Contents

Chair's Welcome Message

It is a pleasure to welcome you to Lisbon, for the *International Conference on Sustainability in Energy and Buildings*.

During the next couple of days, we will gather to present research work and new directions in the fields of sustainable buildings, energy systems and cities, renewable energy technologies and resource efficiency. In addition, you will have the opportunity to attend four keynote talks given by prominent researchers, who will share their scientific and technological activities in sustainability in energy and buildings.

Lisbon is the capital of Portugal and the westernmost city in Continental Europe. Known as the city of seven hills, Lisbon combines a rich historical centre, diverse architectural sights, beaches, and a delicious gastronomy. Take some time to walk around the city centre, visiting Chiado, Bairro Alto and Baixa, do some shopping at Rua Castilho or Avenida da Liberdade. Make your way to Belém to see the place from where the Portuguese explorers set sail to discover the world, and do not miss the beautiful sunset on the Rio Tejo.

On behalf of UNINOVA, the local organiser of the conference, I wish you a successful and exciting couple of days at beautiful Lisbon. I am at your disposal to make your stay more enjoyable.

Ana Rita Campos
Senior Researcher at UNINOVA
General Chair

Organisation

General Chairs
Ana Rita Campos
UNINOVA, Portugal

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Robert J. Howlett
Bournemouth University, UK

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John Littlewood, Cardiff Metropolitan University, Wales, UK
Catalina Spataru, University College London, UK
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Rui Neves-Silva, Universidade Nova de Lisboa, Portugal
Marta Gamito, UNINOVA, Portugal

KES International
SEB-15 is a part of the Sustainability in Energy and Buildings conference series run by
KES International.

Previous conferences
SEB-09: Brighton, UK
SEB-10: Brighton, UK
SEB-11: Marseilles, France
SEB-12: Stockholm, Sweden
MGEF-13: Fes, Morocco
SEB-14: Cardiff, UK

International Programme Committee

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Mr. Nick Evans	Cardiff Metropolitan University
Dr. Fátima Farinha	Universidade do Algarve, Portugal
Prof.Antonio Gagliano	University of Catania, Italy

Name	Affiliation
Prof. Steve Goodhew	University of Plymouth, UK
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Mr. Emeka Efe Osaji	Energy Globe Foundation and World Award for Sustainability
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Prof. João Ramos	Polytechnic Institute of Leiria, Portugal
Prof. Susan Roaf	Architectural Engineering, Heriot Watt University, Edinburgh, UK
Dr. Eric Roberts	Chartered Institution of Building Services Engineers (CIBSE)

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Mr Paul Wilgeroth	Cardiff Metropolitan University, UK
Prof. Pieter de Wilde	Plymouth University, UK

Keynote Speakers

Dr Alfonso Capozzoli
Politecnico di Torino, Italy

Extracting knowledge from building energy data

Abstract: Nowadays, performance monitoring systems and energy management in buildings provide an opportunity to collect a large amount of building-related data. Thanks to adoption of information and communication technology in buildings, a growing number of complex databases becomes available. As a consequence, there is an increasing need to analyse a great amount of heterogeneous data and information. Building related data potentially contain knowledge about the interactions between the building's energy consumption and its most influencing factors. Therefore, the energy data can provide information about the building operation modes, making it possible to improve management and reduce the energy demand. Retrieving the hidden knowledge that can be extracted from these data is highly desirable for improving the building energy performance. However, exploring such data and understanding the underlying energy patterns is a complex issue. For this purpose, intelligent data analysis techniques (e.g. data mining, machine learning) can be used to reveal hidden dependences and to support decision of energy efficiency measures for users, owners and operators. Expertise in building physics is needed when these techniques are used for building applications, in order to properly select the attributes related to the demand objectives, to choose the most suitable methodology to adopt, and to interpret the extracted knowledge for practical uses.
Significant applications of data analysis in the building sector concern the classification of consumption profiles and characterisation of occupant behaviour, the evaluation of energy benchmarks, the prediction of energy consumption and peak power demand as well as the fault detection and diagnosis analysis.
In this keynote the aforementioned issues and several applications in the building physics sector are discussed with the aim to clarify how the process of discovering knowledge through energy data analysis is today an important opportunity to drive and to plan the strategies for energy efficiency.

Biography: Alfonso Capozzoli graduated in Mechanical Engineering and obtained a PhD in Mechanical Engineering Systems at University of Naples Federico II. Currently he works as assistant professor -with a tenure track position for associate professor-

at the Department of Energy of Politecnico di Torino. From 2014 he is qualified for associate professor position (Italian Ministry for University and Research). He teaches HVAC systems and building physics at the Faculty of Engineering and Architecture.

During the PhD, his research activity was related to HVAC systems, energy performance dynamic simulation in buildings, thermal building physics, indoor humidity control analysis, energy saving strategies in air conditioning.

More recently his research fields have been focused on inverse modeling, smart building in smart cities, fault detection and diagnosis, energy data analysis, thermal management in data centers and super insulating materials in building components.

He was member of the Directive Board of IBPSA-Italy (International Building performance Simulation Association) and he is an expert within CTI (Italian thermo-technical committee) on energy certification and building energy performance.

He was chairman in several technical sessions in international conferences on building energy performance. He has been member of the Scientific or Organizing Committee of the following conferences: IBPSA-Italy Conference Building Simulation Applications (BSA 2013, BSA 2015), International Building Physics Conference (IBPC 2015), International Conference on Sustainability in Energy and Buildings (SEB 2014, SEB 2015), 12th International Conference on the European Energy Market (EEM15).

He is involved as principal investigator in International Research Projects on building energy performance financed by European Commission. He is active in various research groups of the International Energy Agency (IEA- EBC) and in the Joint Program "Smart Cities" in EERA (European Energy Research Alliance).

Alfonso Capozzoli has been responsible for different research/consultancy scientific contracts of the Department of Energy at the Politecnico di Torino and for research projects financed by the Italian Ministry of Economic Development and ENEA (Italian National Energy Agency).

He is reviewer for some of the most relevant international journals in the building physics sector e.g.: Applied thermal engineering, Building and Environment, Journal of Cultural Heritage, Energy efficiency, Applied Energy, Neurocomputing, Expert systems with applications, Measurement.

His research activity is summarized in more than 70 scientific papers published in international journals and conference proceedings.

Prof. Antonio Gagliano
University of Catania, Italy

Envelope Renovation to improve energy efficiency in existing buildings

Abstract: Energy renovation has implications for growth and jobs, energy and climate and cohesion policies. The building and real estate management sector is responsible for more than one-third of the total, primary energy demand in the industrialized countries. At the same time, the building sector is identified as providing the largest potential for CO_2 reduction. Many countries across the world have set very ambitious targets for energy efficiency improvements in new and existing buildings. Given this context the European Union trying to meet its ambitious climate and energy targets for 2020 and 2050 have introduced several legislative initiatives for building renovation. Such as implementing energy efficiency measures for major renovations and economic support instruments to stimulate the renovation of the existing building stock.

The EPBD also asked EU Member States to establish strategies for the renovation of national building stocks, as well as to renovate 3 % of the building stock of central governments annually to a high-energy performance level.

For successfully achieve such a target it is necessary to identify and develop innovative technologies, which facilitates energy savings and the implementation and integration of renewable energy devices within the built environment. The potential benefits and the challenges posed by these new technologies need to be investigated and defining the methodology for studying and testing such components for analysing their thermal and energy performances.

The most relevant results of a decade-long research activity (numerical and experimental studies) carried out on various building envelope components, will be presented.

Biography: Antonio Gagliano is Aggregate Professor at the Department of Industrial Engineering of Catania University, Italy. He holds a M.S. Environmental Engineering (1991) and a Ph.D. (1995-1998) in Applied Building Physics.

His research and teaching subjects are within environmental engineering and are focused on the following topics: Energy-efficient building design (Net zero energy buildings, design of low energy buildings - numerical modelling of ventilated facades (computational fluid dynamics), night cooling of buildings and utilization of thermal mass, passive energy technologies for buildings, indoor thermal comfort), Building Acoustic, Renewable Energy (Solar thermal system, Biomass, micro wind turbine), application of GIS as support tool for energy planning.

Antonio has been responsible/participant for more than 10 research/consultancy contracts of the Department of Industrial Engineering at the University of Catania and research projects financed by the Italian Ministry of Education and Regional Authorities. He is a member of the Scientific Committee of the following conferences: ICREPQ - International Conference on Renewable Energy and Power Quality, IREC - International Renewable Energy Conference, SEB -Sustainability in Energy and Building, MGEF, Mediterranean Green Energy.

He is a reviewer for some of the most relevant international journals in the sector, e.g.: Energy, Building and Environment, Energy and Building, Thermal Science, Energy Conversion and Management, Energy Efficiency, Building, Sustainable Cites and Societies ,International Journal of heat and mass transfer, International Journal of Thermal Science, Journal of Computational Environmental Sciences.

His research activity is summarized in more than 90 scientific papers published in national and international conference proceedings, as well as national and international journals and books.

Prof. Rui Neves-Silva
Universidade Nova de Lisboa, Portugal

Model-based decision making to support energy efficiency investments

Abstract: It has been identified by many studies that the main driver for energy efficiency is cost reduction. After an initial stage of the energy efficiency process in which we can have large reductions just by applying obvious and almost costless measures, the additional gains require the deviation of financial resources that compete with other investment possibilities, including financial investments.

The typical measures and technologies in the market for energy efficiency are, nowadays, well supported by the literature, standards, vendors and consultants. The knowledge about what is available to face each challenge in energy consumption is somehow available. Nonetheless, the lack of precise knowledge about the return on investment has been identified by market players as a major barrier to convince investors towards energy efficiency. While for the basic energy efficient measures, the rules of thumb regarding typical payback periods (and associated risk) for the investments are considered trustworthy, the return on additional investments is very much dependent on the specific aspects of each case, undermining the confidence of the investor when compared with more explained alternatives.

This keynote presents a model-based decision support methodology based on the simulation of possible investment alternatives (i.e. technical solutions) for energy efficiency. The goal is to provide the investor (with the support of a technical consultant) well supported evidence on the source of each cash-flow item. The proposed approach has been applied in the scope of two European projects, the first in energy efficiency in office buildings, and the second in energy efficiency in manufacturing plants.

Biography: Developed his PhD in Electrical and Computers Engineering in 2000 in the Technical University of Lisbon in the area of modelling and control of industrial plants. Has been Senior Researcher at UNINOVA since January 2001 where he is responsible for the research group on Intelligent Control and Decision Support Systems. He is an Assistant Professor at the Department of Electrical Engineering of the Faculty of Science and Technology of the Universidade Nova de Lisboa (FCT/UNL), where he is responsible for the courses on Control Engineering. Experience in 19 National and European projects (including global coordination) in the scientific area of decision and control engineering, has published more than 50 publications in International Scientific Journals (CEP, IEEE CST, IJPC) and International Conferences relevant to the decision and control engineering area. He is also one of the co-founders of the

company inknow-solutions, dedicated to the exploitation of the knowledge developed in 10 years of EU funded projects.

Prof. Despina Serghides
Cyprus University of Technology, Cyprus

Energy Efficient Refurbishment towards Nearly Zero Energy Houses, for the Mediterranean Region

Abstract: The building sector in Europe is responsible for an estimated 40% of the total energy consumption and 10% of the total CO_2 emissions. Given that new buildings represent only about 1% of the housing stock annually, it is estimated that more than 80% of the existing buildings will still exist in 2020. Therefore, the energy efficient renovation of the existing housing stock is imperative in order to reduce the building energy consumption. It is for this reason that the European Union ranked the improvement of the energy performance of the old building stock, as a high priority in its research agenda. Following Europe's 20:20:20 objective, this case study investigates refurbishment scenarios in order to achieve Nearly Zero Energy houses, in Cyprus.

The research focuses on the Single Family House typology, as classified in previous studies for Cyprus, in the framework of the IEE, EU project EPISCOPE and specifically on retrofitting an old house that was built before 1980. The aim is to upgrade it into a Nearly Zero Energy Building (nZEB) with the implementation of the national energy performance requirements, as drafted by the Ministry of Energy, Commerce, Industry and Tourism (MECIT). Following the EPISCOPE project methodology, a representative Single Family House from the corresponding residential building typology in Cyprus was chosen and modeled using the iSBEMcy tool. This is the official governmental software in Cyprus used for issuing Energy Performance Certificates (EPC), for the categorization of the energy class of the building and the calculation of the CO_2 emissions according to the European Directives 2002/91/EC and 2010/31/EC.

The study investigates whether it is possible for an old Single Family House to reach the nZEB standards and identifies the lurking obstacles and challenges, through building simulations. To this end, various refurbishment scenarios were developed, with the implementation of strategies aiming at fulfilling the MECIT requirements. Through analysis of the results, the efficiency of each strategy and technique employed towards minimising the energy consumption and the greenhouse gas emissions was evaluated, in terms also of its cost effectiveness. Furthermore, the results of the research were investigated in order to assess whether the nZEB requirements, as developed by the MECIT, are appropriate for the existing single-family houses in Cyprus and whether alternative strategies may be employed in order to meet the target of nZEB and to reduce effectively the energy consumption.

Biography: She is Professor in Bioclimatic Architecture and the Urban Environment and the vice chair of the Department of Environmental Science and Technology, at the Cyprus University of Technology. She is scientific coordinator of European projects and she carries out research in bioclimatic Architecture, energy conscious building design for sustainable indoor and outdoor environments. The architectural design and concepts of her research have been presented and discussed at international congresses, fora and conferences and most of it has been published in international journals and proceedings. She studied Architecture at the Architectural Association School of Architecture (AA) London, UK. She continued postgraduate studies in Planning at the Planning Department of the AA. Also from the AA she obtained her Master and Doctorate in "Architecture - Energy & Environment". She is the president of the International Solar Energy Society of Cyprus (ISES) and member of the Board of Directors of ISES-Europe of which she was the president. She has acted as a consultant for the Cyprus Government and Parliament and has been the national scientific representative of the National Scientific and Technical Co-operations with Greece and China. She gives lectures at National and international Universities and Institutes. She is on editorial boards and a reviewer in scientific journals and international conferences. She was honored with a lot of scholarships, awards and offices. She chairs and participates in organizing and scientific committees of International and National conferences, seminars and congresses of which she is invited plenary or and keynote speaker and presents papers.

Day 1 – Wednesday – 01.07.15

Registration Opening
18:00

Welcome Cocktail
19:00

Day 2 – Thursday – 02.07.15

Registration

Conference Opening

09:00 — Plenary Keynote Talk
Dr. Alfonso Capozzoli
Roma 1

10:00 — Coffee Break

11:00 — General Track 1
Sustainable Buildings
Roma 1

General Track 4
Energy and Resource
Efficiency in Industry
Roma 2

12:00

13:00 — Lunch
13:00 – 14:00

14:00 — Plenary Keynote Talk
Prof. Rui Neves-Silva
Roma 1

15:00 — General Track 1
Sustainable Buildings
Roma 1

General Track 3
Renewable Energy Tech.,
Apps. and Integration
Roma 2

16:00 — Coffee Break

17:00 — General Track 1
Sustainable Buildings
Roma 1

General Track 2
Energy Systems and
Cities
Roma 2

18:00

19:00

20:00 — Conference Dinner at *Museu da Cerveja*
20:00

Day 3 – Friday – 03.07.15

Registration

09:00 — Plenary Keynote Talk
Prof. Despina Seghides
Roma 1

10:00 — Coffee Break

11:00 — General Track 1
Sustainable Buildings
Roma 1

General Track 2
Energy Systems and
Cities
Roma 2

12:00

13:00 — Lunch
13:00 – 14:00

14:00 — Plenary Keynote Talk
Prof. Antonio Gagliano
Roma 1

15:00 — Towards Nearly Zero
Energy Buildings
Roma 1

General Track 2
Energy Systems and
Cities
Roma 2

16:00 — Coffee Break

17:00 — Short Papers Track
Roma 1

18:00 — **Closing Ceremony**

Presentation Schedule

Thursday, 2 July
09.00 - 09.30, Roma 1

Conference Opening
Robert J. Howlett, KES International
Ana Rita Campos, UNINOVA

Thursday, 2 July
09.30 - 10.30, Roma 1

Plenary Keynote Talk
Chair: John Littlewood

Extracting knowledge from building energy data
Dr Alfonso Capozzoli

General Track 1: Sustainable Buildings
Chair: John Littlewood

Hybrid Model Predictive Control of a residential HVAC system with PVT energy generation and PCM thermal storage
Massimo Fiorentini, Paul Cooper, Zhenjun Ma, Duane Robinson

Cradle to cradle implementation in business sites and the perspectives of tenant stakeholders
Nii Ankrah, Emmanuel Manu, Colin Booth

Life Cycle Analysis and Optimization of a Timber Building
Dimitrios Kaziolas, Georgios Bekas, Iordanis Zygomalas, Georgios Stavroulakis

Prioritising energy efficiency measures to achieve a zero net-energy hotel on the island of Gozo in the central Mediterranean
Charles Yousif, Javier Polanco González

Electricity consumption constraints for smart-home automation: An overview of models and applications
Gulnar Mehdi, Mikhail Roshchin

Perceived Comfort and Adaptive Process of Passivhaus 'Participants'
Jing Zhao, Kate Carter

Thursday, 2 July
11.00 - 13.00, Roma 2

General Track 4: Energy and Resource Efficiency in Industry
Chair: Ana Rita Campos

Cutting air pollution by improving energy efficiency of China's cement industry
Shaohui Zhang, Ernst Worrell, Wina Crijns-Graus

Automated system for equipment energy efficiency monitoring in heat energy facility
Tatyana Aleksandrovna Barbasova, Olga Valeryevna Kolesnikova, Aleksandra Aleksandrovna Filimonova

Dispatching control of industrial facility power consumption
Aleksandra Aleksandrovna Filimonova, Lev Sergeevich Kazarinov, Tatyana Aleksandrovna Barbasova

Defining The Energy Saving Potential of Architectural Design
Emanuele Naboni, Antonio Malcangia, Yi Zhang, Furio Barzon

Numerical investigation of counter flow plate heat exchanger
Václav Dvořák, Tomáš Vít

Options for Sustainability in Building and Energy: A South African Permaculture Case Study
Elizabeth May Kruger

Thursday, 2 July
14.00 - 15.00, Roma 1

Plenary Keynote Talk
Chair: Ana Rita Campos

Model-based decision making to support energy efficiency investments
Prof Rui Neves-Silva

Thursday, 2 July
15.00 - 16.30, Roma 1

General Track 1: Sustainable Buildings
Chair: John Littlewood

Design strategies for low embodied carbon and low embodied energy buildings: principles and examples
Antonín Lupíšek, Marie Vaculíková, Štěpán Mančik, Julie Hodková, Jan Růžička

Continuous mechanical ventilation in housing – understanding the gap between intended and actual performance and use
Magdalena Baborska-Naroznya, Fionn Stevenson

Effect of reference state characteristics on the Thermal Exergy analysis of a building
Marta Giulia Baldi, Lorenzo Leoncini

Glass Selection for High-Rise Buildings in the United Arab Emirates Considering Orientation and Window-to-Wall Ratio
Ghaith Tibi, Ahmed Mokhtara

Thursday, 2 July
15.00 - 16.30, Roma 2

General Track 3: Renewable Energy Technologies, Applications and Integration
Chair: Mahieddine Emziane

The implications of mandating photovoltaics on all new homes
Stephen Berry, David Whaley

Conceptual Design of Small Scale Multi-Generation Concentrated Solar Plant for a Medical Center in Egypt
Mohamed Rady, Amr Amin, Mohamed Ahmed

Maximum Power Point Tracking Using IT2FL Tuned with GA
Haraoubia Mohamed Amine, Hamzaoui Abdelaziz, Essounbouli Najib

DC-DC Converter fault diagnostic in wind energy production system. Simulation study
Abdellatif Nouri,Issam Salhi, Najib Essounbouli, Elmostafa Elwarraki

Thursday, 2 July
17.00 - 18.30, Roma 1

General Track 1: Sustainable Buildings
Chair: John Littlewood

Estimation and analysis of building energy demand and supply costs
Jorn K. Gruber, Milan Prodanovic, Raúl Alonso

Diagnosis of buildings' thermal performance - a quantitative method using thermography under non-steady state heat flow
Itai Danielski, Morgan Fröling

Brazilian social housing: Exploration of alternatives for improving thermal performance
Maria Andrea Triana, Paola Sassi, Roberto Lamberts

Preference Elicitation and Reasoning While Smart Shifting Of Home Appliances
Walid Trabelsi, Kenneth N. Brown, Barry O'Sullivan

Thursday, 2 July
17.00 - 18.30, Roma 2

General Track 2: Energy Systems and Cities
Chair: Catalina Spataru

Assessing the optimal use of electric heating systems for integrating renewable energy sources
Tobias Boßmanna, Rainer Elsland, Anna-Lena Klingler, Giacomo Catenazzi, Martin Jakob

Use of ICT tools for integration of energy in urban planning projects
Xabat Oregi, Esther Rothb, Erik Alsema, Maarten van Ginkel, David Struik

Modeling for reactive building energy management
Singh Mahendra, Ploix Stéphane, Wurtz Frederic

Investigation of high renewable energy penetration in the island of Syros following the interconnection with the national grid system
Eleni Zafeiratou, Catalina Spataru

Friday, 3 July
09.30 - 10.30, Roma 1

Plenary Keynote Talk
Chair: Catalina Spataru

Energy Efficient Refurbishment towards Nearly Zero Energy Houses, for the Mediterranean Region
Prof Despina Serghides

Friday, 3 July
11.00 - 13.00, Roma 1

General Track 1: Sustainable Buildings
Chair: John Littlewood

Sustainable Design and Building Information Modelling: Case Study of Energy Plus House, Hieron's Wood, Derbyshire UK
Boris Ceranic, Derek Latham, Angela Dean

Did ARBED I save energy in Wales' deprived dwellings
Jo Atkinson, John Littlewood, Andrew Geens, George Karani

Testing building fabric performance and the impacts upon occupant safety, energy use and carbon inefficiencies in dwellings
John Littlewood, Ivan Smallwood

The use of polymer stabilised earth foundations for rammed earth construction
Paul Marais, John Littlewood, George Karani

Cooling systems in data centers: state of art and emerging technologies
Alfonso Capozzoli, Giulio Primiceri

Design of an Embedded Sensor Network for Application in Energy, Monitoring of Commercial and Industrial Facilities
Frank Doyle, Maria-Jose Rivas Duarte, John Cosgrove

Hybrid Transitions: Combining Biomass and Solar Energy for Water Heating in Public Bathhouses
Magda Sibley, Martin Sibley

Friday, 3 July
11.00 - 13.00, Roma 2

General Track 2: Energy Systems and Cities
Chair: Catalina Spataru

Development of models for on-line diagnostic and energy assessment analysis of PV power plants: the study case of 1 MW Sicilian PV plant
Giuseppe Marco Tina, Cristina Ventura

The energy efficiency management at urban scale by means of integrated modelling
Amos Ronzino, Anna Osello, Edoardo Patti, Lorenzo Bottaccioli, Chiara Danna, Andrea Lingua, Andrea Acquaviva, Enrico Macii, Michelangelo Grosso, Gianluca Messina, Gaetano Rasconà

Can energy systems models address the resource nexus?
Theodoros Semertzidis

Geographical Information System as support tool for Sustainable Energy Action Plan
Antonio Gagliano, Francesco Nocera, Antonio D'Amico, Catalina Spataru

Smart Metering Deployment in Brazil
Priscila Carvalho

Load Demand Disaggregation based on Simple Load Signature and User's Feedback
Valeria Amenta, Giuseppe Marco Tina

Friday, 3 July
14.00 - 15.00, Roma 1

Plenary Keynote Talk
Chair: Catalina Spataru

Envelope Renovation to improve energy efficiency in existing buildings
Prof Antonio Gagliano

Friday, 3 July
15.00 - 16.30, Roma 1

Invited Session 6: Towards Nearly Zero Energy Buildings: technologies and energy
performance assessment
Chair: Elisa Di Giuseppe, Alfonso Capozzoli

TCS Matrix: Evaluation of optimal energy retrofitting strategies
Aránzazu Galán González, Philippe Bouillard, Consolación Ana Acha Román, Sophie
Trachte, Arnaud Evrard

High energy efficiency retrofits in Portugal
Fernanda Rodrigues, Marlene Parada, Romeu Vicente, Rui Oliveira and Ana Alves

Vacuum Insulation Panels: thermal bridging effects and energy performance in real
building applications
Francesco Isaia, Stefano Fantucci, Alfonso Capozzoli, Marco Perino

Discovering knowledge from a residential building stock through data mining analysis
for engineering sustainability
Alfonso Capozzoli, Daniele Grassi, Marco Savino Piscitelli, Gianluca Serale

Comfort filters in a total energy demand optimization method for the passive design
of a building
Maria Ferrara, Elisa Sirombo, Enrico Fabrizio, Marco Filippi

Friday, 3 July
15.00 - 16.30, Roma 2

General Track 2: Energy Systems and Cities
Chair: Catalina Spataru

Towards a smart grid Communication
Aziz Naamane

Performance analysis of roof-mounted photovoltaic systems – The case of a Norwegian residential building
Habtamu B. Madessa

Model predictive control for building active demand response systems
Fiorella Lauro, Fabio Morettia, Alfonso Capozzoli, Stefano Panzieri

Techno-Economic Assessment for Optimal Energy Storage Mix
Catalina Spataru, Yen Chung Kok, Mark Barrett

Friday, 3 July
17.00 - 18.30, Roma 1

Short Papers Track
Chair: Robert. J. Howlett

Post Graduate Energy Efficiency Services: an example of good practices
Dirk Franco

Fabrication and stability of Hexadecane/pigment composite for construction sector based on ultramarine blue
Estibaliz Aranzabe, María Isabel Arriortua, Ana Aranzabe, Aitor Larrañaga, Pedro María Villasante, Ricard March

Applicability and scalability of mobile mCHP units in mid-size battery electric vehicles and detached houses with different energy standards
Henrik Rüscher, Jan P. Minnrich, Christian R. P. Schmicke, Lars-O. Gusig

Social Programme

Welcome Cocktail

A welcome cocktail will be held at the *Altis Grand Hotel*, where the conference takes place, on July 1st, at 19:00.

Delegates will have the opportunity of registering for the conference and have a drink and some light food.

Altis Grand Hotel
Rua Castilho, 11
1269-072 Lisboa

Conference Dinner

The conference dinner will be held at the restaurant *Museu da Cerveja*, on July 2nd, at 20:00.
The distance between the hotel and the restaurant is a little over 2 km, which means a 20 minute walk. Delegates who want to walk and take a glance of downtown should gather at the hotel reception at 19:30.

Alternatively, delegates can take the metro (blue line), from *Avenida* to *Terreiro do Paço* and meet the group directly at the restaurant at 20:00.

Restaurant
Museu da Cerveja
Terreiro do Paço
Ala Nascente
Nº 62 – 65
1100-148 Lisboa