PATRIZIA SIMEONI

PERSONAL INFORMATION

University of Udine, Department of Engineering and Architecture (DPIA), Via delle Scienze 206, 33100 Udine, Italy

+39 0432 558015

patrizia.simeoni@uniud.it

https://people.uniud.it/page/patrizia.simeoni

0000-0002-3788-6162

Gender Female | Nationality Italian

PROFESSIONAL EXPERIENCE and ISTITUTIONAL ACTIVITIES

Works as **assistant professor** (since 2013), **qualified as Associate Professor** (from 2022), in industrial System Engineering. Currently working also as an elected **member of the Academic Senate** (2018-2020 abd 2021-2024)**.**

After obtaining the PhD degree in Energetics, continued the academic career as a **post-doctoral Research fellow** at the Department of Energy and Machinery of the University of Udine and as a Contract lecturer at the Faculty of Engineering of the same University. At the same time, worked as technical-scientific **representative of the Interdepartmental Centre for Environmental Training and Research** (CIFRA) of the University of Udine, and carried out technology transfer and support activities for public bodies and private companies.

Was the Rector's Contact Person for Energy and the Environment (2019-2022). Moreover, served as **Sector Delegate for Energy and Environment** (2016-2018). Performed and still performs various roles representing the University: Network of Universities for Sustainable Development - RUS contact person for the energy sector (2017-today), National Energy Technology Cluster - CTNE contact person (2019-today) and Member of the Steering Committee of the regional Centre I.F.T.S. -Mechanics and Plants (2021-today) for the University of Udine.

TEACHING ACTIVITIES

Working as an **adjunct professor** of *Resourse-efficent industrial facilities* and *Sustainable design of Industrial Plants* for the Master's Degree Course in Management Engineering (since 2019). From 2011 to 2022, also taught *Environmental compatibility of industrial plants* in the Master's Degree Course in Mechanical Engineering. From 2004 to 2009 worked as a contract professor of *Waste Treatment Plants* in the Mechanical Engineering degree course at the University of Udine. Worked also in teaching collaboration activities since 2001 in the courses *of ING-IND/17 –Industrial system engineering.*
The courses teaching areas are: feasibility study and impact assessment of industrial plants from a sustainability perspective (LCA, CFP,...). Industrial eco-efficiency. Plant location models and their optimisation. Design of service facilities and general plant services. Design and management of logistics and materials handling system. Industrial energy management and energy saving. Waste management and reverse logistics. Decision support systems under uncertainty.

Lectured in **first- and second-level master's degrees** and in advanced training courses.

Worked and working as **supervisor/co-supervisor of the PhD** in Chemical and Energy Technologies and in the PhD in Civil Engineering, Architecture and Territory. Supervised over one hundred dissertations as supervisor and co-supervisor in Management Engineering, Mechanical Engineering, Environmental and Energy Engineering and Environmental and Sciences and Technology for the Environment and Territory (Agriculture).

RESEARCH ACTIVITIES

The research topics regarded the scientific disciplinary field ING-IND/17 – Industrial System Engineering. Currently the main research areas are:

- **Industrial eco-efficiency**. Research topics have been oriented towards the analysis and design of plant systems conceived to minimise consumption and environmental impacts with the goal of decarbonisation through the use of renewable energies. Currently, research focuses on optimising the use of alternative energy sources to support production processes by analysing the connections between production-storage systems, industrial activities, and related logistics with a focus on sustainability effects. Current studies are aimed at optimising the use of alternative energy sources/energy carriers or energy efficiency in industrial processes.
- **Sustainable logistics and circular economy**. Research topics concern the design of logistics chains applied to the context of waste management, service management and transport. Current research focuses on the one hand on the optimisation of the supply chain for the production of biofuels and green hydrogen from waste with the aim of reducing the environmental impacts of transport, and on the other on the optimisation of the system of refrigerated warehouses – vehicles for handling/delivery in the agri-food industry.
- **Smart multi-energy systems (SMES) and circular economy for plant systems and industrial clusters**. Research topics concern the development of optimisation and decision support models in the energy transition context with a view to industrial symbiosis for the reindustrialisation of industrial sites. The most recent projects concern industrial waste heat recovery networks for the development of cooling systems in industrial areas and the decarbonisation of the cold chain.
- **Life cycle analysis (LCA) of products/processes**. Research topics concern the analysis of food process waste recovery chains for the production of innovative products with high nutritional value. Current studies have focused on the life cycle analysis of new products derived from lettuce, apple and, currently, soya processing waste.

Research methodologies include multi-criteria and multi-attribute analysis, Montecarlo simulation, optimisation by evolutionary algorithms, and LCA analysis.

International scientific awards

SDEWES Best Paper Award for an outstanding manuscript at the conference submission for the paper “Integrating industrial waste heat recovery into future sustainable Smart Energy Systems”, by Simeoni P., Ciotti G., Cottes M., Meneghetti A., Nardin G at the SDEWES 2018: 13th Conference on Sustainable Development of Energy, Water and Environment Systems.

Responsibility and participation in research projects

Responsibility in international projects

- **S3UNICA** – Interreg Europe Programme (2019-2023)
  Objective: Provision of innovative products, processes, and solutions in the field of energy efficiency on university campuses and to identify quadruple helix approach models for the development of innovation policies. *Other academic project partners*: Malaga University, Lappeenranta University of Technology, University of Trieste.
- **CiTyCIrcle** – Interreg Central Europe Programme (2020-2022)
  Objective: Identification of innovative business models for industrial symbiosis project in the field of energy. *Other academic project partners*: Technical University of Kosice, FH Vorarberger University of applied sciences.
- **SMART CAMPUS** - Winner in an EC call for pilot actions (2017-2019)
  Objective: Identification of scalability models for innovative technologies and plant systems on university campuses. *Other academic project partners*: Malaga University, Lappeenranta University of Technology, Aix-Marseille Université, Instituto Superior de Engenharia of the Algarve University, Ljubljana University.
- **CE-HEAT** - Interreg Europe Programme (2017-2019)
  Objective: Design and development of a decision support system for the selection of optimal technological solutions for the recovery of waste heat from industrial plants. *Other academic project partners*: Univerzita jana evangelisty Purkyně v ústí nad labem (Univerzità J.E. Purkyně.

Participation in national and regional projects

- ARBOPLAN (2011-13). Production and market potential of wood arboriculture in FVG lowlands.
- CO_2NONC€ (2008-2010) Energy from agricultural biomass: reducing the greenhouse effect or maximising energy efficiency?
- (2002-2004) "A systemic study of the introduction of ORC technology associated with the use of alternative sources for the generation and sharing of thermal and electrical energy".
  PRIN2001 (2001-2003) "Facility Management under Global Service in Industrial Districts".

Participation in projects founded by industries

- 2015-2018 "Evaluation of savings potential in SMEs predetermined by a pre-audit computer system". ENEA
- 2014-2015. "Identification of methodology for the drafting of the Regional Energy Plan. Friuli-Venezia Giulia Region.
- 2013-2014 "Introduction of performance evaluation methods in waste management". NET S.p.A.
- 2011-2012 "Creation of a decision support system for the refitting of plants for the integration of environmental sustainability and risk management". NET S.p.A.

Scientific collaboration with international journals and conferences

Guest Editor for the Special Issue "Energy Transition and Hydrogen: Challenges and Opportunities" for the journal Sustainability, (ISSN 2071-1050). mdpi.com/si/91470, 2021-2022;

Member of the **International scientific advisory committee** of the ISAHP2012-International Symposium on the Analytic Hyerarcy Process, 2022;

Member of the **Scientific advisory board** of SDEWES-13th International Conference on Sustainable Development of Energy, water and Environment Systems, 2018;

Member of the **International scientific advisory committee** of the ISAHP2014-International Symposium on the Analytic Hyerarcy Process, 2014;

Since 2007 is/was reviewer for international journals and conferences such as Waste Management, Biomass and Bioenergy, International Journal of Engineering Business Management, Journal of Management and Decision Making, Decision Support System, Sustainability.

MAIN PUBLICATIONS 2012-2022

1. Meneghetti A, Pagnin C., Simeoni P., (2021) "Decarbonizing the cold chain: Long-haul refrigerated deliveries with on-board photovoltaic energy integration", *Sustainability;*
2. Plazzotta S.; Cottes M.; Simeoni P.; Manzocco L., (2020) "Evaluating the environmental and economic impact of fruit and vegetable waste valorisation: The lettuce waste study-case", *Journal of cleaner production,* Volume262;
3. Cottes M.; Mainardis M.; Goi D., Simeoni P., (2020) "Demand-Response Application in Wastewater Treatment Plants Using Compressed Air Storage System: A Modelling Approach" *Energies*, Vol. *13*(18),4780;
4. Simeoni, P., Meneghetti, A., Nardin, G., Ciotti, G., Cottes, M., (2019) "Integrating industrial waste heat recovery into sustainable smart energy systems", *Energy*, Vol.175, pp 941-951;
5. Ciotti G, Cottes M, Mazzolini M, Sappa A, Simeoni P., (2019) "A decision support system for industrial waste heat recovery: the CE-HEAT project", *Proceedings of the 24th Summer school "Francesco Turco"*. Sept. 11-13, Brescia;
6. Simeoni P., Nardin G., Ciotti G., (2018) "Planning and design of sustainable smart multi energy systems. The case of a food industry district in Italy", *Energy*, Vol. 163, pp 443- 456;
7. A. Meneghetti, F. Dal Magro, P.Simeoni, (2018) "Fostering Renewables into the Cold Chain: How Photovoltaics Affect Design and Performance of Refrigerated Automated Warehouses", Energies;
8. Nardin G., Ciotti G., Dal Magro F., Meneghetti A., Simeoni P., (2018) "Waste heat recovery in the steel industry: better internal use or external integration?", *Proceedings of the XIII Summer School Francesco Turco 2018*, 13-14 sept., Palermo;
9. Simeoni, P., Meneghetti, A., Nardin, G., Ciotti, G., Cottes, M., (2018). "Integrating industrial waste heat recovery into sustainable Smart Energy Systems", *Conference Proceedings of 13th SDEWES*. Sept. 30- Oct. 4,2018, Palermo. Prize: *"Best Paper Award for an outstanding manuscript at the conference submission" ;*
10. Nardin G, Montessoro P.L., Toppano E., Simeoni P., Ciotti G., Dal Magro F., Barazzutti A., Sprigico E., (2018) "SPAS - Software di pre-audit" Report number: RdS/PAR2018/014;

11. Simeoni, P., Ciotti, G., Nardin, G., *(2017)* "A multi-objective optimization method for Smart Multi-Energy Systems: the case of a food industrial district in Italy", *12th SDEWES - Conference Proceedings on Sustainable Development of Energy, Water and Environment Systems,* 4-8 oct, Dubrovnik;
12. Ciotti G., Meneghetti A., Nardin G., Simeoni P., (2016) "Fostering sustainable micro district heating: A tool for biomass boiler design", *Proceedings of the Summer School Francesco Turco 2016*, Naples, September 15-17, Pages 134-138;
13. Nardin G., Montessoro P.L., Toppano E., Simeoni P., Ciotti G., Dal Magro F., Alvarez Y., (2016) "Evaluation of energy saving potential in SMEs using a computer application" Report number: RdS/PAR2015/063. 2016;
14. A. Mattiussi, M. Rosano, P. Simeoni, (2014) "Decision Support System for Sustainable Energy Supply Combining Multi-Objective and Multi-Attribute Analysis: An Australian Case Study", *Decision Support Systems*, Volume 57, pp 150-159;
15. Fuccaro M., SIMEONI P. (2013) "Safety risk, cost and performance as criteria of choice in collection and transport systems. An italian district" In Proceedings of "Sardinia Symposium 2013 – 14th International Waste Management and Landfill Symposium", 30 sep-4 oct, S.Margherita di Pula, Cagliari – Italy;
16. Fuccaro M., SIMEONI P., De Felice F. (2013) "Market risk management for public utilities through AHP" in Proceedings of the 12th International Symposium on the Analytic Hierarchy Process for Multicriteria Decision Making, 3-6 June, Kuala Lumpur, Malaysia;
17. Nardin G., Meneghetti A., Chinese D., Simeoni P. (2013)"Universities as activators of urban symbiosis for sustainable energy supply: a case study". *Proceedings of the Joint Conferences: 16th Conference of the European Roundtable on Sustainable Consumption and Production (ERSCP) & 7th Conference of the Environmental Management for Sustainable Universities (EMSU)*, 4-7 June, Istanbul (Turkey);
18. Bianchini A.; Peta D.; Saccani C.; Simeoni P., (2013) Enterprise Resource Planning (ERP) fitting in a Make-To-Order (MTO) Small-Medium Enterprise (SME), in: *A challenge for the future: the role of industrial engineering in a global sustainable economy*, pp. 1 - 5, 11-13 Sept, Senigallia (AN) Italy.