



Matteo Moglie

Curriculum Vitae

PROFILE

Biography

Matteo Moglie is an Associate Professor of Thermal Sciences at eCampus University from May 2015. He holds a Ph.D. (2010) and M.Sc. (2007) in Mechanical Engineering from Università Politecnica delle Marche - Ancona, AN, Italy. Before his current appointment, he served the Università Politecnica delle Marche as Lecturer. His research areas focus on the energy optimization of production processes, the design of lipid extraction processes, pharmaceutical compounds and energy valorisation of algal biomass. He has collaborated as an Advisor for various companies dealing with the optimization of biodiesel production plants, technologies for CHP plants and developing algorithms and thermodynamic models.

Disciplinary scientific sector

ING-IND/10 - FISICA TECNICA INDUSTRIALE

Skills

- ERC sector
 - PE 8.6: Energy processes engineering
 - PE 8.11: Environmental engineering, e.g. sustainable design, waste and water treatment, recycling, regeneration or recovery of compounds, carbon capture and storage
- Sustainable Development Goals
 - Goal 4: Quality education
 - Goal 7: Affordable and clean energy
 - Goal 11: Sustainable cities and communities
 - Goal 12: Responsible consumption and production

EDUCATION

Doctor of Philosophy, Energetics Faculty of Engineering, University Politecnica of Marche, Italy	2010
Master Degree of Engineering, Mechanical engineering Faculty of Engineering, University Politecnica of Marche, Italy	2007

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Secondary School Diploma, Mechanical engineering
Istituto Tecnico E. Mattei, Italy

2000

TEACHING EXPERIENCE

Bachelor Degree

- Industrial Engineering
 - INDU011 Fisica Tecnica - 9 ECTS (2015 - Present)
 - INDU019 Termotecnica e Climatizzazione - 9 ECTS (2015 - Present)
- Civil and Environmental Engineering
 - INCA015 Fisica Tecnica e Impianti Tecnici - 9 ECTS (2015 - Present)
- IT and Automation Engineering
 - INDU017 Fisica Tecnica - 9 ECTS (2015 - 2021)

Master Degree

- Industrial Engineering
 - INDM030 Progettazione Termotecnica - 9 ECTS (2015 - Present)

Master courses

- Gestione sostenibile e energie rinnovabili - 1° Livello, Engineering, Academic Years: 2016
 - Tecnologie Solare Fotovoltaico e Sistemi di accumulo
 - Tecnologie eoliche

PROFESSIONAL EXPERIENCE

Associate Professor of Thermal Sciences
eCampus University

2015 – Present

Lecturer
Faculty of Medicine, University Politecnica of Marche, Italy

2014 – 2016

Postdoctoral Researcher
Faculty of Engineering, University Politecnica of Marche, Italy

2010 – 2015

Advisor
S.TRA.TE.G.I.E S.r.l, Ancona, Italy

2010 – 2012

Advisor
NOVAOL Srl, Livorno, Italy

2009 – 2010

Advisor
Energy Resources Srl, Ancona, Italy

01/2008 – 11/2008

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RESEARCH SUMMARY

Research Topics

- Microalgae Biotechnology
 - Experimental demonstration at the laboratory scale
 - Experimental demonstration at pilot scale
 - Optimization of microalgae growing conditions
 - Optimization of microalgae growing conditions for bioremediation of wastewaters
 - Demonstrate experimental valorisation of microalgal biomass in the cosmetic, animal feed, textile, bioplastic, biostimulant and biopesticide
 - Market analysis and feasibility studies for the construction of plants for the production of microalgae
 - Engineering design, procurement and build of closed tubular Photobioreactor
- Process optimization
 - Optimization analysis of production process in order to increase energy efficiency and reduce raw materials consumption
 - Development of models and procedures that allow to evaluate heat exchange and energy conversion processes to be optimized
 - Energy and environmental assessments of complex systems

Funded Research Project

Erasmus+ Key Action 2: Capacity Building in Higher Education

reZEB: Fostering Renewable energy technologies and energy Efficiency knowledge towards near Zero Energy Buildings of engineers and professionals in Western Balkan Countries

Role: Team member

Budget: 800.0000€

Erasmus+ Key Action 2: Capacity Building in Higher Education

SKYBELT: Enhancement of engineering skills of students of all levels for application of evidence based sustainable renewable energy solutions in the built environment

Role: Team member

Budget: 1.000.0000€

H2020-SMEINST-1-2015

ReSpirA: Olive oil wastewater Reuse for the production and commercialisation of Spirulina Alga

Role: Coordinator

Budget: 50.0000€

Industrial Research

SOGEPU SPA

The Company has an interest in research and development activities at the Belladanza plant complex in order to optimize the management of the plant itself, reducing its environmental impact using microalgae and renewable energy generation systems

Role: Coordinator

Budget: 340.0000€

ENERECO SPA

The Company has an interest in research and development activities for the design of a system for the production of microalgae and high value-added compounds, mainly intended for the pharmaceutical and food industries.

Role: Coordinator

Budget: 23.0000€

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PUBLICATIONS

International Journal

- Valorization of olive mill wastewater for *Arthrospira platensis* production. Moglie M., Biancini G., Norici A., Mugnini A., Cioccolanti L. *Cell Reports Sustainability*, 2024. DOI: 10.1016/j.crsus.2024-100017
- Comparative study of steam, organic Rankine cycle and supercritical CO₂ power plants integrated with residual municipal solid waste gasification for district heating and cooling. Biancini, G., Cioccolanti, L., Moradi, R., Moglie, M. *Applied Thermal Engineering*, 2024, 241, 122437
- Screening for tolerance to natural phenols of different algal species: Toward the phycoremediation of olive mill wastewater. Mollo, L., Drigo, F., Moglie, M., Norici, A. *Algal Research*, 2023, 75, 103256
- A general model for air gasification of heterogenous municipal solid waste. Biancini, G., Moradi, R., Cioccolanti, L., Moglie, M., Del Zotto, L. *Energy Conversion and Management*, 2023, 278, 116749
- Comprehensive Life Cycle Assessment Analysis of an Italian Composting Facility concerning Environmental Footprint Minimization and Renewable Energy Integration. Biancini, G.; Marchetti, B.; Cioccolanti, L.; and Moglie, M. *Sustainability (Switzerland)*, 14(22). 2022.
- Perspectives and challenges of small scale plant microalgae cultivation. Evidences from Southern Italy. Mennella, L.; Tosco, D.; Alberti, F.; Cembalo, L.; Crescimanno, M.; Del Giudice, T.; Galati, A.; Moglie, M.; Scardera, A.; Schifani, G.; Solfanelli, F.; and Cicia, G. *Algal Research*, 45: 101693. 1 2020.
- eLearning Course Design in Higher Education to Maximize Students' Performance. Moglie, M.; Simoncini, M.; Mancini, E.; Suraci, V.; and Arnesano, M. Volume 1091 2019.
- A new surface tension equation for refrigerants. Di Nicola, G.; Di Nicola, C.; and Moglie, M. *International Journal of Thermophysics*, 34(12): 2243-2260. 2013.
- Solid-liquid equilibria for nitrous oxide+ fluoromethane and triple point measurements for refrigerants. Di Nicola, C.; Moglie, M.; Santori, G.; Stryjek, R.; and Di Nicola, G. *High Temperatures - High Pressures*, 41(2): 145-158. 2012.
- A corresponding states principle-based equation for the surface tension of Alkenes. Di Nicola, G.; Di Nicola, C.; Moglie, M.; and Pacetti, M. *Journal of Thermal Analysis and Calorimetry*, 108(2): 621-625. 2012.
- A review analyzing the industrial biodiesel production practice starting from vegetable oil refining. Santori, G.; Di Nicola, G.; Moglie, M.; and Polonara, F. *Applied Energy*, 92: 109-132. 2012.
- Solid-liquid equilibria for the dimethyl ether + carbon dioxide binary system. Di Nicola, G.; Moglie, M.; Stryjek, R.; and Santori, G. *Journal of Thermal Analysis and Calorimetry*, 105(2): 489-493. 2011.
- A techno-economic analysis of biomass gasifiers integrated with high and intermediate temperature solid oxide fuel cells. McIlveen-Wright, D., R.; Moglie, M.; Rezvani, S.; Huang, Y.; Anderson, M.; Redpath, D.; Dave, A.; and Hewitt, N., J. *International Journal of Energy Research*, 35(12): 1037-1047. 2011.
- A generalized equation for the surface tension of refrigerants. Di Nicola, G.; and Moglie, M. *International Journal of Refrigeration*, 34(4): 1098-1108. 2011.
- Carbon dioxide + fluoromethane and nitrous oxide + fluoromethane: Solid-liquid equilibria measurements. Di Nicola, G.; Moglie, M.; Santori, G.; Stryjek, R.; and Polonara, F. *Journal of*

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Chemical and Engineering Data, 55(11): 5018-5022. 2010.

- Bioenergy II: Modeling and multi-objective optimization of different biodiesel production processes. Di Nicola, G.; Moglie, M.; Pacetti, M.; and Santori, G. International Journal of Chemical Reactor Engineering, 8. 2010.
- Alternative biofuels: PVTx measurements for DME + propane. Arteconi, A.; Di Nicola, G.; Moglie, M.; Santori, G.; and Stryjek, R. Journal of Thermal Analysis and Calorimetry, 99(3): 899-903. 2010.
- Solid-liquid equilibria for the CO₂ + R143a and N₂O + R143a systems. Di Nicola, G.; Moglie, M.; Santori, G.; and Stryjek, R. International Journal of Thermophysics, 30(4): 1155-1164. 2009.
- PVT properties of an alternative biofuel: Dimethyl ether. Arteconi, A.; Di Nicola, G.; Moglie, M.; Santori, G.; and Stryjek, R. Journal of Thermal Analysis and Calorimetry, 97(2): 631-636. 2009.
- Quantitation of compounds in biodiesel mixtures with reversed-phase liquid chromatography. Santori, G.; Arteconi, A.; Di Nicola, G.; Moglie, M.; and Stryjek, R. Energy and Fuels, 23(7): 3783-3789. 2009.

International Conference

- Biancini, G.; Cioccolanti, L.; Marchetti, B.; and Moglie, M. (2022). EVALUATION OF MUNICIPAL LANDFILL LEACHATE TREATMENT BY MICROALGAE. In Chevet P.-F. Scarlat N., G., A., editor(s), European Biomass Conference and Exhibition Proceedings, pages 79-85, 2022. ETA-Florence Renewable Energies
- Biancini, G.; Moglie, M.; Marchetti, B.; and Cioccolanti, L. (2022). Life Cycle Impact Assessment of Municipal Solid Waste Management Systems: Improved design for environmental footprint minimization. In: International Conference on Renewable Energies and Smart Technologies (REST), volume I, pages 1-5, 2022.
- Cioccolanti, L.; Moglie, M.; Mahkamov, K.; Paksoy, H.; Chen, C.; Lin, J.; Li, C.; Guan, Y.; Zhou, W.; Abdullah, E.; Mohd Radzi, M.; Shafie, S.; Alimuddin, Z.; Yusof Idroas, M.; Yew Heng, T.; Azmier Ahmad, M.; Azman Miskam, M.; Kraitong, K.; Wongsapai, W.; Chaichana, C.; and Damronsak, D (2021). Analysis of labour market needs for engineers with enhanced knowledge in sustainable renewable energy solutions in the built environment in some Asian countries. In E3S Web of Conferences, volume 238, 2021.
- Arteconi, C. Di Nicola, M. Moglie, G. Santori, G. Di Nicola. (2011). Experimental investigation of a cascade cycle using R744+R23 as low temperature working fluid. In: Proceedings of 23rd International Congress of Refrigeration, 21-26 August 2011, Prague, Czech Republic. ISBN: 9782913149892
- M. Moglie, F. Polonara, G. Santori (2010). Optimization procedure for a biodiesel production process. In: WREC 2010 - Eleventh Renewable Energy Congress. Abu Dhabi, United Arab Emirates, 25-30 September, p. 115-120, Future technology Press, ISBN: 9780956151612
- G. Di Nicola, G. Marinelli, M. Moglie, F. Polonara, G. Santori (2010). Biodiesel process: comparative evaluation of a theoretical model and a real case. In: Thermal and Environmental Issues in Energy Systems. Sorrento, 16-19 May 2010, p. 589-594, Pisa: Edizioni Plus, ISBN: 978-884672659-9
- G. Di Nicola, G. Marinelli, M. Moglie, F. Polonara, G. Santori (2010). Multi- objective optimization of a biodiesel production process: comparison between algorithms. In: Thermal and Environmental Issues in Energy Systems. Sorrento, Italy, 16-19 May 2010, Pisa: Edizioni Plus, ISBN: 978-884672659-9
- G. Santori, M. Brasili, M. Moglie, F. Polonara, S. Vasta, A. Freni, G. Restuccia (2010). A mathematical tool for combined simulation of an adsorption chiller operating in a solar air

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- conditioning system. In: Thermal and Environmental Issues in Energy Systems. Sorrento, 16-19 May 2010, Pisa: Edizioni Plus, ISBN: 978-884672659-9
- G. Di Nicola, C. Di Nicola, M. Moglie, G. Santori (2010). Experimental investigation and optimization of a cascade cycle. In: 13th International Refrigeration and Air Conditioning Conference at Purdue. West Lafayette, IN 47907-2032, USA, West Lafayette: Printing Services
 - M. Moglie, M. Giordano, A. Norici, F. Polonara, S. Ratti, G. Santori, A. Ciampechini (2010). Fourier Transform Infrared Spectroscopy (FTIR) as a Novel Tool for the Analysis and Monitoring of Biomass Quality in a Photobioreactor for Lipid Production from Microalgae. In: 18th European Biomass Conference and Exhibition, 03 - 07 May 2010, Lyon, France, p. 480-483, ETA-Florence Renewable Energies, doi: 10.5071/18thEUBCE2010- VP1.3.30
 - G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2009). Solid- Liquid Equilibria for the binary systems of natural refrigerants and HFCs. In: Proceedings of the 3rd Conference on Thermophysical Properties and Transfer Processes of Refrigerants. Boulder, USA, 21-26 June 2009
 - G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2009). Solid- Liquid Equilibria for the carbon dioxide + fluoromethane binary system. In: Proceedings of the 24th European Symposium on Applied Thermodynamics. Santiago de Compostela, Spain, 27 June, 01 July 2009, p. 528-529
 - G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2009). Liquid- Liquid Equilibria of the Biodiesel+Glycerol and Biodiesel+Water Systems. In: Proceedings of the 17th Symposium on the Thermophysical Properties. Boulder, USA, 21-26 June 2009
 - G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2009). Solid- Liquid Equilibria for Binary Systems of Natural Refrigerants and HFC's. In: Refrigerations science and technology proceedings. Boulder, CO, USA, 21-26 June 2009, Paris: International Institute of Refrigeration, ISBN: 978-2- 913149-70-0
 - G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2009). Liquid- Liquid Equilibria of the biodiesel+glycerol and biodiesel+water systems. In: 17th Symposium on thermophysical properties. Boulder, CO, USA, 21-26 June 2009
 - G. Di Nicola, M. Moglie, G. Santori, R. Stryjek (2008). Solid-Liquid Equilibria For The CO₂ + R143A, And N₂O + R143A Systems. In: Book of abstracts - 18th European Conference on Thermophysical Properties. Pau - France, August 31st - September 4th 2008
 - G. Di Nicola, G. Giuliani, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2008). Chemical Equilibrium Of Sunower Oil Transestericati. In: ESAT 2008. Proceedings of the 23rd European Symposium on Applied Thermodynamics. Cannes - France, May 29th - June 1st 2008, p. 820-837, Vandouvre Cedex: INPL Atelier De reprographie, ISBN: 2-905267-59-3
 - G. Di Nicola, L. Mandozzi, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2008). Solid - Liquid equilibria for the CO₂ + R134a binary system. In: ESAT 2008. Proceedings of the 23rd European Symposium on Applied Thermodynamics. Cannes - France, May 29th - June 1st 2008, p. 347-353, Vandouvre Cedex: INPL Atelier De reprographie, ISBN: 2-905267-59-3
 - G. Di Nicola, G. Giuliani, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2008). Chemical equilibrium of sunflower oil transesterification. In: Proceedings of the 23rd European Symposium on Applied Thermodynamics. Cannes, France, 29 May - 1 June 2008, p. 820-837

National Conference

- Sapienza, Moglie M, Santamaria S., Costa F., Santori G. (2010). Progettazione e realizzazione di una macchina frigorifera ad energia solare per la conservazione dei vaccini o delle derrate alimentari. In: 65° Congresso Nazionale ATI. Chia Laguna Resort, Domus De Maria (CA), 13- 17

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September 2010

- G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2009). Equilibrio liquido-liquido dei sistemi biodiesel-glicerolo e biodiesel-acqua. In: Atti XV convegno AIPT. Pisa, Italia, 25 settembre 2009, p. 31-37, Pisa: Istituto per i processi Chimico-Fisici, ISBN: 9788865070789
- A. Arteconi, S. Boria, M. L. Corradini, F. Giannoni, M. Moglie, F. Polonara (2009). Sviluppo di un modello matematico per uno scambiatore geotermico a spirale. In: La geotermia per tutti. Ancona, Italia, 06 Novembre 2009
- G. Di Nicola, M. Moglie, F. Polonara, G. Santori, R. Stryjek (2008). Equilibrio chimico nella reazione di transesterificazione dell'olio di girasole. In: Atti XI Convegno A.I.P.T., Ancona, Italia, Ottobre 2008, p. 33-56, ISBN: 9788865070048
- G. Di Nicola, M. Moglie, G. Santori (2008). Analisi del processo industriale di produzione del biodiesel. In: 63° Congresso nazionale ATI - Energia per lo sviluppo sostenibile. Palermo - Italy, September 23rd - September 26th 2008, Dario Flaccovio Editore, ISBN: 978-88-7758-839-5
- G. Di Nicola, M. Moglie, G. Santori (2008). Ottimizzazione termodinamica del processo di produzione di biodiesel. In: XIV Convegno A.I.P.T. Ancona, Italia, 03 Ottobre 2008

Chapters and Books

- eLearning Course Design in Higher Education to Maximize Students' Performance Moglie M., Simoncini M., Mancini E., Suraci V., Arnesano, M. COMMUNICATIONS IN COMPUTER AND INFORMATION SCIENCE, vol. 1091, p. 139-148, Springer, Cham, ISBN: 978-3-030-31284-8, ISSN: 1865-0937, doi: 10.1007/978-3-030-31284-8112019

Patents

- Adsorbent photothermal solar panel Bonaccorsi L., Brunetti E., Freni A, Guetti D, Moglie M., Polonara F., Santori G. AN2013A000208, GreenTech S.R.L. 2013.

AWARDS & HONORS

- Oscar Green 2019. Coldiretti Marche, "Sustainability Category", San Benedetto del Tronto, Italy, 15 July 2019.
- EN.FA.SI Project. Rotary International, Construction of a solar refrigeration machine for the conservation of vaccines or foodstuffs, Rotary International, Bari, Italy, 2009.
- Applied Energy. Highly Cited Award Review Paper 2012 to 2013, Applied Energy - 2013

PARTICIPATION IN INTERNATIONAL CONFERENCE

- 23rd International Congress of Refrigeration, 21-26 August 2011, Prague, Czech Republic
- 65° Congresso Nazionale ATI. Chia Laguna Resort, Domus De Maria (CA), 13-17 September 2010
- WREC 2010 – 11th Renewable Energy Congress. Abu Dabi, United Arab Emirates, 25-30 September 2010
- Thermal and Environmental Issues in Energy Systems. Sorrento, 16-19 May 2010
- 3th International Refrigeration and Air Conditioning Conference at Purdue. West Lafayette (USA), 12-15 July 2010
- 18th European Biomass Conference and Exhibition, 3 - 7 May 2010, Lyon, France
- XV° Convegno AIPT. Pisa, Italia, 25 September 2009
- La geotermia per tutti. Ancona, Italia, 06 Novembre 2009
- 3rd Conference on Thermophysical Properties and Transfer Processes of Refrigerants. Boulder (USA), 21-26 June 2009

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- 24th European Symposium on Applied Thermodynamics. Santiago de Compostela, Spain, 27 June, 1st July 2009
- 17th Symposium on the Thermophysical Properties. Boulder, USA, 21-26 June 2009
- XI° Convegno A.I.P.T., Ancona, Italia, Ottobre 2008
- 18th European Conference on Thermophysical Properties. Pau - France, August 31st - September 4th 2008
- 63° Congresso nazionale ATI - Energia per lo sviluppo sostenibile. Palermo - Italy, September 23rd - September 26th 2008
- 23rd European Symposium on Applied Thermodynamics. Cannes - France, May 29th - June 1st 2008
- XIV° Convegno A.I.P.T. Ancona, Italia, 03 Ottobre 2008

COURSES AND SPECIALIZATIONS

- Aprile - Giugno 2014 Corso ENERGY MANAGER ED ESPERTI IN GESTIONE DELL'ENERGIA, The ACS, Loreto.
- 10 Aprile 2014 La Termografia in edilizia, Macerata, Ordini Degli Ingegneri Della Provincia di Macerata
- 14 Marzo 2014 I ponti termici: dalla corretta progettazione alla soluzione del problema muffa, Macerata, Ordini Degli Ingegneri Della Provincia di Macerata
- 11 - 12 Marzo 2014 SimaPro e Life Cycle Assessment, Mogliano Veneto (TV).
- 4 - 8 Novembre 2013 Algae Training Program (Large-Scale Algal Cultivation, Harvesting and Downstream Processing), ATP3 Algae TestBed - Arizona Center for Algae Technology and Innovation, Mesa - USA.
- 8 - 12 Luglio 2013 Scuola Estiva della Fisica Tecnica - VI Edizione - La misura nella Fisica tecnica, Benevento
- Ottobre 2010 - Maggio 2011 Corso professionale di "Acustica applicata e metodologie di controllo del rumore per l'attività di tecnico competente in acustica", Università Politecnica delle Marche.
- 13 -16 Novembre 2010 Non-equilibrium thermodynamics of heterogeneous systems: the square-gradient model; Brescia, Facoltà di Ingegneria, Italy
- Gennaio - Luglio 2009 Corso di specializzazione per tecnico abilitato al rilascio di certificazioni in prevenzione incendi ai sensi della legge 818/84 e DM 25.03.1985, Federazione Degli Ordini Degli Ingegneri Delle Marche.
- 17 - 18 marzo 2008 Shimadzu software GasChromatograph solution (Shimadzu Italy), Milano, Italy
- 28 - 29 Febbraio 2008 Gabi4 software course (Febe Ecologic), Ancona, Italy
- 4 -5 Dicembre 2008 Advanced course of data acquisition in Labview, Ancona, Italy

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