

Historical buildings retrofit in the mediterranean area

Retrofit di edifici storici nell'area del mediterraneo

Matera Italy

May 12th • 13th, 2017



Patronages



REGIONE BASILICATA



International Council on Monuments and Sites



Collegio Geometri e Geometri Laureati
Provincia di Matera



HISTORICAL BUILDINGS RETROFIT IN THE MEDITERRANEAN AREA

Climamed 2017 - Matera, 12 -13 maggio 2017

Palazzo Viceconte—Via San Potito 7 Matera— 9.00 a.m.

WELCOME TO CLIMAMED 2017

Energy Retrofit is an extremely interesting challenge for engineers, architects, designers.

If we focus our attention on historical buildings the challenge is formidable. Many countries overlooking the Mediterranean have a rich historical and cultural heritage. The challenge posed by their energy retrofit is stimulating and, to some extent, necessary. Interventions in historical buildings must be carefully designed and defined both for the existence of static and/or historical constraints, both for use requirements, operational, maintenance and cost.

The energy performance of buildings shall be defined on the basis of methodologies which include, in addition to thermal characteristics, other factors that play an increasingly important role such as heating and air-conditioning installations, application of energy from renewable sources, passive heating and cooling elements, shading, indoor air quality, thermal comfort, adequate natural light and satisfactory indoor noise level.

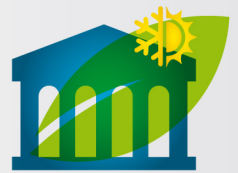
To provide answers to these challenges AiCARR, the Italian Association of Air Conditioning, Heating and Refrigeration, organizes jointly with AICVF (France), ATECYR (Spain) and TTMD (Turkey) its 9th Mediterranean Congress CLIMAMED with the main scope "Retrofit of historical buildings in mediterranean area". In addition to the presence of international speakers (engineers, architects, designers and manufacturers alike can share information and expertise), we will organize a series of workshops, some of which specifically dedicated to aspects of the renovation. On behalf of the Organizing Committee, we invite you to join us in Matera for the 2017 edition of CLIMAMED.

Convegno accreditato dal CNPI. La partecipazione all'evento conferisce n. 6 crediti formativi ai fini della formazione continua per i Periti iscritti ai Collegi

Credit Formativi richiesti ai fini della formazione continua degli Ingegneri. L'effettiva assegnazione è subordinata all'approvazione da parte del CNI .

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May 12th, 2017 — PRELIMINARY PROGRAMME

9,00 a.m. Participants registration

10,30 a.m. **Opening Ceremony and Plenary Session**

Welcome addresses

Francesca R. d'Ambrosio, *AiCARR President*

Raffaello De Ruggieri, *Major of Matera*

Livio de Santoli, *Climamed Board President*

Stefano P. Corgnati, *REHVA President*

Bjarne Olesen, *ASHRAE President-elect*

Bertrand Montmoreau, *AICVF Association, France, Climamed Board*

Julio Cano Lacunza, *ATECYR Association, Spain, Climamed Board*

Sarven Çilingiroğlu, *TTDM Association, Turkey, Climamed Board*

11,00a.m. **General introductory speech:**

Livio de Santoli, *Climamed Board President*

11,30 a.m. **Cultural Heritage and Retrofit of Historical Buildings Evaluations of Restoration Issues**

Giovanni Carbonara, *Dept. of Specialisation in Architectural Heritage and Landscape Rome University "Sapienza"*

12,00 p.m. **Matera architectural restoration**

Amerigo Restucci, *Comitato Italiano ICOMOS—Dean of Venice University*

12,30 p.m. **Art, culture and environment: from the memory of the past to a project for the future in the Art. n. 9 of the Italian Constitution**

Giovanni Maria Flick, *President Emeritus of the Italian Constitutional Court*

1,00 p.m. **Lunch**

2,30 p.m. **Hassan Fathy Award**

2,45 p.m. **Technical simultaneous sessions**

4,15 p.m. **Break**

4,30 p.m. **Technical simultaneous sessions**

5,45 p.m. **Closure of the day's work**

8,30 p.m. **Gala Dinner**

May 13th 2017 — PRELIMINARY PROGRAMME

8,00 a.m. Participants registration

9,00 a.m. **Technical simultaneous sessions**

10,30 a.m. **Break**

10,45 a.m. **Technical simultaneous sessions**

12,00 p.m., **Closing Ceremony - End of the Conference**

Simultaneous translation is provided exclusively in Sala Grande



TECHNICAL SESSION 1 SALA GRANDE
Indoor and outdoor climate: how to design the retrofit in the Mediterranean basin
Chairman: Ahmet Arisoy, Istanbul Technical University, Turkey

14,45 **Microclimate of territory of Matera and the heat island effect**
Gianluca Rospi, Elisabetta Negro, Nicola Cardinale, *Università degli Studi della Basilicata, Dipartimento delle Culture Europee e del Mediterraneo – Matera*
Tiziana Cardinale, *Centro Ricerche Enea Trisaia, Rotondella, Matera*

15,00 **Statistical analysis of the heating demand in residential buildings located in Mediterranean climate and proposals for refurbishment**
Natale Arcuri, Roberto Bruno, Cristina Carpino, *Department of Mechanical, Energetic and Management Engineering (DIMEG), University of Calabria*

15,15 **Heating, ventilating, and cooling impacts of double windows on historic buildings in Mediterranean area**
Mike Coillot, Mohamed El Mankib, Richiard Cantin, *Department of Civil and Building Engineering, Ecole Nationale des Travaux Publics de l'Etat, University of Lyon, France*

15,30 **Thermal inertia of heavyweight traditional buildings: experimental measurements and simulated scenarios**
Giampiero Evola, Luigi Marletta, *Dipartimento di Ingegneria Elettrica, Elettronica e Informatica, University of Catania*
Sukumar Natarajan, Elisabetta Patanè, *Free-lance professional Engineer, Bologna*
Lamberto Tronchin, *Dipartimento di Ingegneria Industriale, Università di Bologna*

15,45 **Integration time step issue in Mediterranean Historic Building energy simulation**
Livio Mazzarella, Martina Pasini, *Dipartimento Energia, Politecnico di Milano*

16,00 **A PC-tool to calculate the Moisture Buffer Value**
Inaki Gomez-Arriaran, Isabel Sellens-Fernandez, Moises Odriozola-Maritorea, Aitor Erkoreka-Gonzalez
Department of Thermal Engineering, University of the Basque Country

TECHNICAL SESSION 1 SALA DELLA MUSICA
Cases study: measured performance
Chairman: Julio Cano Lacunza, Ingeniero Industrial Lco. en CC. Económicas y Empresariales

14,30 **Environmental monitoring and building simulation application to Vasari Corridor: preliminary results**
Cristina Carletti, Gianfranco Cellai, Leone Pierangioli, Fabio Scurpi, *Laboratory of Environmental Physic for Building Quality, University of Florence*
Maurizio Crisante Annalisa Orsi, Antonio Russo, Giuseppe Russo, Eike D. Schmidt, *Uffizi Gallery - Florence*
Virgilio Muratore, *Building and Architectural Engineer – Trieste*

14,45 **The energy efficiency challenge for a historical building undergone to seismic and energy refurbishment**
Ioele Nardi, Tullio De Rubeis, Dario Ambrosini, Stefano Serra, *Department of Industrial and Information Engineering and Economics, University of L'Aquila*
Marilena Taddei, *Campus Bio-Medico, University of Rome*

15,00 **Keeping it modern, making it sustainable. Monitoring and energy retrofitting the Collegi by Giancarlo De Carlo in Urbino**
Cesare Maria Joppolo, Davide Del Curto, Andrea Luciani, Luca Pietro Valisi, Mara Bellebono, *Climate Energy Cultural Heritage (C.E.C.H.) Laboratory, Politecnico di Milano*

15,15 **A successful story of PV integration in historic building**
Myriam Perna, *Solbian Ltd – Avigliana, Torino*
Valentina Cari, *Free-lance Professional – Bellano, Lecco*

15,30 **Assessment of the indoor ambient conditions of a baroque library in Portugal**
Luísa Dias Pereira – Adélio Rodrigues Gaspar – José Joaquim Costa, *ADAI, LAETA, Department of Mechanical Engineering, Faculty of Sciences and Technology, University of Coimbra, Portugal*

15,45 **Analysis and exploitation of the stack ventilation in the historic context of high architectural, environmental and landscape value**
Eleonora Laurini – Annalisa Taballione – Marianna Rotilio – Pierluigi De Berardinis, *Department of Civil, Architectural and Environmental Engineering, University of L'Aquila*

TECHNICAL SESSION 1 SALA DEI TAROCCHI
Cases study: simulated performance
Chairman: Francis Allard, Laboratoire des Sciences de l'Ingénieur pour l'Environnement University of Rochelle, France

14,30 **Energy retrofitting of dwellings from the 40's in Borgata Trullo - Rome**
Livio de Santoli, *Department of Astronautics, Electrical and Energy Engineering, Sapienza University of Rome*
Francesco Mancini, Serena Ridolfi, *Department of Planning, Design and Technology of Architecture, Sapienza University of Rome*
Benedetto Nastasi, *Department of Architectural Engineering & Technology, TU Delft University of Technology, The Netherlands*

14,45 **Applying underfloor heating system for improvement of thermal comfort in historic mosques: the case study of Salepçioğlu Mosque, Izmir, Turkey**
Khaled S. M. Bughara *Energy Engineering Programme, Izmir Institute of Technology, Gülbahçe, Urla, Izmir, Turkey*
Zeynep Durmuş Arsan, *Department of Architecture, Izmir Institute of Technology Gülbahçe, Urla, Izmir, Turkey*

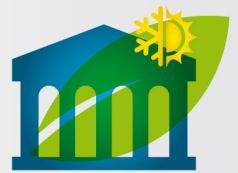
Gülden Gökçen Akkurt, *Department of Energy Systems Engineering, Izmir Institute of Technology, Gülbahçe, Urla, Izmir, Turkey*

15,00 **Recovery of ancient bioclimatic strategies for energy retrofit in historical buildings: the case of the Infants' Tower in the Alhambra**
Silvia di Turi, *Construction Technologies Institute, National Research Council – Bari*
Luis José García Pulido, *Department of Art and Architecture, Design and Projects, University of Malaga, Spain*
Francesco Ruggiero, Pietro Stefanizzi, *DICAR, Department of Civil Engineering and Architecture, Polytechnic University of Bari*

15,15 **Experimental and numerical investigation of the effects of wind exposure on historical towns**
Fausto Arpino, Manuel Caschera, Assunta Pelliccio, Gino Cortellessa, *Dipartimento di Ingegneria Civile e Meccanica, Università degli Studi di Cassino e del Lazio Meridionale*
Andrea Frattolillo, *Dipartimento di Ingegneria Civile, Ambientale e Architettura, Università di Cagliari*

15,30 **Reuse of an ancient church: thermal aspect for integrated solutions**
Giovanni Semprini, *D.I.N. - University of Bologna*
Claudio Galli, *D.A.. - University of Bologna*
Silvia Farina, *Free-lance Professional – Bologna*

15,45 **Energy retrofit of historic buildings in the Mediterranean area: the case of the Palaeontology Museum of Naples**
Diana D'Agostina, Concetta Marino, Francesco Minichiello, *University of Naples Federico II, Department of Industrial Engineering, Naples*
Filippo De' Rossi, Francesco Russo, *University of Sannio, Department of Engineering, Benevento*



TECHNICAL SESSION 2 SALA GRANDE

Cases study & Tools

Chairman: Piercarlo Romagnoni, Università IUAV di Venezia

16,30 **Energy efficiency, heritage conservation, and landscape integration: the case study of the San Martino Castle in Parella (Turin, Italy)** Matteo Serraino, *Manitalidea spa, Ivrea, Torino*
Elena Lucchi, *Eurac Research, Bolzano*

16,45 **The “new” Salone de’ Dugento: The Medici tapestries return home to Palazzo Vecchio**
Enzo Ferloni, *Mitsubishi Electric Europe B.V. Italy Branch – Agrate Brianza, Monza*
Claudia Calabrese, *Free lance Professional, Milan*

17,00 **Restoration work of properties located within the “Sassi” of Matera: a case study of some types of installations**
Gennaro Loperfido, *Mariapia Colella, Freelancer, B&L Team, Matera*
Roberto Barro, *Freelancer, B&L Team, Udine*
Alessandro Temperini, *Freelancer, B&L Team, Fermo*

17,15 **Sustainability for the minor construction rehabilitation in Liguria: the rehabilitation of the village of Balestrino**
Marco Della Rocca, *Department of Architecture and Design, Politecnico di Torino*

17,30 **GIS tools towards a renovation of the building heritage**
Paola Caputo, *Giulia Pasetti, Department of Architecture, Built environment and Construction engineering, Politecnico di Milano*

TECHNICAL SESSION 2 SALA DELLA MUSICA

Cases study: economic optimization

Chairman: Livio Mazzarella, Dip. Energia, Politecnico di Milano

16,15 **Energy renovation strategies for historical buildings: cost-optimal analysis for a case study in Catania (Sicily)**
Simona Cirami, *Giuseppe Margani, Department of Civil Engineering and Architecture, University of Catania*

Gianpiero Evola, *Antonio Gagliano, Department of Electrical, Electronic and Computer Engineering, University of Catania*

16,30 **Energy and technological refurbishment of the School of Architecture Valle Giulia, Rome**
Livio de Santoli, *Department of Astronautics, Electrical and Energy Engineering, Sapienza University of Rome*
Francesco Mancini, *Carola Clemente, Stefano Lucci, Department of Planning, Design and Technology of Architecture, Sapienza University of Rome*
Benedetto Nastasi, *Department of Architectural Engineering & Technology, TU Delft University of Technology, The Netherlands*

16,45 **Historical buildings retrofit: the city hall of the city of Motta di Livenza (Treviso)**
Alessandro Righi, *Tiziano Dalla Mora, Fabio Peron, Piercarlo Romagnoni, Department of Design and Planning in Complex Environments, University IUAV of Venice*

17,00 **Evaluation of refurbishment alternatives for an Italian vernacular building considering architectural heritage, energy efficiency and costs**
Cristina Becchio, *Stefano P. Corgnati, Giorgia Spigliantini, Department of Energy, Politecnico di Torino*

17,15 **The “Cost Optimality” approach for the internal insulation of historic buildings**
Elena Lucchi, *Alexandra Troi, Eurac Research, Bolzano*
Magdalena Tabak, *La Sapienza Università, Roma*

TECHNICAL SESSION 2 SALA DEI TAROCCHI

Cases study: simulated performance

Chairman: Stefano P. Corgnati, Dip. Energia, Politecnico di Torino

16,15 **A study on the energy performance of a ground source heat pump utilized in the refurbishment of an historical building: comparison of different design options**
Claudia Pacchiega, *Free-lance Professional, Ferrara*
Patrizio Fausti, *Engineering Department, University of Ferrara*

16,30 **The effect of spatial interventions on historic buildings' indoor climate (Case Study: Tire Necip Paşa Library, Izmir- Turkey)**
Turgay Coskun, *Özcan Gülhan, Energy Engineering Programme, Izmir Institute of Technology, Izmir, Turkey*
Cem Dogan Sahin, *Department of Mechanical Engineering, Izmir Institute of Technology, Izmir, Turkey*
Zeynep Durmus Arsan, *Department of Architecture, Izmir Institute of Technology, Izmir, Turkey*
Gülden Gökçen Akkurt, *Department of Energy Systems Engineering, Izmir Institute of Technology, Izmir, Turkey*

16,45 **Energy retrofit and environmental sustainability improvement of historical farm in south Italy**
Paolo Maria Congedo, *Cristina Baglivo, Ilaria Zaca', Department of Engineering for Innovation, University of Salento, Lecce*
Delia D'Agostino, *Energy efficiency and Renewables Unit, Institute for Energy and Transport (IET), Joint Research Centre (JRC) - European Commission, Ispra (VA), Italy*
Fabrizio Quarta, *Alessandro Cannoletta, Antonio Marti, Luciano Ostuni, Department of Economic Sciences, University of Salento*

17,00 **Adaptive reuse with low budget: a new methodology for the renovation of historical buildings. The former fire station in Ferrara**
Claudia Pacchiega, *ArchLivIng S.r.l – Ferrara*
Ilaria Fabbri, *Marco Negri, Gabriele Lelli, OURlab – Ferrara*



TECHNICAL SESSION 3 SALA GRANDE

Cultural heritage and historical buildings: conservation and sustainability

Chairman: Francesca R. d'Ambrosio, Dip. Ingegneria Industriale, Università degli Studi di Salerno, Presidente AiCARR

9,00 Heritage and Climate Changes in Romania: The St. Nicholas Church of Bunas, from Degradation to Restoration

Mihaela Stela Georgescu, Cristina Victoria Ochinciuc, *University of Architecture and Urbanism "Ion Mincu", Bucharest, Romania*

Emil Sever Georgescu, *NIRD URBAN-INCERC, Bucharest, Romania*

Iolanda Colda, *Technical University of Civil Engineering, Bucharest, Romania*

9,15 UNESCO's Historic Centre of Porto: rehabilitation and sustainability

Paulo Valenca, *Architect and Director at Porto Vivo, Society for Urban Rehabilitation, Porto, Portugal*

Hugo Santos, *R&D Unit Director at INEGI, Porto, Portugal*

Eduardo Oliveira Fernandes, *Emeritus Professor at the Faculty of Engineering of the University of Porto, Portugal*

9,30 Learning from Casbah of Algiers for more Sustainable Environment

Nagme Ebru Aydeniz, *Department of Interior Architecture, Yasar University, Izmir, Turkey*

Nadja Fellahi, *Department of Architecture, Batna University, Algeria*

9,45 Analysis of the evapotranspiration processes in The Sassi of Matera

Francesca R. d'Ambrosio Alfano, *Department of Industrial Engineering, DIIN, University of Salerno* Settimio Ferlisi, *Department of Civil Engineering, DICIV, University of Salerno*

Boris I. Palella, Giuseppe Riccio, *Department of Industrial Engineering, DII, University of Napoli Federico II*

10,00 An analysis on technological plant retrofitting on the behaviour structures of 19th century Traditional Historical Buildings (THB) in Rome

Rosa Flavio, *CITERA Centro di Ricerca Interdipartimentale Territorio Edilizia Restauro Ambiente, Architecture Faculty Sapienza University of Rome* Carbonara Elisa, *Department of Astronautical, Electrical and Energy Engineering (DIAEE), Sapienza University of Rome*

10,15 Heritage BIM, Numerical Simulation and Decision Support Systems: an integrated approach for historical buildings retrofit

Elena Gigliarelli, Filippo Calcerano, Luciano Cessari, *Institute for Technologies Applied to Cultural Heritage, National Research Council of Italy, Montelibretti*

TECHNICAL SESSION 3 SALA DELLA MUSICA

HVAC systems: equipment performance in historical buildings

Chairman: Marco Filippi, Dip. Energia, Politecnico di Torino

9,00 HVAC solutions for energy retrofitted hotel in Mediterranean area
Cristina Becchio, Stefano P. Corgnati, Giulia Crespi, *Department of Energy, Politecnico di Torino*

Michele Vio, *RHOSS Consultant – Arquà Polesine, Rovigo*

Leonardo Prendin, Mattia Magagnini, *RHOSS, Gruppo IRSAP – Arquà Polesine Rovigo*

9,15 Air distribution systems for historic buildings – A case study

Luigi Cinquanta, Benedetta Bedendo, *Sagicofim spa, Cernusco sul Naviglio, Milano*

Claudio Bertolini, Luca Dagrada, *General Planning srl, Milano*

9,30 The inclusion of chillers and heat pumps in historical contexts: the case of Venice

Michele Vio, *Studio Associato Vio - Venice - AiCARR Past President*

Alessandra Vio, *Studio Associato Vio - Venice*

9,45 The polyvalent heat pumps technology in retrofit of existing HVAC systems

Michele Vio, *RHOSS Consultant – Arquà Polesine, Rovigo*

Michele Babuin, Silvia Morassutti, *RHOSS, Gruppo IRSAP – Arquà Polesine Rovigo*

Cristina Becchio, Stefano P. Corgnati, Giulia Crespi, *Department of Energy, Politecnico di Torino*

10,00 Energy and economic analysis of an underground water source heat pump system for a historical valuable building

Marco Noro, Renato Lazzarin, *Department of Management and Engineering, University of Padova*

Andrea D'Ascanio, *Studio Centro Energia srl – Vicenza*

10,15 Ground source heat pump systems in historical buildings. two Italian case studies

Giuseppe Emmi, Angelo Zarrella, Michele De Carli, Stefano Moretto, *Department of Industrial Engineering - University of Padova*

Antonio Galgaro, Matteo Cultrera, *Department of Geoscience - University of Padova*

Adriana Bernardi, *CNR-ISAC of Padova*



TECHNICAL SESSION 4 SALA GRANDE

HVAC systems: application of new techniques for HVAC

Chairman: Cesare Maria Joppolo, Dipartimento Energia, Politecnico di Milano

10,45 Dynamic setpoint calculation including collection and comfort requirements: energy impact for museums in southern Europe

Rick Kramer, Jos Van Schijndel, Henk Schellen, *Department of the Built Environment, Eindhoven University of Technology – Eindhoven, the Netherlands*

11,00 Innovative Hybrid CHP systems for high temperature heating plant in existing buildings

Livio de Santoli, Gianluigi Lobasso, *Department of Astronautics, Electrical and Energy Engineering (DIAEE), Sapienza University of Rome*
Benedetto Nastasi, *Department of Architectural Engineering & Technology, Environmental & Computational Design Section, TU Delft University of Technology, NL*

11,15 Low thickness radiant systems for renovation and better efficiency

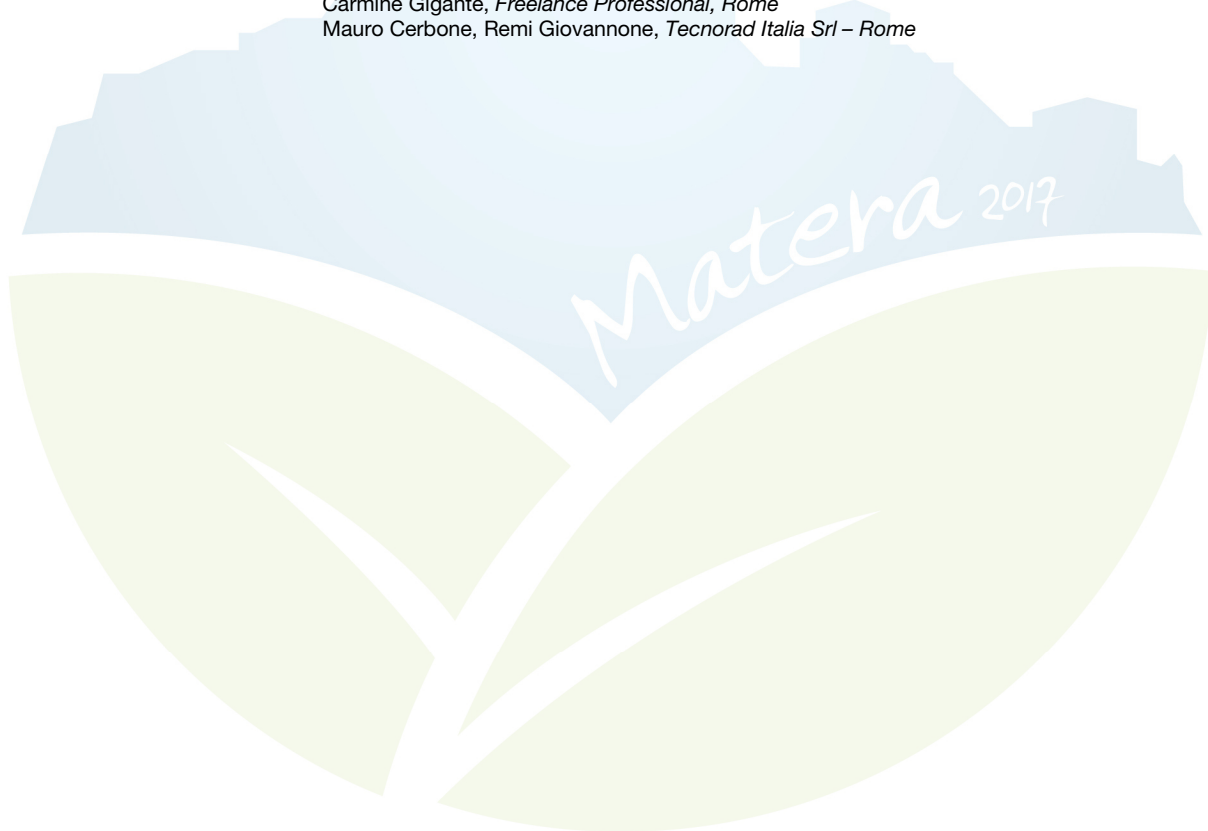
Roberto Torreggiani, Matteo Pastore, *Giacomini S.p.A. San Maurizio d'Opaglio Novara*

11,30 Application of new equipment for retrofit in the historical buildings: comparative analysis of systems in three different Mediterranean areas

Filippo La Rosa, Daniela Petrocelli, *Daikin Air Conditioning Italy, San Donato Milanese, Milano*

11,45 Smart metering and HVAC retrofit of an ancient Vanvitellian building: proof of Concept

Carmine Gigante, *Freelance Professional, Rome*
Mauro Cerbone, Remi Giovannone, *Tecnorad Italia Srl – Rome*





CONFERENCE FEES

The registration fee includes Entrance to the Scientific Meeting and business Lunch

Participants	Early bird within April 10 th , 2017	After April 10 th , 2017
AiCARR, AICVF, ATECYR, TTMD Members	350,00	450,00
ASHRAE, IIR, REHVA Members	400,00	500,00
Non Members	500,00	600,00
AiCARR AICVF, ATECYR, TTMD Members (free papers)	300,00	400,00
ASHRAE, IIR, REHVA Members (free papers)	350,00	450,00
Speakers non Members (free papers)	450,00	550,00
AiCARR AICVF, ATECYR, TTMD Students members (max 30 years old)	50,00	80,00
Students non members (max 30 years old)	100,00	150,00
Accompanying persons (not included the entrance)	150,00	250,00
Gala Dinner	80,00	80,00

50th International Conference + Climamed 2017 May, 10-11-12-13

CONFERENCE FEES

The registration fee includes Entrance to the Scientific Meeting and business Lunch

Participants	Early bird within April 10 th , 2017	After April 10 th , 2017
AiCARR, AICVF, ATECYR, TTMD Members	650,00	750,00
ASHRAE, IIR, REHVA Members	700,00	800,00
Non Members	800,00	900,00
AiCARR AICVF, ATECYR, TTMD Members (free papers)	600,00	700,00
ASHRAE, IIR, REHVA Members (free papers)	650,00	750,00
Speakers non Members (free papers)	750,00	850,00
AiCARR AICVF, ATECYR, TTMD Students members (max 30 years old)	80,00	120,00
Students non members (max 30 years old)	180,00	240,00
Accompanying persons (not included the entrance to the scientific meeting)	250,00	350,00
Gala Dinner	80,00	80,00