architecture* (1997, 1998-1999, 1999-2000, 2004-2005), *Vogue* (No. 614, 2001), *Costruire* (No 215, 2001), *Area* (No. 58, 2001); L. Molinari -40 *the next generation international* (Skira, 2002); L. Prestinzenza Pugliesi *Three words to become the future* (Meltemi, 2002).

[gabriele.elli@unife.it](mailto:gabriele.elli@unife.it)



### Luca Magarotto

Luca Magarotto (Monselice (Padua), 1982) is an architect and PhD doctor in Technology of Architecture. After scientific secondary studies, he enrolls at the university of Ferrara, Faculty of Architecture. In march 2007 he took the degree in Architecture with a grade of 110 (out of 110). His thesis was about the functional and technological integration and the energy retrofit of an existing school building. In the same year he has achieved the licence to practice architecture and he continues the educational activities for the University of Ferrara, Department of Architecture. In detail, from 2007 he cooperated as assistant professor, for the *Energy Control in Buildings* course; from 2008 as assistant professor, for the *Laboratory of Architectural Construction 1* and for the *Laboratory of Architectural Construction 2*. He cooperated also in 2008 and 2009 with the activities of the workshop *Architecture>Energy>Environment*. In march 2011 he archived, with the highest marks, the title of PhD in Technology of Architecture at the University of Ferrara, Faculty of Architecture, with a thesis titled *Energetic and environmental renovation of alpine huts. Support for decision-making process of renovation and optimization project of accommodation facilities in apart setting characterized by discontinuous use in alpine climatic context and unconnected with supplies nets*. He was selected and took place in national architectural workshops. He also carried out some works in an advisory and energy check capacity about architectural projects and cooperated with a research project about sustainability in accommodation facilities. He wrote various scientific articles published in trade magazines, about energy efficiency and refurbishment of existent buildings.

[luca.magarotto@unife.it](mailto:luca.magarotto@unife.it)





## Nicola Marzot

Nicola Marzot was born in Imola (Bologna), 27/11/1965. He has obtained his degree in Architecture in Florence, with a thesis on Ferrara's building history, supervised by Prof. Mario Zaffagnini.

After being unpaid assistant at Faculty of Architecture, Ferrara, involved in the teaching of *Urban Morphology and building Typology* (1994), and Temporary Lecturer at the same Faculty, involved in the teaching of *Urban Morphology and building Typology* (1995/96/97), he is Temporary Lecturer at Faculty of Architecture of Florence, Italy, involved in the teaching of *Theory of contemporary architectural research* (1997) and *Typological and Morphological Characters of Architecture* (1998). Since 1998 he is PhD student at Faculty of Engineering, Bologna. Once obtained his PhD in *Building and territorial engineering* in 2000, since that time he is Temporary Lecturer at the Faculty of Architecture, Ferrara, involved in the teaching of *Urban Morphology and building Typology* and Temporary Lecturer at the Faculty of Engineering, Bologna, responsible for the design Laboratory of *Technical Urbanism I*. Since 2004 he has been Assistant Professor at the Faculty of Architecture of Ferrara, responsible for the design Laboratory of *Architectural Composition I A*. His research activity mainly focus on theory and method of architecture and urban design strategies, in close relation to Urban Morphology and Building Typology. He has been visiting professor at Hosei University, Faculty of Architecture and Lund University, Faculty of Architecture. He is currently visiting professor at TU Delft Politecnic, Department of Architecture, associated to the chair of Architectural composition and Urban design. He is going to obtain his second PhD at TU Delft Politecnic in Architectural Design.

Vice director of *Paesaggio Urbano* and member of the Editorial Board the international reviews *Urban Morphology*, *Opera/Progetto and Rassegna* (now directed by François Burkhardt), he is author of more than 190 essays on the subject of urban design, several of which presented on occasion of national and international conferences.

Since 2002 he is urbanism advisor of *Oikos Centro studi sull'abitare* and of *Nomisma Spa REAL ESTATE*, of which since 2006 he also is Head of Urban Planning. He is member of the scientific committee of *MARKITECTURE*, international architectural event prompted by Bologna's Ente Fiera, now at its third edition. He is member of the organizing committee of the Italian Pavilion, X International Venice Biennale of Architecture, curator Prof. Franco Purini. Since 2005 he is member of the Council of *ISUF*, International Seminar on Urban Form. Since 2006 he also is Secretary-General of the same Institution. Since 1994 he start working as a singular Professional Architect, while since 1996 he shares his office with Architect Luca Righetti, founding together in 2002 the architectural firm *PERFORMA A+U*, mainly focusing on urban design, housing and the relation between tradition/innovation in tectonics.

[nicola.marzot@unife.it](mailto:nicola.marzot@unife.it)



## Arch. Gianluca Minguzzi

Gianluca Minguzzi graduates in architecture in 1997 at the Faculty of Architecture of the University of Ferrara. He is teaching, from 1999, at the Faculty of Architecture of the University of Ferrara.

He is Secretary and Member of Jury of the *International Sustainable Architecture Prize* from 2004, year of its first edition.

He has held lectures in various courses of formation and post graduates master on the themes of the ecological architecture and the energetic efficiency.

He has published the volumes *Architettura Sostenibile - Una scelta responsabile per uno sviluppo equilibrato* (Skira, Milano, 2008); *Architettura Sostenibile - processo costruttivo e criteri biocompatibili* (Skira, Milano, 2006) e *FIBER REINFORCED PLASTICS - utilizzo dei materiali compositi a matrice polimerica in edilizia civile*, (Alinea, Firenze, 1999). He has written articles on some magazines of sector as *Costruire*, *Paesaggio Urbano* e *L'Architettura Naturale*, *Architetti* and *City Project*.

He has founded in 2000 his own study *Officina di Architettura*, together with Nicola Pasi and Enrico Golfieri, working on projects of urban recovery and architectural planning.

[gianluca.minguzzi@unife.it](mailto:gianluca.minguzzi@unife.it)



### Arch. Valentina Modugno

Valentina Modugno (Ferrara, 1980), Architect and PhD in Architectural Technology.

After a period of study at the Technical University of Graz (Austria 2004), she graduated in Architecture on 7<sup>th</sup> July 2005 with full marks (110 cum laude). She reached the degree in Archaeology Restoration with a work entitled *Julia Praedia Felicis: from Preliminary investigations on the project of restoration and enhancement of the urban context* at University of Ferrara. Since 2007 she was teaching assistant at the Laboratory of Architecture Construction 1 at Faculty of Architecture of University of Ferrara. In the same year she qualified for the profession to the Order of Architect of Ferrara.

On 9<sup>th</sup> April 2010 she obtained the title of Doctor of Philosophy in Architectural Technology at the Faculty of Architecture of Ferrara (IUAV of Venice, University of Bologna - Faculty of Architecture in Cesena were associated Universities) discussing a thesis entitled *Translucence in the architectural envelope: materials, performance and innovative technologies in application to contemporary architectural boundaries*; this work was considered the best thesis of the XXII cycle within the doctoral vol. III of the Annals of the Institute for Advanced Studies of Ferrara.

In April 2010 she achieved the awarding of a scholarship of one year on *Environmental studies and energy audits, field surveys, organizing activities, dissemination, coordination of research in the field of energy efficiency and environmental sustainability, with particular interest in improving energy performance and behaviour in the European Mediterranean climate* and collaborates with the Architettura>Energia Research Centre of the Department of Architecture of Ferrara.

In December 2010 she played the role of tutor at the workshop entitled *Ideas for a sustainable container of young people, designed by young people* for the project to upgrade and creation of new functions of the former warehouse ex-Tecnoform in Argenta, to be dedicated to youth centre.

Since 2011 she is an ordinary member of SITdA, Italian Society of Architectural Technology.

She participated to national design competitions. She is author of several scientific publications and papers for some magazines. She attends national conferences, seminars and workshops.

She is interested in products technological innovation research, especially materials for architectural envelopes, focusing particularly on the synergy that exists between the phenomena of energy efficiency and perception of architectural translucent boundaries, and on their applications in existing buildings.

[valentina.modugno@unife.it](mailto:valentina.modugno@unife.it)



### Arch. Valentina Radi

Valentina Radi is an architect (Fano, 1980); in March 2006 she got a degree cum laude from the Faculty of Architecture, with a thesis on architectural and urban planning titled *Cognitus, Natura, Salus: new relationships among environment, people and architecture in the city of Fano*. The thesis, presented by an exhibition, received a prize from Fano city and it was shown at Architectural Festival of Parma.

In April 2010, in the same University, she became a research doctor on Tecnologia dell'Architettura; the doctoral thesis draws the guide lines for a planning of high energetic efficiency in Mediterranean countries. Since January 2009 she has been a member of architecture section of Research Centre Architettura>Energia at the Faculty of Architecture of the University of Ferrara. Since 2003 she has been contributing to degree courses of *Laboratory of architectural design 1* and *Laboratory of architectural construction 1*, at the Faculty of Architecture of Ferrara. She took part in workshops and research projects, she is author of scientific articles. She was chosen for the workshop Places as open systems: strategies for the modification, organised by Guastalla city (RE), in partnership with the Faculty of Architecture of Ferrara (May 2001). She took part in the research project *GECO-project, analysis and study about receptivity of young people and youth hostels. Guidelines for a hostel project*, developed in collaboration with Economics and Historical Sciences department of the University of Ferrara, financed by Emilia-Romagna region (November 2008).

As tutor she was involved in the workshop *Ideas for a sustainable container of young people, designed by young people*, project of re-qualification and re-functionalization of Tecnoform ex-shed, in Argenta city (FE), in order to transform it into a youth center (December 2010).

Chartered in Pesaro e Urbino Architectural Association since February 2007, the architect cooperated with architecture office Cristofani&Lelli Architetti of Faenza (RA) from March 2006 to August 2008 and then she took part in competitions in partnership with the office Laboratorio di Architettura di Reggio Emilia. She is a freelancer and she is dealing with plans for private citizens, public and religious bodies.

[valentina.radi@unife.it](mailto:valentina.radi@unife.it)



### Paolo Rava

Paolo Rava, architect, born 1956, lives and mainly works in Faenza. He completed his studies at the University of Florence, Faculty of Architecture, graduating with Adolfo Natalini as supervisor. Since 1989, performs studies and research on theory and practice in the field of biotechnology applied to architecture at the Polytechnic of Milan and in the course ANAB IBN (Institut FurBaubiologie + Oekologie), developing experiences on sustainable natural and bio-climatic architecture. From 1994 to 1997 he worked as assistant professor with prof. Massimo Carmassi at the Faculty of Architecture of Ferrara. From 1980 to 1995 he worked in associated form with the A+4 STUDIO, a zero-carbon architectural office, and since 1995 as a designer on his own. The study develops the various scales of architectural design to control sequence of steps. At the same time and in relation to these projects has enabled a research and has participated successfully in various competitions. He has taught as an expert on bioclimatic and sustainable techniques in many courses and as tutors to design workshops in Italy. Member of ANAB - *National Association of Biological Architecture*, organizes seminars and conferences on issues of sustainability and on the role of variables of cost in energy efficiency and environmental design strategic planning phase of the construction process. He is currently an contract Professor and tutor of the course of *Laboratory of Architectural Design 2* at the Faculty of Architecture of Ferrara.

[architettorava@yahoo.it](mailto:architettorava@yahoo.it)



### Graziano Trippa

He graduates in Architecture at the Faculty of Architecture of Florence.

Full Professor of Technology of Architecture since 1987. From 1970 to 1975 he cooperates with the urban sector of the Municipality of Bologna. From 1973 to 1977 he is Contract Professor at the Faculty of Architecture of Florence, teaching *Special Building Materials* and, from 1978 *Technology of Architecture*, becoming Associate Professor in 1980. In 1980, foundation year of the Faculty of Architecture of Ferrara, he begins working there, where he currently teaches *Technology of Architecture*. He was President of the Architect Chapter of the Region Emilia Romagna from 1975 to 1990. In the years 1976-80 he his technical consultant for the Region. From 1980 he is member of the Technical Consulting Committee of SAIE - *International Fair of Building Industrialization*.

Scientific director and coordinator of the fourth volume of the publication *Procedures and professional aspects - Building Design* (Hoepli Publisher). Author of several publication in the fields of technical, technology/process relation, techniques evolution and product innovation, new control and assessment procedures, innovative tools for programming, easing and speeding the production of new generation building materials, relation between architectural design and building technicians.

In the years 1999 and 2000 he is Italian Member of the *Consulting Committee for the formation of the Architectural Institute Campus*, managed by the European Union Council at the European Monetary Union in Brussels. From 2000 he is coordinator of the Ph.D. course in *Technology of Architecture* for the Faculties of Architecture of Ferrara (base office), IUAV Venice, and Cesena DAPT. From 1997 to 2000 he is member of the Research Council, the Board of Directors, and the Academic Senate. Head of the Faculty of Architecture of the University of Ferrara the periods 2000/2006 and 2008/2011.

[graziano.trippa@unife.it](mailto:graziano.trippa@unife.it)



## Theo Zaffagnini

Theo Zaffagnini (Modena, 1968) is graduated in Architecture at the Faculty of Architecture of the University of Florence (Italy) in 1993. Here achieved the PhD on *Building Technology* in 1998. Since 1999 he is working as Researcher on *Building Technology* at the University of Ferrara, Faculty of Architecture. His research activity is mainly focused on technological innovation in building processes and materials, on sustainable approach to architecture and on restoration, refurbishment and re-use of historical buildings. Since September 2005 until now he is working also as Professor on *Building Technology* in the *Laboratory of Building Construction 1 - Course C*.

Since year 2000 nowadays he is member of the teacher board of the PhD course in *Building Technology* (courses from XV to XXV, coordinator prof. Graziano Trippa) organized and coordinated by the Faculty of Architecture of Ferrara with IUAV (University of Venice – Italy) and University of Bologna DAPT (Faculty of Architecture “Aldo Rossi” – Cesena, Italy) and from the XXVII course with LUB Bolzano. He is since 2006 enrolled delegate from Prof. G. Trippa in the activities of OSDOTTA network between Universities aimed to share the results of Italian researches developed inside all the national PhD courses in the field of Building Technologies.

He has been member of the Scientific Board of the first Decennial of the Faculty of Architecture of Ferrara. He is also co-author of the scientific project, of the specific website (created for the Decennial titled Xfaf.it), chairman and lecturer in many international conferences organized for the Xfaf celebrations.

He worked on several research programs commissioned by private and public institutions, by MIUR and by the European Economic Community.

Among the recent publications – outcome of the European research *Interreg IIIB - Villas Stately Homes and Castles: compatible use, valorisation and creative management* – is remarkable R. DI GIULIO, ZAFFAGNINI T. (by) *Case sparse. Paesaggi agrari tra Ferrara e Bologna: strategie per la valorizzazione e il riuso del patrimonio rurale*, Franco Angeli Publisher, Milano, 2010, pagg. 208.

He is the author of several essays on technology books, CD-ROM/DVD, websites and magazines on issues of recovery and reuse of historical buildings, hypogeum architecture, technologies for uptake and transport of natural light and innovative technologies for energy efficiency of buildings.

Since 2000, is curator of Building Technology and Energy Efficiency and Sustainable Technologies sections for magazines *L'Ufficio Tecnico*, *Archingeo* and *Geoinforma* (Maggioli Publisher).

He carries out freelance work in Bologna working primarily in the design of intermodal logistics centers, road infrastructure and industrial construction.

[theo.zaffagnini@unife.it](mailto:theo.zaffagnini@unife.it)

## ► CURRICULA | ENERGY SECTION



### **Giacomo Bizzarri (vice-director)**

Giacomo Bizzarri is Research Professor of Industrial Technical Physics at the Faculty of Architecture of the University of Ferrara, and teaches *Environmental Technical Physics 1*, *Energy Control in Buildings* and *Thermal Systems* (section of the course *Technology of Architecture*).

He is the Vice-director of the *Architettura>Energia* Research Centre and responsible of the Energy section and of the *eFAF - Laboratory of Energetics*.

Member, for the Faculty of Architecture of Ferrara, of the Directive Committee of the Modelling, Calculation, and Statistic Centre (2007-2010).

He graduates as Civil Engineer on the 28/10/1999 at the Faculty of Engineering of the University of Parma (final evaluation: 100/110).

He graduates Ph.D. in Energetics on the 26/06/2003 at the University of Udine.

Research fellow at the Faculty of Architecture of Ferrara from 1/9/2003 to 31/8/2007.

From 1999 he teaches, appointed with different designation, in the courses of *Physics and Technical Physics*, *Environmental Technical Physics 1*, *Environmental Technical Physics 2*, *Thermal Systems*, *Architectural Design 4*, *Preservation and Environmental retrofit Technologies*, *Energy Control in Buildings*.

On the 3 November 2006 he elaborates the study for the *Energy Plan* of the Municipality of Reggio Emilia.

He is author of over 40 scientific articles. Among those, 4 have been published on international journals.

[giacomo.bizzarri@unife.it](mailto:giacomo.bizzarri@unife.it)



### **Vittorino Belpoliti**

Vittorino Belpoliti was born in Reggio Emilia on the 24/09/1981. He is architect enrolled in the chapter of Reggio Emilia.

He graduated in Architecture with honours on the 6/07/2007 at the University of Ferrara.

On the 19/06/2011 he graduated Ph.D. in Energy Technologies at the University of Udine, with a research on energy refurbishment in existing social housing.

In 2004 he is visiting scholar at the Arkitektsskole di Aarhus, Denmark. In 2006 he is visiting scholar at the University of California, Berkeley (2006).

He is author of over 10 scientific papers.

He teaches energy calculation methods for building energy assessors courses.

From 2006 he is Assistant Professor for the academic courses of *Energy Control in Buildings*, *Technical Physics*, *Technology of Architecture 1 and 2* at the Faculty of Architecture of Ferrara.

Member of the Technical-Scientific committee *Material and Resources* for GBC Italy, for the elaboration of new LEED protocols.

Awarded the First Prize *Energhetica* 2008. First Prize of the Architectural Competition SIPRO 2008 *Eco-sustainable industrial buildings and renewable energies*. First Prize of the Architectural Competition *Energy and functional refurbishment of the historical town of Mandonico, Dorio (LC)* (2011). Awarded two other first prizes in architectural competitions, as collaborator and expert in energy efficiency. Awarded three special mentions in architectural design, concerning topics of energy efficiency and environmental sustainability.

[vittorino.belpoliti@unife.it](mailto:vittorino.belpoliti@unife.it)



## Michele Bottarelli

In 1993 he graduated in hydraulic engineering at the University of Bologna (Italy) and in 1993 he took the professional qualification. He has further certifications in Environmental Acoustic and Safety at work, with specific certifications as required by the Italian laws.

From 1994 to 1995 he took part to the European project EUREKA - EU487 ENVINET-INFOSYSTEM , a project focused on a model-based information and decision support system, planning and managing water resources at a river basin scale.

From 2005 to 2006 he upgraded the Eureka results through the participation to W-SAHARA – EVK1-CT-1999-00041, a European project to develop a Stochastic Analysis of Well-Head Protection and Risk Assessment, to assess the impact of groundwater pollutants on the environment and for an efficient and cost-effective planning of groundwater.

From 2000 to 2008 he has been adjunct professor at the Faculty of Architecture of Ferrara, with a course of Environmental technologies, together with lecturer in several Master courses (Megas, Mastem, Mapaus) and specializing courses focused on environmental planning and energy efficiency (SGA Regione Lombardia, AE UNIFE-UNIMORE, Acquiferi e bonifiche DISTART).

Since 2006 he is member of the Scientific Committee of the Site Remediation Observatory at the University L.Bocconi (Milan), on the research of technical-economic rules for the remediation of contaminated site.

Since 2008 is Researcher at the Faculty of Architecture of Ferrara (ING-IND/10), teaching Technical physics and Service Engineering and collaborating in Design Labs in the field of energy efficiency and green strategies based on hydraulic systems and river analysis. Previously he designed wastewater treatment plants, landfills, hydraulic networks, flood control systems, air conditioning and environmental mitigations for public and private groups (Solvay, Degremont, Ansaldo, Edison, Pirelli RE, Hera, Unieco, Fisia Italimpianti and several local authorities). He is member of UIT (Italian Union of Thermal Fluid-dynamics) and AIPT (Italian Association Thermal Properties).

He is an expert in developing and applying numerical models, databases and geographical information system and author of several technical papers in hydrodynamic flow, flow and mass/heat transport in porous media, remediation of contaminated sites, hydraulic network, flood risk analysis, acoustic monitoring, and renewable energy.

At the moment his research activity is focused on ground source heat pumps for cooling and heating, testing a prototype for horizontal ground heat exchanger (patent pending).

[michele.bottarelli@unife.it](mailto:michele.bottarelli@unife.it)



## Marta Calzolari

Marta Calzolari was born in Ferrara on the 07 July 1984.

She enrolls in the Faculty of Architecture of Ferrara in September 2003, and graduates with honour on the 7 November 2008, with a thesis regarding energy refurbishment of and historical building.

In July 2009 she obtains the assessment to practice as architect.

From January 2010 she is Ph.D. student in Technology of Architecture (Ph. D. course involving the Faculty of Architecture of Ferrara, IUAV Venice, and the Faculty of Architecture of Cesena). The research activity mainly regards the energy refurbishment of the historical building heritage.

Member of the Technical-Scientific committee *Material and Resources* for GBC Italy, for the elaboration of new LEED protocols.

From October 2009 she is member of the research group *British-Italian partnership for young researcher* in relation to the workshop *Nottingham meets Ferrara* (University of Nottingham, School of Built Environment).

From February 2009 she is Assistant Professor for the academic courses of *Energy Control in Buildings* and *Technology of Architecture 1* at the Faculty of Architecture of Ferrara.

[marta.calzolari@unife.it](mailto:marta.calzolari@unife.it)



## Roberto Capra

He graduates with honours as civil engineer (hydraulic specialization) in 1994, at the University of Catania. The following year he obtains the assessment to practise as engineer.

From 1995 to 2000 he has his own activity in the field of hydraulic and thermal systems for both residential and industrial buildings.

From March 2000 he works first for Ingg. Gross and Speier in Milan, as technician responsible for the design of the mechanical systems for Modulo 5 of the STMicroelectronics, office of Catania, then he works in Qatar for the realization of the thermal systems of a thermal-electric plant.

In 2005 he is hired from ACER Reggio Emilia (social housing local agency) as director of the energy office. There, he completes several systems for new and existing residential buildings.

In 2008 he is contract Professor at the Faculty of Architecture of Ferrara, teaching *Thermal systems* (section of the course *Technology of Architecture 2*).

From 2009 he works on his own in the field of thermal and hydraulic systems toward energy efficiency of new low-energy demand buildings and energy refurbishment of existing ones (both residential and industrial).

In 2009 he cooperated with the University of Rome, Faculty of Architecture at the energy refurbishment of a primary school.

He teaches thermal and hydraulic plants and renewable energy systems for building energy assessors courses.

[robertocapra62@hotmail.com](mailto:robertocapra62@hotmail.com)



## Laura Gabrielli

She graduated in Architecture at the Luav, University of Venice with a final mark of 110 cum Laude out of 110, and she got a PhD in *Property Valuation and Economics* at the University of Padova.

She taught *Valuation* and *Economics* at the University of Ferrara, Faculty of Architecture, from 1999 to 2007; *Valuation* at the Luav University of Venice, Faculty of Architecture, from 2003 to 2008; *Property Investment* and *Valuation* at the University of Bologna, Faculty of Architecture, from 2004 to 2006; *Economics* and *Property Valuation* at the University of Trento, Faculty of Engineering.

She teaches for Master, PhD Schools, Postgraduate courses organized by Public Institutions and Universities nationally and internationally.

She has participated in researches funded by public and private, from the Ministry of Education and the European Community.

He is a member of the Academic Board of the PhD School of *Management Engineering and Surveying*, address *Surveying and Spatial Economics*, University of Padua.

She was actively involved in different international networks founded by European Commission such as *BEQUEST* (1999–2001), *STELLA* (2001–2004) and *INTELCITY* (2002–2003). She participated at research projects and groups at national level (Murst 40%, 1998–2001; research unit of Istituto Nazionale di Urbanistica and Tecnoborsa Scpa, 2000–2002; ex Murst 60%, 2001–2003; Prin 2004). She has also published a number of papers and articles in scientific and academic journals in the areas of property valuation and investment, property portfolio construction and risk analysis. She was Briefing Editor of *Journal of Property Investment and Finance* from 2006 to 2008. The publications on uncertainty in valuation, written with Prof. N. French, have all received international awards.

Concerning the professional activity, she collaborated with studies and research centres on studies related to real estate markets, valuations for tax purposes, policy implementation and project management, real estate development, feasibility studies of plans and projects and economic-financial plans for project financing.

On the 1st of November 2008 she joined the Faculty of Architecture, University of Ferrara, as Lecturer in *Property Valuation* and *Investment*.

[laura.gabrielli@unife.it](mailto:laura.gabrielli@unife.it)



### Enrico Lambertini

Enrico Lambertini was born on the 19/05/1984.

In November 2008 he graduates with honour in Architecture at the University of Ferrara with a thesis on energy retrofit of productive areas.

In December 2008 he participates to the refurbishment projects of the industrial areas of Mancasale (RE) and Madonna dei Baldaccini in the Municipality of Pavullo nel Frignano (MO), to run for Regional financial aids within the workframe of the *POR-FESR 2007/2013*.

From January 2009 he is enrolled at the University of Udine as Ph.D. student in *Energy and Chemical Technologies*. His research mainly regards the urban and architectural integration of mini and micro-wind turbines.

[enrico.lambertini@unife.it](mailto:enrico.lambertini@unife.it)



### Alex Lambruschi

Alex Lambruschi graduates as Civil Engineer (Reggio Emilia 1978) in 2004 at the University of Parma with an experimental research thesis in urban and energy design, titled *Eco-sustainable design in urban retrofit plans: the case-study of the Compagnoni Fenulli residential area in Reggio Emilia*.

From 2009 he is enrolled at the University of Udine as Ph.D. student in *Energy and Chemical Technologies*, researching on urban energy design and policies and analysis of ecological industrial areas (APEA e ACEA). From 2004 he is member of ANAB - *National Association of Biological Architecture* and from 2005 he cooperates to the elaboration of the ANAB-ICEA assessment standards for natural building material. He is director of *Ecoabita*® (building energy assessment protocol of Reggio Emilia) and takes care of all the aspect of the protocol from technical and performance standards to software programming. He is Energy Manager (assessment by ENEA-FIRE). He cooperated to the definition of the performance standards within the workgroup GP PAN.

He is author of the *Efficiency Plan of Public Properties* of the Municipality of Parma and Albinea (RE), and co-author of the *Energy Plan* of the Municipality of Parma (2010). He is author of the *Guidelines for the installation of renewable energy devices* of the Municipality of Reggio Emilia, and of the Energy Code, attachment of the *Building Code* of the Municipality of Reggio Emilia and Novellara (RE). In 2010 he has been energy consultant for the evaluation of requirements and technologies of the oncology and hematology centre, currently in construction in Reggio Emilia.

Author of several scientific publication regarding energy efficiency, embodied energy and LCA, and passive house in the Mediterranean climate; among those the volume *Energy design and efficiency* (Maggioli Publisher).

[alex.lambruschi@unife.it](mailto:alex.lambruschi@unife.it)



### Amedeo Papi

Amedeo Papi is an architect and a Ph.D. Student in Energetics at University of Udine – Faculty of Engineering.

1996: student at Faculty of Architecture "Biagio Rossetti" of Ferrara;

2001: member of design team in "Dalmine" former canteen re-qualification project;

2003: member of 3D laser scanner team in Pompeii Imperial Forums historical site survey;

2004: trainee architect at "Claudio Silvestrin Architects" international architectural firm (London offices);

2005: junior architect in "Riccione Terme", hotel and thermal complex project;

2008: graduated cum laude at Faculty of Architecture "Biagio Rossetti" of Ferrara with a thesis entitled "Energy performance of existing buildings: optimized and integrated procedures for data acquisition, processing and management in efficiency analysis";

2008 – 2010: member of D.I.A.P.Re.M. Research Centre (Development of Integrated Automatic Procedures for Restoration of Monuments) – Department of Architecture of Ferrara, publishing scientific articles and speaking at conferences and seminars on laser scanner 3D survey, thermographic diagnosis and heat flow analysis;



2008 – onwards: member of Architecture>Energy Research Centre – Department of Architecture of Ferrara, publishing scientific articles and speaking at conferences and seminars on energy efficiency of buildings, thermographic diagnosis and heat flow analysis;

2008 – onwards: lessons and seminars at Faculty of Architecture of Ferrara courses (Energy Survey; Laser scanning; Energy efficiency in buildings);

2008 – onwards: renewable energy power plant designer at Becquerel Electric Ltd;

2011 – onwards: Vice-Director at Becquerel Electric Ltd;

2011: Master Sole 24 "Renewable Energy: Permitting, contracts and project financing";

Until october 2012: development, design and permitting of 28 renewable power plants (photovoltaics, wind power, small-hydropower), rating over 80 MW total peak power and costing over 190 million euros.

[Due 2013]: Ph.D. in Energetics at University of Udine - Faculty of Engineering, publishing scientific articles and speaking at conferences and seminars on energy planning and policies, mainly focusing on small hydropower plants design and development strategies.

[amedeo.papi@unife.it](mailto:amedeo.papi@unife.it)

## MAIN EXPERTISE AREAS AND OFFERED SERVICES

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### ▶ Research | Architecture Section

Architecture>Energy Research Centre provides advisory and design research aimed to raising energy efficiency and environmental quality of buildings, both in new construction, both in the recovery and/or restoration of existing buildings.

Main research fields are:

- design guidelines of performance enhancement aimed to increase energy efficiency and environmental quality of existing buildings, even in cases of high historic value;
- experimentation and collection of technologies, procedures and intervention models for the technological development and innovation of building products and processes;
- elaboration of design guidelines from the building scale (implementations of local building codes) to the urban one (regional energy planning), with a most recent interest towards industrial sites, historic buildings and settlements, schools, social buildings and envelopes summer behaviour;
- data collection and development of databases concerning sustainability, energy efficiency and certification processes.

### ▶ Research | Energy Section

Architecture>Energy Research Centre carries out research relating to special equipment design (fuel cells) and renewable energy sources (wind, solar, biomass, hydropower), with application to the neighborhood scale and local level.

Main expertise fields are:

- research in low enthalpy geothermal energy;
- research and consultancy in the field of Life Cycle Assessment (LCA) and Life Cycle Cost (LCC) to provide classification of phenomena, analysis of critical points and possible lines of development;
- research in innovative photovoltaic systems applied to architecture, with particular reference to thermal and optical features of semitransparent devices;
- energy performance evaluation, based on calculations and experimental applications in the field, through the employment of advanced and integrated techniques for diagnostics, construction site checks or other buildings monitoring and for the optimization of the evaluation process of the historical heritage;
- energy planning at local and regional scale;
- support to the preparation of calls for Public Administrations.

▶ **Measurements and evaluations**

Architecture>Energy Research Centre delivers physical measurements for performance assessment and evaluation of buildings and urban sectors. The measurements are performed either on the basis of calculations and experimental applications in the field, through advanced diagnosis techniques, on site verification and ex-post monitoring.

Main expertise fields are:

- evaluation of envelopes thermal behaviour through infrared thermal camera;
- evaluation of envelopes thermal quality through heat flux meter;
- calculations of energy balances and heat flows (static and dynamic approach) for the evaluation of energy consumption (current and expected), the risk of condensation and thermal bridges;
- design, dimensioning and architectural integration of systems powered by renewable energy sources (solar thermal, photovoltaics, micro-CHP, micro-wind, etc.);
- evaluation of the use of solar energy (shading, overheating, etc.) through the use of solar diagrams;
- indoors and outdoors acoustic measurements and development of impact analysis for the determination of the acoustic and sound insulation requirements related to passive acoustic performance of buildings;

The Centre can also offer economic assessments regarding investments in energy efficiency and environmental quality, in particular:

- estimation of amortization for energy saving measures and construction of plants fed by renewable energy sources;
- calculating of the present value of investment for energy efficiency enhancement of existing buildings and comparison of technical solutions to new construction.

▶ **Educational activities and publications**

The Centre has particular expertise in scientific management, promotion and organization of training activities such as thematic conferences, technical seminars, training courses, workshops, summer schools and masters for operators of Public Administrations, designers and technicians of the construction industry; all courses are aimed to increasing knowledge in the field of energy efficiency and environmental sustainability.

Main expertise fields are:

- design of buildings with high energy efficiency standards, with attention to the restoration of existing buildings, including historical context;
- definition of policies for energy performance and environmental quality enhancement;
- energy performance certification and certificates market;

- update on technical regulations and legislation in force, with attention to the incentives offered to national and local level.

Architecture>Energy Research Centre draws up publications, essays and articles in major national and international specialized publications networks and organizes conferences and activities within the trade fairs. The Centre also organizes workshops and study tours to the most current energy-efficient national and international architectures.

## ON-GOING OR FULL-FINISHED ACTIVITIES

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### ▶ Design research

- Integrated study for the definition of design strategies aimed at energy and environmental refurbishment, renewable source-fed plants integration and preliminary geological survey in the historic settlement of Apice Vecchia (BN) | 2012
- Functionalization, energy and environmental requalification of an industrial building in Argenta (IT) to use as a youth center | 2011
- Preliminary design for the implementation of sports facilities and urban renewal of the entrance and the former parking lot of the University Sports Centre, University of Ferrara (IT) | 2010
- Design study aimed at energy and environmental regeneration of the historic fabric of the town of Caporciano (IT); design study conducted during the workshop *Sustainable ideas and proposals for the areas struck by earthquake near l'Aquila* | 2010
- Energy plan of the Municipality of Parma (IT) | 2010
- Design research for urban, functional, energy and environmental regeneration of the neighbourhood social housing "Barca" in Bologna; research commissioned by the Municipality of Bologna and the Emilia-Romagna region | 2009-2010
- Participation in the regional work table for the elaboration of the Preliminary Act for energy efficiency of buildings - Emilia Romagna | 2008
- Energy plan of the Municipality of Reggio Emilia (IT) | 2006-2008
- Interdepartmental research assignment entitled *Guidelines for a prototype hostel*, related to the Framework Programme *Evolved and aware young people* (financial support from the University of Ferrara and Emilia Romagna District) | 2008
- Study for the evaluation of hydraulic risks in the territories near Ferrara in support of municipal codes (agreement with Association of Municipalities of Ferrara) | 2008
- In-depth study of the acoustic impact resulting from the operations of expansion and transformation estimated in the Inter-Municipality Structure Plan, commissioned by the Association of the Municipalities of Ferrara | 2008
- Request for access to the national research call *FIRB - Future in Research 2008* (Head of Research Unit: Laura Gabrielli) concerning settlement models and economic and energy development of brownfield sites | 2008
- University research *FAR* concerning *Sustainable energy requalification of historical buildings and urban districts* | 2008
- Access request to the research announcement of national interest *PRIN 2008* (Head of Research: Riccardo Dalla Negra) concerning existing basic building stock recovery | 2008

- Financing of PhD researches in Chemical and Energy Technology, in collaboration with the University of Udine, concerning environmentally friendly power plants, with particular reference to wind turbines (in collaboration with TRE SpA/Pozzi Nord Srl) and on the energy upgrading of social housing stock (in collaboration with ACER - Reggio Emilia) | 2008-2010
- Data collection and creation of a database of *Observatory on environmental sustainability in buildings* | 2007
- Access request (in cooperation with Enia SpA and Bagnolo in Piano Municipality) to the Operative Regional Programme *FESR 2007-2013, Emilia Romagna District, Axis 3.1.1*, for financing the realization of productive ecologically equipped areas, with a suggestion for APEA Mancasale | 2007
- Access request (in cooperation with TRE SpA and Pavullo nel Frignano Municipality) to the Operative Regional Programme *FESR 2007-2013, Emilia Romagna District, Axis 3.1.1*, for financing the realization of productive ecologically equipped areas, with a suggestion for APEA Pavullo nel Frignano | 2007
- Creation of the *Sustainable Architecture Annex* for the Reggio Emilia Municipality (first prize *Local Authorities for Kyoto in 2006* as best national initiative for quality and innovation of Public Administrations in the *Energy efficiency and renewable sources* | 2006

▶ **Educational Activities**

- *Quali(ci)ty. Redesign and energy efficiency for sustainable quality of life*, Design Workshop organized by Faculty of Architecture and of Industrial Design product of University of Ferrara, with scientific coordination of Architettura>Energia Research Centre and Material design Laboratory | Milano, 2012
- *Energy refurbishment of existing buildings*, Professional Course organized by Consorzio Ferrara Ricerche and University of Ferrara, with scientific coordination of Architettura>Energia Research Centre | Ferrara, 2011
- *Architecture>Energy>Bricks* Course on high energy efficiency in Mediterranean areas | Ferrara, 2010
- *Energy and environmental certification of buildings* course, organised by Regional Federation of Architects – Marche Region and Foundation of the Order of Architects – Region Marche, with scientific coordination of Architettura>Energia Research Centre | Ancona, 2010
- *Building and plant Designer* course, organised by Ecipar Ferrara, Ferrara Province, with scientific coordination of Architettura>Energia Research Centre | Ferrara, 2010
- *Architecture\_Energy\_Environment\_Argenta 2010 – Sustainable ideas for a building for youth, designed by young peoples*, Design Workshop organized by Faculty of Architecture of Ferrara, with scientific coordination of Architettura>Energia Research Centre | Argenta, 2010
- *Energy performance certification of buildings* course, organised by Ecipar Ferrara, Ferrara Province, with scientific coordination of Architettura>Energia Research Centre | Ferrara, more than 10 editions from 2008 to 2011

- *The future of the built heritage. Energy refurbishment and regulations – Analysis and suggestions for existing buildings*, Design Workshop organized by Faculty of Architecture of Ferrara, with scientific coordination of Architettura>Energia Research Centre | Bologna, 2009
- *Architecture\_Energy\_Environment\_From water to ancient walls. Linking S. Antonio to S. Pietro. Five days of 3D ideas for a multidisciplinary comparison on energy and environmental refurbishment of Ferrara's urban landscape*, Design Workshop organized by Faculty of Architecture of Ferrara, with scientific coordination of Architettura>Energia Research Centre | Ferrara, 2009
- *Ecoabita® Designer*, organised by Faculty of Architecture of Ferrara, Ecoabita® Consortium, Province of Reggio Emilia, with scientific coordination of Architettura>Energia Research Centre | Cavriago, 2007, 2008 and 2009
- *Architecture>Energy* post-graduate course organised by Faculty of Architecture of Ferrara, Ferrara Province, with scientific coordination of Architettura>Energia Research Centre | Ferrara, 2007
- *Architecture>Energy* post-graduate course organised by Faculty of Architecture of Ferrara, in collaboration with University of Modena and Reggio Emilia, with scientific coordination of Architettura>Energia Research Centre | Reggio Emilia, 2005 and 2006
- *Energy performance certification of buildings* course, for Public Administrations operators, in collaboration with Ministry of Work, Emilia Romagna Region, Reggio Emilia Province, Ferrara Province | 2006
- Cycle of seminars on energy efficiency, renewable energy sources and environmental sustainability, at building and urban scale:
  - *Energy efficiency of existing buildings*, organised and with scientific coordination of Architettura>Energia Research Centre | Ferrara, 2011
  - *Thermal bridges and air tightness of buildings*, organised and with scientific coordination of Architettura>Energia Research Centre | Ferrara, 2010
  - *Energy efficiency and ventilation of buildings*, organised and with scientific coordination of Architettura>Energia Research Centre | Ferrara, 2010

▶ **Recent Publications**

- Davoli P. (by), *Il recupero energetico ambientale del costruito*, Rimini, Maggioli Editore, 2010, pp. 192
- Rinaldi A. (by), *Efficienza energetica e progettazione*, Rimini, Maggioli Editore, 2010, pp. 250
- Boarin P., *Edilizia scolastica. Riqualficazione energetica e ambientale*, Monfalcone, EdicomEdizioni, 2010, pp. 336
- Brunoro S., *Efficienza energetica delle facciate per l'adeguamento e la riqualficazione architettonica*, Rimini, Maggioli Editore, 2006, pp. 290
- Rava P., *Tecniche costruttive per l'efficienza energetica e la sostenibilità*, Rimini, Maggioli Editore, 2008, pp.400

The Team has held many articles and sections on the main national and international scientific journals, including:

- *Energy and Buildings*, Elsevier
- *L'Ufficio Tecnico*, Maggioli Editore
- *Paesaggio Urbano*, Maggioli Editore
- *Recupero&Conservazione*, DeLettera Editore
- *PV Technology*, Artenergy
- *Progetto Abitare.it*, Keymedia Group
- *CDA – Condizionamento dell’Aria Riscaldamento e Refrigerazione*, Shinda Edizioni
- *International Journal of Environmental Technology and Management*, Inderscience Publishers
- *Applied Thermal Engineering*, Elsevier
- *La Termotecnica*, L’Editrice



## CONTACTS

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### **Architettura>Energia Research Centre**

Department of Architecture, University of Ferrara

**Address** | Via della Ghiara, 36 | 44121 Ferrara – ITALY

**Building** | Tassoni Estense Palace, mezzanine floor

**e-mail** | [ae@unife.it](mailto:ae@unife.it)

**phone/fax** | +39 0532 293631

**web** | [www.unife.it/centro/architetturaenergia](http://www.unife.it/centro/architetturaenergia)

**University of Ferrara**  
via Savonarola, 9 - 44121 Ferrara (IT)  
[www.unife.it](http://www.unife.it)



**Faculty of Architecture**  
via Quartieri, 8 - 44121 Ferrara (IT)  
via Della Ghiara, 36 - 44121 Ferrara (IT)  
[www.unife.it/architettura](http://www.unife.it/architettura)



**Department of Architecture**  
via Quartieri, 8 - 44121 Ferrara (IT)  
[www.unife.it/dipartimento/architettura](http://www.unife.it/dipartimento/architettura)



**Architettura>Energia Research Centre**  
Tassoni Estense Palace, mezzanine floor  
Via della Ghiara, 36 - 44121 Ferrara - ITALY  
e-mail: [ae@unife.it](mailto:ae@unife.it) | ph./fax: +39 0532 293631  
[www.unife.it/centro/architetturaenergia](http://www.unife.it/centro/architetturaenergia)

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