

# Dr. ing. Damiana Chinese

## EDUCATION AND PROFESSIONAL EXPERIENCE

Damiana Chinese obtained her MSc. in Management Engineering *summa cum laude* at the University of Udine in the year 2000.

At the same University, she obtained her Ph.D. in Energy technologies in march 2004.

During her Ph.D studies she has been a visiting researcher at the IER – Institute of Energy Economics and the Rational Use of Energy at the University of Stuttgart (Germany) and at the Department of Economics at the USI (Università della Svizzera Italiana) in Lugano.

She has been a post-doc fellow at the University of Udine – Department of Energy Technology until 2005.

Since 2005 she has been an assistant professor in Industrial Systems Engineering (Italian Scientific Sector ING-IND/17) at the University of Udine, with tenure since September 2008, currently at the Polytechnic Department of Engineering and Architecture.

Since December 2018 she is an Associate Professor in Industrial Systems Engineering at the University of Udine, having obtained her lecture qualification in January 2014.

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## RESEARCH INTERESTS AND IMPACT

The research approach by prof. Chinese is based on energy and industrial systems analysis. Her research interests have covered three main research areas:

1. **Analysis and optimization of the energy and environmental performance of industrial plants**, including the development and evaluation of energy and heat recovery projects for internal (company) and external (municipal) applications. She is currently focusing on advanced methodologies for district energy systems planning, on industrial waste heat recovery, and on the nexus between water and energy consumption in industrial processes.
2. **Plant location and sustainable logistics**, with a special focus on raw materials supply to energy conversion plants and on the evaluation of the energy and environmental impact of manufacturing logistics and freight transport. The impact of national and international energy policies on energy supply chain has also been analysed in her research, taking into account carbon prices, renewable energy and energy efficiency certificates, capital grants, and external costs.
3. **Maintenance management**, involving surveys on practices and maturity and industrial research contracts on reliability modelling for the optimization of maintenance policies. She is currently interested in modelling the links between maintenance and environmental impact performance.

From a methodological viewpoint, she has experience in MILP models for energy systems optimization, also coupled with GIS tools when tackling local energy planning and location modelling issues. She is also experienced in multi-criteria methods, Monte Carlo simulation (also for reliability modelling) and multivariate analysis for exploratory research and for demand prediction. She has authored more than 50 scientific publications, thereof 21 indexed in Scopus and 11 published in ISI Web of Science Journals. According to Scopus, her current H-index is 11 and her work has been cited in 275 documents.

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## RESPONSIBILITIES IN SCIENTIFIC

Dr. Chinese has been a referee for *Waste Management*, *Proceedings of the Institution of Mechanical Engineers Part A Energy and Power*, *International Journal of Energy Research*, *Energy*,

## COMMUNITIES AND NETWORKS

*Applied Energy, Energy and Buildings, Energy Policy, Journal of Cleaner Production, Journal of Quality in Maintenance Engineering, International Journal of Simulation Modelling.*

In 2009 she has been a member of the scientific committee of the *Dubrovnik Conference on Sustainable Development of Energy, Water and Environment Systems*.

She belongs to the Italian Association of Professors in Industrial Systems Engineering (AIDI) since its foundation in 2012.

Since 2012 she belongs to TESEM, the National Monitoring Centre on Technologies and Services for Maintenance of Politecnico di Milano.

Since 2016 she belongs to the Editorial Board of *Manutenzione Tecnica e Management* (Maintenance Technique and Management), Thomas Industrial Media, official media of A.I.MAN., the Italian Association of Maintenance.

Since 2017 she belongs to ALEP-I, the Italian National Research Network on Advanced Local Energy Planning, founded by the Politecnico of Torino with the support of ENEA, the Italian National Agency for New Technologies, Energy and Sustainable Economic Development.

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## INTERNATIONAL COOPERATION AND RESEARCH GROUPS

Over the years, she has been supervising Ph.D. students and coordinating the research activities of small groups. She established direct cooperations with research institutions in Austria (International Institute for Applied Systems Analysis, IIASA, Laxenburg and RSA, Salzburg) and Scotland (Department of Design, Manufacture and Engineering Management) in the fields of energy and biofuels supply chains, energy planning and sustainable logistics. She has contacts with researchers in the energy planning and cleaner production field based in Germany, Slovenia, Sweden, Switzerland, and the UK.

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## RESPONSIBILITY AND PARTICIPATION IN SCIENTIFIC PROJECTS

### COORDINATION OF INTERNATIONAL RESEARCH PROJECTS

Since January 2017 she is coordinator of the project **IDEE** – Crossborder Research Network for the Integrated Design of Efficient Energy systems in urban areas, funded at European Level in the Frame of the Cooperation program **Interreg Italy Austria**, until 2019.

### PARTICIPATION TO FUNDED PROJECTS

2014-2015 “TRIM – technologies and industrial research for marine mobility “, funded at Italian Level from MIUR in the Frame of the **Cluster “Trasporti Italia 2020”**.

2010-2012 “NG SHIP, Natural Gas for Ship Propulsion”, co-funded at European level within **POR-FESR 2007-2013** by Regione Friuli Venezia Giulia.

2003-2004, "Systemic study on the introduction of ORC as heat recovery strategy in industrial areas" funded at regional level by **Regione F.V.G. (Legge 3)**.

2001-3 **PRIN** “Facility Management in Regime di Global Service in un distretto industriale”.

### SCIENTIFIC COORDINATION OF PROJECTS FUNDED BY INDUSTRIES

2017 “DIGIMET – DIGITALIZATION FOR THE METAL INDUSTRY” – Support to method and tool development for condition based monitoring and maintenance planning in steelmaking plants. **Danieli Automation**, Buttrio(UD).

2016-2017 “Engineering configuration of heat-recovery plants based on absorption cooling in greenfield steelmaking plants”, Centro Ricerche Danieli, Buttrio(UD).

2013-2015 “**BREF** – Business Resource Efficiency in micro and small firms in the Italy-Austria crossborder area”, funded at European level in the frame of the cooperation program interreg Italy Austria. Scientific consultant of **Confartigianato Udine** on research design, validation and analysis of energy efficiency, sustainable logistics, ecodesign and lean manufacturing programs in MPI.

2014, “Maintenance cost management and optimization within the Industry 4.0 Framework”, **FREUD SpA, BOSCH Group, Fagagna(UD)**.

2008, "Reliability analysis and modelling of machinery subsystems having an impact on safety", **Casagrande S.p.A, Fontanafredda (PN)**.

#### SCIENTIFIC RESPONSIBILITY FOR TECHNOLOGY TRANSFER PROJECTS

2007 "DESIGN OF ENERGY SUPPLY AND DISTRIBUTION SYSTEM FOR A NEW INDUSTRIAL BUILDING", **Anodica Trevigiana SpA, Codogné (TV)**.

2007 "ENERGY DIAGNOSIS OF PRODUCTION PLANTS", funded by IAL FVG in support of **ArcelorMittal Distribution Solutions e di NSguassero S.p.A, San Giorgio di Nogaro (UD)**.

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#### TEACHING AND ACADEMIC DUTIES

Since 2004/2005 she has been lecturing Industrial Systems Engineering to undergraduate and graduate students in Mechanical Engineering at the University of Udine.

At the University of Udine, she has supervised some 50 Master theses in Mechanical Engineering and in Management Engineering, she belongs to the PhD Board in Environmental and Energy Engineering Science and has been supervising two Doctoral theses.

Between 2007 and 2011 she participated to the Commission for Communication of the Engineering Faculty. Since 2013 she belongs to the Commission for Quality Assurance of the Mechanical Engineering Course.

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#### PUBLICATIONS ARTICLES IN ISI OR SCOPUS INDEXED JOURNALS

- J1. Mauro, C., Rentizelas, A.A., CHINESE, D. , (2018), International vs. domestic bioenergy supply chains for co-firing plants: The role of pre-treatment technologies. *RENEWABLE ENERGY*, 119, pp. 712-730
- J2. CHINESE, D., Santin, M., Saro, O. Water-energy and GHG nexus assessment of alternative heat recovery options in industry: A case study on electric steelmaking in Europe, (2017) *ENERGY*, 141, pp. 2670-2687.
- J3. De Angelis, A., CHINESE, D., Saro, O. ,(2017), Free-cooling potential in shopping mall buildings with plants equipped by dry-coolers boosted with evaporative pads, *International Journal of Heat and Technology*, 35 (4), pp. 853-862.
- J4. Patrizio P., Leduc S., CHINESE D., Kraxner F. (2017). Internalizing the external costs of biogas supply chains in the Italian energy sector. *ENERGY*, vol. 125, p. 85-96
- J5. CHINESE D., Patrizio P. (2016). The impact of regional factors and new bio-methane incentive schemes on the structure, profitability and CO<sub>2</sub> balance of biogas plants in Italy. *RENEWABLE ENERGY*, vol. 99, p. 573-583
- J6. Patrizio P., Leduc S., CHINESE D. (2015), Dotzauer E., Kraxner F., Biomethane as transport fuel - A comparison with other biogas utilization pathways in northern Italy, *APPLIED ENERGY*, 157, p. 25-34.

- J7. CHINESE D., Patrizio P., Nardin G. (2014), Effects of changes in Italian bioenergy promotion schemes for agricultural biogas projects: Insights from a regional optimization model". ENERGY POLICY, Volume 75, December 2014, p.189-205
- J8. CHINESE D, Nardin G, Saro O (2011). Multi-criteria analysis for the selection of space heating systems in an industrial building. ENERGY, vol. 36, p. 556-565
- J9. CHINESE D, Ghirardo G. (2010). Maintenance management in Italian manufacturing firms: Matters of size and matters of strategy. JOURNAL OF QUALITY IN MAINTENANCE ENGINEERING, vol. 16, p. 156-180
- J10. CHINESE D, Meneghetti A (2009). Design of Forest Biofuels Supply Chain. INTERNATIONAL JOURNAL OF LOGISTICS SYSTEMS AND MANAGEMENT, vol. 5, p. 525-550
- J11. CHINESE D (2008). Optimal size and layout planning for district heating and cooling networks with distributed generation options. INTERNATIONAL JOURNAL OF ENERGY SECTOR MANAGEMENT, vol. 2, p. 385-419
- J12. CHINESE D, Meneghetti Antonella, Nardin Gioacchino, Simeoni Patrizia (2007). From hospital to municipal cogeneration systems: An Italian case study. INTERNATIONAL JOURNAL OF ENERGY RESEARCH, vol. 31, p. 829-848
- J13. CHINESE D, Meneghetti A (2005). Optimisation models for decision support in the development of biomass-based industrial district-heating networks in Italy. APPLIED ENERGY, vol. 82, p. 228-254, ISSN: 0306-2619, doi: 10.1016/j.apenergy.2004.10.010
- J14. CHINESE D, Meneghetti A, Nardin G (2005). Waste-to-energy based greenhouse heating: exploring viability conditions through optimisation models. RENEWABLE ENERGY, vol. 30, p. 1573-1586, ISSN: 0960-1481, doi: 10.1016/j.renene.2004.11.008
- J15. CHINESE D, MENEGHETTI A. (2004). Energy analysis in industrial districts: a statistics-based approach. INTERNATIONAL JOURNAL OF GLOBAL ENERGY ISSUES, vol. 21, p. 315-328
- J16. CHINESE D, Meneghetti A, Nardin G (2004). Diffused introduction of Organic Rankine Cycle for biomass-based power generation in an industrial district: a systems analysis. INTERNATIONAL JOURNAL OF ENERGY RESEARCH
- J17. Meneghetti A., CHINESE D (2002). Perspectives on facilities management for industrial districts. FACILITIES, vol. 20, p. 337-348

**CONFERENCE PROCEEDINGS (conferences where she personally presented are highlighted in bold).**

INDEXED IN SCOPUS.

- P1. CHINESE D., Patrizio P., Bonotto M. (2014) " A service station location model to explore prospects and policies for alternative transport fuels: a case of CNG distribution in Italy", in J. F. de Sousa and R. Rossi (eds.), Computer-based Modelling and Optimization in Transportation, Advances in Intelligent Systems and Computing 262
- P2. CHINESE D., Patrizio P., Nardin G. (2014), "Optimal location, technology and capacity planning of biogas production and utilization plants". In: Proceedings of the XIX Summer School "Francesco Turco" 2014. Senigallia, 9-12 September 2014
- P3. CHINESE D, Meneghetti, A., Nardin, G. (2003). Evaluating feasibility of a sustainable greenhouse heating through renewable energy sources . In: Advances in Ecological Sciences - Fourth International Conference on Ecosystems and Sustainable Development (ECOSUD IV), Tiezzi E., Brebbia C.A., Uso J., WIT Press, Southampton, 2003**
- P4. CHINESE D, Meneghetti A. (2002). A district oriented approach to energy analysis: A case study from the food industry. In: Proceedings of the First International Conference on**

OTHER CONFERENCES.

- P5. CHINESE D., Santin M., Saro O. (2016). Exploring the Water-Energy-GHG Nexus in Process Waste Heat Recovery Projects, 2nd SEE Conference on Sustainable Development of Energy, Water and Environment Systems, SDEWES, Piran, 15-18 June 2016
- P6. Patrizio P., Leduc S., CHINESE D., Kraxner F.(2015),” External costs as a tool to identify sustainable biogas infrastructure options on a regional scale”, Proceedings of the 24th European Biomass Conference and Exhibition.
- P7. 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 ERSCP-EMSU Conference, Bridges for a more sustainable future, Istanbul, 4-7 June 2013
- P8. CHINESE D, Fiannacca G., Pezzarini D., Pinamonti P. (2012). Valutazione tecnico-economica di un impianto a biomasse mediante analisi di rischio. In: Atti del 67° Congresso Annuale ATI - Trieste 2012. Trieste, 11-14 Settembre 2012
- P9. CHINESE D, Patrizio P. (2012). Bigger, better, slower, less: a longitudinal case study on the energy efficiency of a global supply chain. In: Proceedings of the XVII Summer School "Francesco Turco" 2012. Venezia, 12-14 Settembre 2012
- P10. CHINESE D, Fumagalli L., Ierace S., Macchi M., Guarino M. (2011). Benchmarking maintenance management in manufacturing firms: empirical evidence from Northern Italy. In: Proceedings of the XVI Summer School "Francesco Turco" 2011. Abano Terme (PD), Italy, 14-16 Settembre 2011
- P11. CHINESE D, STURAM J (2007). Resolving Location Issues in Planning the Development of Biomass Based District Energy Systems. In: From research to market deployment. 15th european biomass conference & exhibition. Berlin, 7-11 maggio 2007, FLORENCE, MUNICH:ETA-Florence, Italy and WIP-Munich, Germany., ISBN: 3-936338-21-3
- P12. CHINESE D, MONACO B, NARDIN G (2007). Exploring prospects for local, small-scale biofuel supply chains: a mathematical programming model for Friuli Venezia Giulia Region. In: Proceedings of the 15th European Biomass Conference and Exhibition. Berlin, 7-11 July 2007, FLORENCE, MUNICH:ETA-Florence, Italy and WIP-Munich, Germany., ISBN: 3-936338-21-3
- P13. CHINESE D, Nardin G., Simeoni P. (2007). Incorporating Environmental and Economic Objectives in the Design of Distributed Generation and District Heating Plants Through Externalities: Dealing with Uncertainty. In: SUSTAINABLE DEVELOPMENT OF ENERGY, WATER AND ENVIRONMENT SYSTEMS . 5-10 giugno, p. 206-220, World Scientific, ISBN: 9812706402
- P14. CHINESE D, Nardin G, Tosoni S (2007). Impatto energetico-ambientale della logistica globale di approvvigionamento per un'azienda industriale. In: Atti del XXXIV Convegno Nazionale ANIMP – OICE UAMI. Isola d'Elba, 26-28 Aprile 2007, MILANO: ANIMP Servizi
- P15. CHINESE D, Biral M (2006). "To centralize or to decentralize? An optimization model supporting the design of distributed cogeneration, district heating and cooling systems. In: Proceedings of the 19th MiniEURO Conference Operational Research Models and Methods in the Energy Sector. Coimbra, 6-8 September 2006, ISBN: 989-95055-0-1
- P16. CHINESE D, Nardin G., Simeoni P. (2005). Pursuing environmental and economic objectives in the design of distributed generation and district heating plants. In: 3rd - 2005

**DUBROVNIK CONFERENCE ON SUSTAINABLE DEVELOPMENT OF ENERGY, WATER AND ENVIRONMENT SYSTEMS. June 2005**

- P17. CHINESE D, Meneghetti A., Venturini E. (2004). METHODOLOGY TO ASSESS FOREST RESIDUAL POTENTIALS FOR POWER GENERATION IN MOUNTAIN AREAS: THE CASE OF NORTH-EASTERN ITALY. In: 2nd World Conference and Technology Exhibition on Biomass for Energy, Industry and Climate Protection . p. 592-595, Florence:Eta-Florence and Wip-Munich, ISBN: 88-89407-04-2
- P18. CHINESE D, Meneghetti A, Nardin G, Simeoni P (2004). Application of biomass fed ORC power systems in the furniture manufacturing industrial district of Pordenone. Part I: Determinants of renewable energy exploitation. In: Proceedings of the 3rd International Symposium "Energy and Environment" 2004. Sorrento, NAPOLI: università degli Studi di Napoli "Federico II"
- P19. CHINESE D, Meneghetti A., Venturini E. (2004). Progettazione della logistica di approvvigionamento per impianti di conversione energetica a biomasse: applicazione ad un contesto montano. In: Atti del XXXI Convegno Nazionale ANIMP . MONASTIER (TV), 13-14 ottobre
- P20. CHINESE D, Meneghetti A., Nardin G., Simeoni P. (2004). La cogenerazione in un contesto urbano: il caso di Udine Nord. In: Atti del XXXI Convegno Nazionale ANIMP. MONASTIER (TV), 14-15 ottobre 2004**
- P21. CHINESE D, De Monte M., Meneghetti A., Padoano E., Vogrig R. (2003). Facilities management in un distretto industriale: orientamenti delle imprese ed opportunità di sviluppo nel settore del legno. In: Atti del XXX Convegno Nazionale ANIMP. Rapallo, 30-31 ottobre.
- P22. CHINESE D, Meneghetti A., Nardin G. (2002). Industrial waste recovery from the furniture industry: designing an integrated cogeneration pole for CO<sub>2</sub> emission minimisation. In: Proceedings of SWEMP, Seventh International Symposium on Environmental Issues and Waste Management in Energy and Mineral Production. Cagliari, 7-10 ottobre 2002, ISBN: 8890089504
- P23. CHINESE D, Meneghetti A. (2002). Designing a biomass-fired system serving an industrial district: deriving profitability information through an optimised dimensioning. In: Proceedings of the 12th European Conference and Technology Exhibition on Biomass for Energy, Industry and Climate Protection. Amsterdam - Paesi Bassi, 17-22 June 2002, vol. 8890044276
- P24. CHINESE D, Meneghetti A., Moroso L., Nardin G. (2002). Integrazione di metodologie statistiche e analisi tecniche per la stima dei fabbisogni energetici nei distretti industriali. In: Atti del XXIX Convegno Nazionale ANIMP. Sorrento, 17 - 18 ottobre 2002, MILANO: ANIMP Servizi

**ITALIAN JOURNALS**

- R1. CHINESE D, Ghirardo G. (2011). L'ingegneria di manutenzione nelle aziende manifatturiere. MANUTENZIONE. TECNICA E MANAGEMENT, vol. 7/8, p. 16-17
- R2. CHINESE D, Ghirardo G. (2007). Strategie e strumenti di manutenzione nel Nord Est. Indagine sullo stato dei servizi di manutenzione nelle aziende industriali delle Province di Treviso, Pordenone e Udine". MANUTENZIONE. TECNICA E MANAGEMENT, vol. 1, p. 31-35