PERSONAL INFORMATION

MAURIZIO DE LUCIA

Dipartimento di Ingegneria Industriale

via Santa Marta 3, 50139 Florence -Italy

+39 055 2758781 +39 3288604578

maurizio.delucia@unifi.it

www.unifi.it

Male, Date of birth 30/03/1961, *Nationality* Italian (IT)

Enterprise	University	EPR
☒ Management Level	☒ Full professor	☒ Research Director and 1st level Technologist / First Researcher and 2nd level Technologist
☐ Mid-Management Level	☐ Associate Professor	☐ Level III Researcher and Technologist
☐ Employee / worker level	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

from Feb—2001 **Full Professor at the Department of Industrial Engineering (DIEF), University of Florence**

In addition to teaching, he has always coordinated a research group commitment in activities mainly in the experimental sector on turbomachinery and energy systems as well as renewable energies with particular reference to solar concentrated systems. for use in CSP, SH&C, DSG. His contribution to technology transfer is significant not only at the national level but above all at the European level. He has promoted, coordinated and led various research projects of relevant national interest more than 70 projects) and European research projects in the role of Head (more than 20 projects). In addition to European collaborations, he has promoted, collaborated and carried out cooperation projects in the energy sector in several area/country (PERU-Amazon, CHILE, Morocco, Jordan, Egypt, Israel)

From 2018

Director of CREAR (Center for Alternative and Renewable Energy, University of Florence)

11/1998 01/2001 ▪ Associated Professor Dpt. Energetica, University of Florence

02/1990 10/1998 ▪ Assistant Professor, Dpt. Energetica, University of Florence

12/1986 12/1987 ▪ Topographic engineer at IGM (Italian Military Geographical Institute)

EDUCATION AND TRAINING

11/1996—11/1989 PhD in Energy Technologies and Energy Use (CICLO III)

11/1980 03/1986 Degree in MECHANICAL Engineering (full marks and honours.- 5 year course)

PERSONAL & SKILLS

ORCID *https://orcid.org/0000-0003-2000-1927*

Other skills Professional qualification in the Register of Engineers
Research project evaluators for the Ministry of Technological Development
Research project evaluators for the Ministry of Scientific Research
Research project evaluators for European projects
Member of the CTI Board (Comitato Termotecnico Italiano) 2019-2022 -delegated by the Ministry of Researc

ADDITIONAL INFORMATION

National Delegate for the European TWG-CSP (Temporary Working Group for Concentrated Solar Power) and is currently National Delegate for IWG-CPS (CSP-Implemantation Working Group for SET-PLAN)
member of the National BOARD of Horizon 2020 for the CLEAN ENERGY sector
expert&member of various international TASK&Annex of the IEA (International Energy Agency)

- o TASK 38 "Solar Air-Conditioning and Refrigeration"
- o TASK 54 "Price Reduction of Solar Thermal Systems"
- o TASK 56 "Building Integrated Solar Envelope Systems for HVAC and Lighting"

Member of the IGTI Controls & Diagnostics Committee and of the Industrial Cogeneration Committee
Coordinator of the Italian Concentration Solar Platform
He is national deputy secretary of the USPUR (Union of University Professors) and is also USPUR-FI secretary.

Patent

7 patents (as inventor, and/or as holder), ranging in the energy systems and Energy use in industrial processes and machines

Honors&award

Best Paper Awards, IGTI (International Gas Turbine Institute) for the work concerning the development of a system for monitoring and controlling the temperature of rotating parts of the most critical hot parts of the gas turbine without direct contact.

Some Coordinated research projects of relevance

- **REACt - "**Self-sufficient Renewable Energy Air-Conditioning system for Mediterranean countries" : FP6 project coordinated by the Working Group of UNIFI for the study and construction some demonstration plants of Solar Cooling in Mediterranean countries based on linear concentration systems PTC (participation of the CRER, NERC, EURAC, SOLITEM, SHAP**).**
- **ALONE - "**smAll scaLe sOlar cooliNg dEvice": FP7 project for the analysis and construction of demonstration plants SHC (Solar Heating & Cooling) based on different technologies and solutions. Project co-ordinated by the group of UNIFI (participation of the DLR, ClimateWell, EURAC, SOLITEM, RIELLO).
- **SALTO** – "**S**olar **A**ssisted Coo**L**ing **TO**scana": local funded research aimed at the production of cooling energy to average low temperature (0-7 °C) using thermal solar energy by parabolic trough collectors (PTC); UNIFI coordinated the project dealt with the development of PTC. The project led to the development of innovative linear concentrators in terms of both geometries architectures.
- **CESARE –** "**C**oncentrated PV combin**E**d **S**o**l**A**R E**nergy system"**:** Research project completed coordinated by UNIFI with the aim of developing CPV-T (Concentrated PV system) with thermal energy recovery. It took care of the basic aspects related to the optimization of the use of solar radiation for providing Power and Heat (electricity and thermal energy) using photovoltaic modules in high concentration architecture.
- **SALVE** – "ASsisted SolAr CooLing – UniVersità di FirEnze" project aimed at the implementation and testing of a plant SH&C (solar Heating&Cooling) in public buildings, remote monitoring and management of the system and recording the main thermodynamic parameters.
- **SCOOP**: project Italian proposal for Solar Concentration Technologies for Photovoltaic systems - Project funded within the Industry 2015 when UNIFI is the coordinator of the system "CENTER", which includes the development of parabolic concentrators for the combined production of electricity and heat for the small to medium business sector and the 'industry. Participation of the ENEL, STMicroelectronics, ENEA, Archimede Solar Energy-Angelantoni, RIELLO, ect.
- **PIACE:** project **"I**ntelligent Platform, Integrated and Adaptive Micro-cogeneration" with high efficiency for residential uses, Project funded within the a local project in the field of "Energy Efficiency" coordinated by RIELLO where UNIFI is co-coordinator of the line of development of solar concentrators for the production steam for a rankine cycle.
- **FreeSUN** project coordinated by F.E.R.A. which includes the development of systems Fresnell small for many purposes. UNIFI is responsible for the optical design of the elements of reflective Fresnel.
- **REPLICATE** H2020 SCC1 project: "REnaissance of PLaces with Innovative Citizenship And Technology"; Project in the field of Smart City and Communities. 36 partners from Spain, Italy and United Kingdom. The coordination of research work related to improving energy uses and energy efficiency measures as well as integration of renewable energy (solar)
- **SOLARGRID** National project "Sistemi Solari Termodinamici E Fotovoltaici Con Accumulo Per Co-Generazione E Flessibilità Di Rete". Its aims at the innovation and upgrade of components and systems connected to Concentrating Solar Power (CSP) and Concentrating PhotoVoltaic (CPV) technologies, with the general objective of improving their energy performance, economic competitiveness and with a view to integration within advanced energy management networks. The partnership sees the participation of ENEA (coordinator), ENI, Magaldi and IDEA as well as Polimi, UNIFI and UNIPA

Some Publications (recent):

F., DANIELA, F., FRANCO, J. DAVID, P. GIACOMO, M. DE LUCIA, 2015, Technique for Outdoor Test on Concentrating Photovoltaic Cells, INTERNATIONAL JOURNAL OF PHOTOENERGY, vol. 2015, p. 1-9, ISSN: 1110-662X, doi: 10.1155/2015/308541

Stefano Pratesi, Maurizio De Lucia, Marco Meucci, Elisa Sani, 2016, “Structural and optical properties of copper-coated substrates for solar thermal absorber”, International JOURNAL SUPERLATTICES AND MICROSTRUCTURES, Volume 98, Pages 342-350, ISSN: 0749-6036, http://www.sciencedirect.com/science/article/pii/S0749603616306863 http://hdl.handle.net/2158/1084206

Taccani, Rodolfo, De Lucia, Maurizio; Micheli, Diego; Toniato, Giuseppe, 2016, Development and Experimental Characterization of a Small Scale Solar Powered Organic Rankine Cycle (ORC). 2016. DOI:10.1016/j.egypro.2016.11.064. pp.504-511. ENERGY PROCEDIA - ISSN:1876-6102 vol. 101.; http://hdl.handle.net/2158/1084319

Taddei, F, De Lucia, M., Bartolozzi, L., Salvestroni, M., Torzo, D., Setup of a test rig for the characterization of devices for acoustic measurements in hot flow, 2016, ICSV 2016 - 23rd International Congress on Sound and Vibration: From Ancient to Modern Acoustics, Greece; 10 July 2016 through 14 July 2016; Code 123390, ISBN: 978-960992262-3

D. Fontani,1 P. Sansoni,1 F. Francini,1 M. DeLucia,2 G. Pierucci,2 and D. Jafrancesco, 2017, Optical Tests on a Curve Fresnel Lens as Secondary Optics for Solar Troughs, International Journal of Photoenergy, Volume 2017 (2017), Article ID 1945875, 11 pages, https://doi.org/10.1155/2017/1945875

G.Pierucci, M. Salvestroni, M. Messeri, F. Fagioli, F. Taddei, M. De Lucia, 2017, Thermal loss test on a receiver for small size PTC application, SOLARIS Conference 2017, 27 Jul 2017 to 28 Jul 2017, Darwin/Newton North, Hamilton Centre, Brunel University London.

G. Pierucci1, S. Hosouli1, M. Messeri1, M. Salvestroni1, F. Fagioli1, F. Taddei1, A. Pourreza1, H. Rashidi1, M. De Lucia1. Realization of a Test Rig for Small Solar Collectors and Preliminary Test, SOLAR PACES 2018, Casablanca 2-5 Oct, 2018

M Salvestroni, G Pierucci, F Fagioli, A Pourreza, M Messeri, F Taddei and M De Lucia, Design of a small size PTC: computational model for the receiver tube and validation with heat loss test, SOLARIS 2018, The 9th edition of the international SOLARIS conference, Chengdu, China, Invitation for special issue of Journal Renewable Energy

M Salvestroni, G Pierucci, F Fagioli, A Pourreza, M Messeri, F Taddei and M De Lucia, 2018, Design of a seasonal storage for a solar district heating in Florence, SOLARIS 2018, The 9th edition of the international SOLARIS conference, Chengdu, China Invitation for special issue of Energies Journal.

M Salvestroni, G Pierucci, F Fagioli, A Pourreza, M Messeri, F Taddei and M De Lucia, Design of a seasonal storage for a solar district heating in Florence, 2019, IOP Conf. Series: Materials Science and Engineering 556 (2019) 012026, IOP Publishing, doi:10.1088/1757-899X/556/1/012026

Giacomo Pierucci, Sahand Hosouli, Michele Salvestroni, Matteo Messeri, Federico Fagioli, Francesco Taddei and Maurizio De Lucia, 2018, Experimental Methodology and Thermal Loss Tests on Small Size Absorber Tubes for Solar Applications, Energies 2018, 11, 2552; doi:10.3390/en11102552. www.mdpi.com/journal/energies

M Salvestroni, G Pierucci, F Fagioli, A Pourreza, M Messeri, F Taddei, S Hosouli, H Rashidi1 and M De Lucia, 2019, Design of a small size PTC: computational model for the receiver tube and validation with heat loss test, IOP Conf. Series: Materials Science and Engineering 556 (2019) 012025, IOP Publishing, doi:10.1088/1757-899X/556/1/012025

D. Fontani, P. Sansoni, F. Francini, M. Messeri, G. Pierucci, M. De Lucia, D. Jafrancesco, 2019, Electroluminescence test to investigate the humidity effect on solar cells operation, Energies 11 (10), 2552, doi:10.3390/en11102659, www.mdpi.com/journal/energies

F. Taddei, M. De Lucia, A. Pourreza, H. Rashidi, G. Pierucci, M. Messeri, F. Fagioli, M. Salvestroni, D. Torzo, 2019, A Novel Grazing Flow Rig For Acoustic Liner Investigations, Proceedings of 13th European Conference on Turbomachinery Fluid dynamics & Thermodynamics, ETC13, April 8-12, 2019; Lausanne, Switzerland, Paper ID: ETC2019-347

Marotta G, Fontani D., Francini F, Jafrancesco D., Sansoni P., Messeri M., Pierucci G, De Lucia M., 2019, Comparison between two methods of optical profilometry on micro-PTC, 24th SolarPACES International Conference on Concentrating Solar Power and Chemical Energy Systems, SolarPACES 2018; Casablanca; Morocco; 2 October 2018 through 5 October 2018; Code 149943, Volume 2126, 25 July 2019, Article number 120011, doi: 10.1063/1.5117629

Marotta G., Sansoni P., Francini F., Jafrancesco D, De Lucia M, Fontani D., 2020, Structured Light Profilometry on m-PTC. Energies 2020, 13, 5671; Doi:10.3390/en13215671. www.mdpi.com/journal/energies.

G. Pierucci, C. Balocco, M. De Lucia, 2020, Development of a New Heat Flux Sensor for Building Applications, International Journal of Heat and Technology, Vol. 38, No. 4, December, 2020, pp. 794-800, https://doi.org/10.18280/ijht.380404, http://iieta.org/journals/ijht

G. Pierucci, Sahand Hosouli, Michele Salvestroni, Matteo Messeri, Federico Fagioli and Maurizio De Lucia, 2021, Indoor Thermal Loss Test on Small-Size Solar Receiver (UF-RT01) For Process Heat Application, Journal Solar Energy Advances,

https://doi.org/10.1016/j.seja.2021.100010

1M. Salvestroni, G. Pierucci, A. Pourreza, F. Fagioli, F. Taddei, M. Messeri, M. De Lucia, 2021, Design of a solar district heating system with seasonal storage in Italy, Journal; Applied Thermal Engineering (https://www.journals.elsevier.com/applied-thermal-engineering), https://doi.org/10.1016/j.applthermaleng.2021.117438.

Paolo Sospiro, Leonardo Nibbi, Marco Ciro Liscio, Maurizio De Lucia, 2021, Cost–Benefit Analysis of Pumped Hydroelectricity Storage Investment in China, Journal Energies 2021, 14(24), 8322; https://doi.org/10.3390/en14248322

M. Salvestroni, L. Nibbi, G. Paone, G. Pierucci, M. De Lucia, 2021, Conversion of Existing District Heating into Solar District Heating, Applied Energy Symposium 2021: Low carbon cities and urban energy systems, August 24-27, 2021, Tokyo, Japan, Paper ID: xxxx

Carla Balocco, Giacomo Pierucci, Maurizio De Lucia, 2022, An experimental method for building energy need evaluation at real operative, conditions. A case study validation, Energy and Buildings, Volume 266, 1 July 2022, 112114, https://doi.org/10.1016/j.enbuild.2022.112114

Gianluca Marotta, Daniela Fontani, Franco Francini, David Jafrancesco, Maurizio De Lucia, Paola Sansoni, 2022, Laser Profilometry on Micro-PTC, Energies 2022, 15, 5293; https://doi.org/10.3390/en15145293, https://www.mdpi.com/1996-1073/15/14/5293/htm

Leonardo Nibbi, Paolo Sospiro, Maurizio De Lucia and Cheng-Cheng Wu, 2022, Improving Pumped Hydro Storage Flexibility in China: Scenarios for Advanced Solutions Adoption and Policy, Recommendations, Energies 2022, 15(21), 7918; https://doi.org/10.3390/en15217918

Leonardo Nibbi1, Paolo Sospiro, Maurizio De Lucia, 2021, Improving Pumped Hydro Storage (PHS) Flexibility in China, 13th Int. Conf.on Applied Energy (ICAE2021), Nov. 29 -Dec. 5, 2021, Thailand ID: 864, DOI: 10.46855/energy-proceedings-9783 https://hdl.handle.net/2158/1342793

Chirici, Gherardo, De Lucia, Maurizio, Francini, Saverio, Pecorella, Tommaso, Vespri, Vincenzo, Zatti, Filippo, 2022, Blockchain Technology: Energy Community and Beyond, Conference: 2022 Workshop on Blockchain for Renewables Integration (BLORIN), DOI: 10.1109/BLORIN54731.2022.10028260

Carla Balocco;Giacomo Pierucci;Maurizio De Lucia, 2022, An experimental method for building energy need evaluation at real operative conditions. A case study validation, Journal ENERGY AND BUILDINGS, Energy & Buildings 266 (2022) 112114, https://doi.org/10.1016/j.enbuild.2022.112114

Giuseppina Ciulla,, Stefania Guarino, Michela Lanchi, Marco D'Auria, Maurizio De Lucia, Michele Salvestroni,Vincenzo Di Dio,2023, Hybridization solutions for solar dish systems installed in the Mediterranean region, Renewable Energy Journal, Volume 217, November 2023, 119112, https://doi.org/10.1016/j.renene.2023.119112

Carla Balocco, Giacomo Pierucci, Cristina Piselli,, Francesco Poli, Maurizio De Lucia, 2024, A Dimensionless Study Describing Heat Exchange through a Building's Opaque Envelope, Sustainability 2024, 16, 3558. https://doi.org/10.3390/su16093558

Maurizio De Lucia, Giacomo Pierucci, Maria Manieri, Gianmarco Agostini, Emanuele Giusti , Michele Salvestroni, Francesco Taddei, Filippo Cottone and Federico Fagioli, 2024, Experimental Characterization of Commercial Scroll Expander for Micro-Scale Solar ORC Application: Part 1, Journal ENERGIES, Energies 2024, 17, 2205. https://doi.org/10.3390/en17092205

Diki Ismail Permanaa,b,c,, Federico Fagioli, Maurizio De Lucia, Dani Rusirawan, Istvan Farkas, 2024, Energy, exergy, environmental and economy (4E) analysis of the existing of biomass-ORC plant with capacity 150 kWe: A case study, Journal Energy Conversion and Management: X 23(2024)100646, https://doi.org/10.1016/j.ecmx.2024.100646

Valeria Palladino, Marialaura Di Somma, Carmine Cancro,Walter Gaggioli, Maurizio De Lucia, Marco D'Auria, Michela Lanchi, Fulvio Bassetti, Carla Bevilacqua, Stefano Cardamone, Francesca Nana, Fabio Maria Montagnino, Giorgio Graditi, 2024, Innovative Industrial Solutions for Improving the Technical/Economic Competitiveness of Concentrated Solar Power, Energies 2024, 17(2), 360; https://doi.org/10.3390/en17020360 (https://hdl.handle.net/2158/1404452)

Maurizio DE LUCIA