Prof. Ing. Luigi Marletta

CURRICULUM

Luigi Marletta, Associate Professor since 1987, is currently Full Professor of Environmental Physics at the Catania University since 1999.

He has focused his research work on renewable energy systems, energy engineering systems and building physics. Since the Eighties, he worked out mathematical models for the thermal transient analysis of buildings in the frame of the Finalized Energy Program supported by the Italian National Energy Council (CNR).

He granted two CNR fellowships to conduct research work on bioclimatic architecture and sustainable building construction, under the guide of Prof. Baruch Givoni at the UCLA (University of California at Los Angeles – USA) and at the Ben Gourion University of the Negev (Israel).

He was member of the scientific Board of the CNR-ITAE Institute for Advanced Energy Technologies in Messina (Italy). He was also responsible for scientific projects dealing with thermal comfort, solar energy systems, heating and cooling of buildings and thermodynamic analysis of energy systems.

Invited lecturer at the University of Vienna, University of Malta and University of the Neuquen (Argentina) to speak about mathematical modelling of building physics and solar energy applications, he was also active in the field of solar cooling in the framework of the Task 38 of the IEA (International Energy Agency), as sub-task leader for the thermodynamic analysis of solar cooling systems.

He was Director of the International Doctorate in Energetics of the University of Catania.

Daylighting, Light technologies, Building Acoustics and energy conscious design related to buildings and urban areas are also among his fields of interest.

He is member of various cultural and scientific associations operating in the domain of energy conservation and pollution control.

He was also responsible of various research projects of national (PON, PRIN, CNR, ENEA) and regional (POR) interest.

He is co-founder of the italian branch of the International Building Performance Simulation Association (IBPSA) and is currently member of the IBPSA-Italy Scientific Board.

His teaching activity spans over 30 years. Courses given in the Engineering Faculty are : Technical Physics, Energetics, HVAC in buildings, Environmental impact of energy systems, Sustainable energy systems.

He is author of more than two hundred scientific papers and invited papers, discussed in national and international meetings.

SCIENTIFIC ACTIVITY

PON "Fotovoltaico" 01_01725 , (2010-2013): "Nuove tecnologie fotovoltaiche per sistemi intelligenti integrati in edifici"; (New PV technologies for smart systems integrated in buildings), Principal Investigator for the scientific issues

PON "TESEO" 02_00153_2939517, (2012-2014); "Tecnologie ad alta efficienza per la sostenibilità energetica ad ambientale on-board". (High energy efficiency technologies for on-board sustainability), Principal Investigator for the didactic plan.

POR FESR 2007-2013 : Mis. 4.1.1.2 : "Prestazioni del sistema radiante a bassa temperatura "R-Panel" in relazione al comfort termico e ai consumi energetici, (The R-Panel:. Energy performance for heating and cooling purposes of a low temperature radiant device), Principal Investigator, Duration (2007-2010) three-years

POR FESR 2007-2013 : Mis. 4.1.1.2 : "Terminale innovativo a bassa temperatura e alta emissione radiativa per il riscaldamento e il raffrescamento degli edifici" (A novel end-tail unit for low temperature heating and cooling of buildings), Principal Investigator, Duration (2011-2013) three-years

FIR 2014-2016 : RESTORE: "Riqualificazione energetica di edifici mediante fonti energetiche rinnovabili", COd. 5C204, (Renewable energy technologies for existing buildings), Principal Investigator, Duration (2014-2016) three-years

PRIN 1998-2000: "Ottimizzazione termo-economica di sistemi per la climatizzazione" (Thermo-economic optimization of HVAC systems), Responsible for the Research Unit of Catania University.

PRIN 2000-2002: "Macchine termiche ad adsorbimento per la produzione del calore e del freddo" (Adsorption chillers for heating and cooling), Responsible for the Research Unit of Catania University.

PRIN 2003-2005: "Costi energetici e ambientali degli impianti tecnologici degli edifici" (Energy and environmental costs of energy technologies used in buildings), Responsible for the Research Unit of Catania University.

PRIN 2010-2012: "L'energia solare per la riqualificazione energetica degli edifici esistenti" (Solar energy for existing buldings), Participation to the research activity.

PRIN 2017-2019: "La ricerca per i PAES: Una piattaforma per le municipalità partecipanti al Patto dei Sindaci", (Research for SEAP: a platform for municipalities involved in the Covenant of Majors), Participation to the research activity.

ENEA: 2016-2017 "Riqualificazione energetica di edifici pubblici esistenti: Direzione nZEB- Studio dell'edificio di riferimento uso uffici della Pubblica Amministrazione", (Energy savings in public buildings aimed at the nZEB standard). Principal Investigator

CNR - MiSE - Research in the National Electricity System; Project Use of solar energy for summer air conditioning; partners: duration 12 months from January 2009. Responsible for the Research Unit of the Catania University.

CNR - MiSE - Research in the National Electricity System; Project Use of solar energy for summer air conditioning; duration 15 months from January 2010. Responsible for the Research Unit of the Catania University.

CNR - MiSE 2009-2011 on Research within the National Electricity System; Summer air Conditioning Project; duration 12 months from April 2011. Responsible for the Research Unit of the Catania University.

CNR - MiSE 2009-2011 and 2012-2014 on Research within the National Electricity System; Adsorption solar air conditioning project; duration 24 months from April 2012. Responsible for the Research Unit of the Catania University.

CNR - PFM 1998-2002, "Materiali adsorbenti su supporti metallici per impieghi in sistemi di accumulo e pompe di calore"(Sorption materials on metal support for thermal storage and heat pumps). Duration 5 years. Responsible for the Research Unit of the Catania University.

CNR 1992-1994 : "Previsione e misura del comfort termico in ambienti definiti severi" (Prediction and modelling of thermal comfort in thermally severe enclosures) CNR, 92/-94; 00694-CT11. Duration: 3 years, Responsible for the Research Unit of the Catania University.

PFE 1: "Progetto Finalizzato Energetica-1", 1982-1984, (Finalized Energy Programme-1), Participation to the research activity

PFE 2: "Progetto Finalizzato Energetica-2", 1985-1988, (Finalized Energy Programme-2), Participation to the research activity

POP Sicilia 1995-1997: "Rilievo dell'inquinamento acustico urbano in alcune città della Sicilia" (Acoustic pollution survey in selected urban areas of Sicily), Participation to the research activity.

ACADEMIC POSITIONS

Assistant Professor: Academic years: 1983-84; 1984-85;1985-86

Associate Professor: Academic years: from 1991-92 to 1999-2000

Full Professor 2000-01 up to now

TEACHING ACTIVITY :

Technical Physics, Academic years: 1990 up to now

Thermal plant for HVAC, Academic years: 1987-1991

Energetics, Academic years: 1992-1999

Environmental impact of energy systems, Academic years: 2000-2011

Sustainable energy systems, Academic years: 2016 up to now

FURTHER ACADEMIC ACTIVITY

Vice-Director of the Institute of Technical Physics: 1998-2001

Member of the Scientific Committee of Doctorate in Technical Physics (Palermo University main ref.) in the years 1990-2000,

Coordinator of the International Doctorate in ENERGETICS (Univ. of Catania) in the years 2000-2015

President of the Paritetic Commette ("Commissione Paritetica") of the Industrial Dept. (Unv. of Catania) in the years 2013-2015

PhD SUPERVISOR

1994 PhD Thesis: F. Forgia : "Model order reduction for building physics" 1994, Palermo University

1999 PhD Thesis: F. Sicurella :" New technologies for daylighting" , 1999, Palermo University

2001 PhD Thesis: G. Evola : "Solar cooling systems based on chemical dehumidification", 2001, Palermo University

2005 PhD Thesis: S. Bivona: "Sorption wheels for solar cooling", 2005 Catania University

2006 PhD Thesis: M. Pappalardo: "The solar factor as derived from the harmonic analysis of buildings" 2006 Catania University

2007 PhD Thesis: M. N. Papa: "PCM for building applications", 2007 Catania University

2008 PhD Thesis: M. Giuga: "The admittance method for building physics. Validation of a new mathematical model", 2008 Catania University

2009 PhD Thesis: C. Di Pasquale: "Energy optimization of historical buildings", 2009 Catania University

2010 PhD Thesis: I. Scuderi: " PVT for smart buildings" 2010 Catania University

2011 PhD Thesis: M. Cammarata: "The reference building in the framework of the EPBD directive", 2011 Catania University

2012 PhD Thesis: V. Costanzo:" Energy improvements in the buildings of the tertiary sector", 2011 Catania University

CONSULTANTSHIPS

Member of the Scientific Committee for the Sicily energy and environmental plan 1990-95

Member of the Scientific Committee for the Sicily energy and environmental plan 2016-20

Member of the Scientific Committee of the CNR-ITAE Institute (Messina) during the years 1994-98

INTERNATIONAL ACTIVITY

Visiting Professor at the University del Comahue (Neuquen, Argentina) 1990 and 1992 giving lectures and seminars on " Ahorro y uso racional de la energia en edificios" (Energy savings and rational use of energy in buildings), Sept. 1990

Coordinator of the Subtask C of the IEA TASK 38, in the years 2007-2009 (duration 3 years)

Visiting professor at the Vienna Univ. giving seminars on "Second Law analysis of solar cooling systems", March 2008

Visiting professor at the Malta Univ. giving seminars on "Advances in solar cooling technology", October 2009

INTERNATIONAL SCHOLARSHIPS

1984 Ben Gourion University, Israel, supported by Univ. of Catania

1985 University of California at Los Angeles (USA), supported by the Italian CNR

REVIWER ACTIVITY

for the following peer-refereed journals:

Energy and Buildings

Solar Energy

Building and environment

Applied Energy

AFFILIATIONS

AICARR : (Associazione Italiana Condizionamento dell'aria e riscaldamento e refrigerazione) (Italian Association for heating cooling and air conditioning). Regional delegate for Sicily in the years 2006-2012

AIDI (Associazione Italiana di Illuminazione) (Italian Association of Lighting), Regional delegate for Sicily in the years 2003-2018.

IBPSA- Italia (Internationas Buidling Simulation Association), Co-founder and member since 2010

AIA (Associazione Italiana di Acustica) (Italian Association of Acoustics)

AIGE (Associazione Italiana Gestione dell'Energia) (Energy management Italian Association) since 2005

CNR-ITAE, (Istituto per le tecnologie avanzate dell'energia) (Institute for Advanced Energy Technologies) affiliation since 2010.