Lingkang Jin, Ph.D.

August 18, 2026
l.jin@tue.nl
Google Scholar
ORCID
Personal Website

EDUCATION

09/2020 - 10/2023 **Energy systems Ph.D. candidate**
Department of Industrial Engineering and Mathematical Science, Università Politecnica delle Marche, Ancona (IT)
Thesis: "*Energy storage in multi-energy carrier communities: Li-ion batteries and hydrogen multi-physical details for integration into the planning stage*"
Supervisor: Prof. Gabriele Comodi

03/2023 - 07/2023 **Visiting Ph.D**
Technical University of Eindhoven, Eindhoven (NL)
Output: *"Assessing battery degradation as a key performance indicator for multi-objective optimization of multi-carrier energy systems"*
Supervisor: Dr. Christina Papadimitriou

03/2022 - 09/2022 **Visiting Ph.D**
Technical University of Copenhagen, Copenhagen (DK)
Output: *"Alkaline electrolysis for green hydrogen production: techno-economic analysis of temperature influence and control"*
Supervisor: Prof. Henrik Lund Frandsen
Co-supervisor: Dr. Rafael Nogueira Nakashima

09/2017 - 10/2019 **Master's degree in Mechanical engineering**
Università Politecnica delle Marche, Ancona (IT)
Thesis:"*Feasibility study and preliminary design of an offshore wind farm in the Mediterranean Sea: Wind resource assessment*"
Supervisor: Prof. Renato Ricci, Grade: **110 cum laude**

09/2014 - 07/2017 **Bachelor's degree in Mechanical engineering**
Università Politecnica delle Marche, Ancona (IT)
Thesis: "*Sensitivity analysis of a blind processing method for continuous scanning laser doppler vibrometry*"
Supervisor: Prof. Paolo Castellini
Co-supervisors: Milena Martarelli-Paolo Chiariotti, Grade: **106/110**

PROFESSIONAL EXPERIENCE

01/2024 - present **Postdoctoral researcher**
Technical University of Eindhoven, Eindhoven (NL)
Electrical Energy Systems (EES), Department of Electrical Engineering

10/2020 - 12/2023 **Postdoctoral researcher**
Università Politecnica delle Marche, Ancona (IT)
Department of Industrial Engineering and Mathematical Science

TEACHING

- **Electrical Energy Systems, Dept. of Electrical Engineering, Technical University of Eindhoven (NL)**
  - *System integration project (5LEF0)* 2025-2026: Lecturer on the master class for the optimization models in sustainable technologies.
  - *Electricity Markets: Modeling and Optimization (5LEP0)* 2025-2026: Co-lecturer

  - *Electrical Power Systems for EE (5EWD0)* 2024-2025-2026: Lecturer on the energy storage and advancements.

- **Department of Industrial Engineering and Mathematical Science, Università Politecnica delle Marche, Ancona (IT)**
  - *Energy storages and their management* 2022-2023-2024: Lecturer on the master class on the *Pyomo* and *Python* driven solution for the energy storage simulation.
  - *Co-generation and white certificates* 2023: lecturer for the dedicated lecturer for the co-generation plants.

AWARDS

- Eurotech Visiting Researcher Program, grant for the academic visiting in DTU wind and Energy Systems, 2026
- Erasmus+ Campusworld, grant for the academic visit in Technical University of Eindhoven, Electrical Energy Systems group of Electrical Engineering department, 2023
- Erasmus+ Campusworld, grant for the academic visit in Technical University of Denmark Energy, Continous Modeling and Testing section, 2022
- In Studis Laus, Rotary Club Senigallia, for excellence in the high school exam, 2014
- Premio Due Valli, Associazione GIO Misa e Nevola, excellece for the high school exam score, 2014

PROFESSIONAL ACTIVITIES

Reviewing Activities

- *Journals*
  Applied Energy, Energy Conversion and Management, Journal of Energy Storage, Sustainable Energy Grids and Networks, Sustainability, IEEE Systems, IEEE transactions on Intelligent transportation systems, IEEE transaction on Smart Grid.
- *Conferences*
  Innovative Smart Grid Technology Conference (ISGT) Europe, Smart Energy Systems and Technologies (SEST), PowerTech conference, Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS)

Memberships

- IEEE Power and Energy Society (since 2024)
- Italian Association of Turbo-machinery and Energy Systems (2020-2024)
- Italian order of engineers (2020-2024)
- Society of Automotive Engineers (2018-2019)

INVOLVED PROJECTS

- **SG-SKILL**, Erasmus project from the European Union, 2026 - present
- **ORKEST**, Netherlands Enterprise Agency (RVO) project, 2025 - present
- **NO-GIZMOS**, Netherlands Enterprise Agency (RVO) project, 2024-2025
- **Gretha**, Italian ministry project, 2023-2024
- **eNeuron**, Horizon 2020 project, 2020-2023
- **Ricerca del sistema elettrico italiano**, Italian ministry project, 2020-2022
- **Recity**, Italian ministry project, 2022

JOURNAL PUBLICATIONS

[J14] L. **Jin**, L. Bliek, and N. G. Paterakis, "Learning active constraints for bilevel optimization: Evaluating classification metrics on real-world distribution system data," *IEEE Transactions on Smart Grid*, vol. 17, no. 2, pp. 1303–1314, 2026. DOI: 10.1109/TSG.2025.3632419.

[J13] L. **Jin**, L. Bliek, and N. G. Paterakis, "Surrogate models in power system scheduling problems: Learning active constraints via graph neural networks," *IEEE Transactions on Smart Grid*, pp. 1–1, 2026. DOI: 10.1109/TSG.2026.3681028.

[J12] L. **Jin**, R. Nogueira Nakashima, G. Comodi, and H. L. Frandsen, "Alkaline electrolysis for green hydrogen production: A novel, simple model for thermo-electrochemical coupled system analysis," *Applied Thermal Engineering*, vol. 262, p. 125 154, 2025, ISSN: 1359-4311. DOI: https://doi.org/10.1016/j.applthermaleng.2024.125154. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S1359431124028229.

[J11] L. **Jin**, M. Rossi, A. Monforti Ferrario, F. Mennilli, and G. Comodi, "Designing hybrid energy storage systems for steady green hydrogen production in residential areas: A gis-based framework," *Applied Energy*, vol. 389, p. 125 765, 2025, ISSN: 0306-2619. DOI: https://doi.org/10.1016/j.apenergy.2025.125765. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0306261925004957.

[J10] S. Zhan, L. **Jin**, H. Zhang, and N. G. Paterakis, "Real-time measurement-based optimization for distribution system operation considering battery voltage and thermal constraints," 2025. arXiv: 2510.16408 [eess.SY]. [Online]. Available: https://arxiv.org/abs/2510.16408.

[J9] L. **Jin**, M. Kazemi, G. Comodi, and C. Papadimitriou, "Assessing battery degradation as a key performance indicator for multi-objective optimization of multi-carrier energy systems," *Applied Energy*, vol. 361, p. 122 925, 2024, ISSN: 0306-2619. DOI: https://doi.org/10.1016/j.apenergy.2024.122925. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0306261924003088.

[J8] F. Mennilli, L. **Jin**, M. Rossi, and G. Comodi, "Assessment of a naoh-based alkaline electrolyser's performance: System modelling and operating parameters optimisation," *International Journal of Hydrogen Energy*, vol. 85, pp. 625–634, 2024, ISSN: 0360-3199. DOI: https://doi.org/10.1016/j.ijhydene.2024.08.175. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0360319924033342.

[J7] A. Pizzuti, L. **Jin**, M. Rossi, F. Marinelli, and G. Comodi, "A novel approach for multi-stage investment decisions and dynamic variations in medium-term energy planning for multi-energy carriers community," *Applied Energy*, vol. 353, p. 122 177, 2024, ISSN: 0306-2619. DOI: https://doi.org/10.1016/j.apenergy.2023.122177. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0306261923015416.

[J6] M. Rossi, L. **Jin**, A. Monforti Ferrario, M. Di Somma, A. Buonanno, C. Papadimitriou, A. Morch, G. Graditi, and G. Comodi, "Energy hub and micro-energy hub architecture in integrated local energy communities: Enabling technologies and energy planning tools," *Energies*, vol. 17, no. 19, 2024, ISSN: 1996-1073. DOI: 10.3390/en17194813. [Online]. Available: https://www.mdpi.com/1996-1073/17/19/4813.

[J5] L. **Jin**, M. Rossi, L. Ciabattoni, M. Di Somma, G. Graditi, and G. Comodi, "Environmental constrained medium-term energy planning: The case study of an italian university campus as a multi-carrier local energy community," *Energy Conversion and Management*, vol. 278, p. 116 701, 2023, ISSN: 0196-8904. DOI: https://doi.org/10.1016/j.enconman.2023.116701. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S019689042300047X.

[J4] L. **Jin**, M. Rossi, A. Monforti Ferrario, J. C. Alberizzi, M. Renzi, and G. Comodi, "Integration of battery and hydrogen energy storage systems with small-scale hydropower plants in off-grid local energy communities," *Energy Conversion and Management*, vol. 286, p. 117 019, 2023, ISSN: 0196-8904. DOI: https://doi.org/10.1016/j.enconman.2023.117019. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0196890423003655.

[J3] E. Marchegiani, F. Ferracuti, A. Monteriù, L. **Jin**, M. Rossi, G. Comodi, and L. Ciabattoni, "Li-ion battery aging model robustness: An analysis using univariate and multivariate techniques," *Journal of Energy Storage*, vol. 72, p. 108 591, 2023, ISSN: 2352-152X. DOI: https://doi.org/10.1016/j.est.2023.108591. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S2352152X23019886.

[J2] L. **Jin**, A. Monforti Ferrario, V. Cigolotti, and G. Comodi, "Evaluation of the impact of green hydrogen blending scenarios in the italian gas network: Optimal design and dynamic simulation of operation strategies," *Renewable and Sustainable Energy Transition*, vol. 2, p. 100 022, 2022, ISSN: 2667-095X. DOI: https://doi.org/10.1016/j.rset.2022.100022. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S2667095X2200006X.

[J1] A. Nadeem, M. Rossi, E. Corradi, L. **Jin**, G. Comodi, and N. A. Sheikh, "Energy-environmental planning of electric vehicles (evs): A case study of the national energy system of pakistan," *Energies*, vol. 15, no. 9, 2022, ISSN: 1996-1073. DOI: 10.3390/en15093054. [Online]. Available: https://www.mdpi.com/1996-1073/15/9/3054.

CONFERENCE PUBLICATIONS

[C13] L. **Jin**, S. Zhan, S. Cudjoe, and N. G. Paterakis, "Empowering low-voltage grids: Real-world implementation of home batteries for effective congestion management," in *2025 IEEE Kiel PowerTech*, 2025, pp. 1–6. DOI: 10.1109/PowerTech59965.2025.11180463.

[C12] L. **Jin**, S. Zhan, H. Zhang, and N. G. Paterakis, "Multi-objective congestion management in low-voltage grids: Coordinating end-users and system operators for real-world implementation," in *2025 IEEE PES Innovative Smart Grid Technologies Conference Europe (ISGT Europe)*, 2025, pp. 1–5. DOI: 10.1109/ISGTEurope64741.2025.11305401.

[C11] X. Li, J. J. Markus, S. De Lange, L. **Jin**, K. Kok, and N. G. Paterakis, "Hybrid heat pump flexibility allocation: Quantified thermal comfort-based congestion management," in *2025 IEEE International Conference on Environment and Electrical Engineering and 2025 IEEE Industrial and Commercial Power Systems Europe (EEEIC / I&CPS Europe)*, 2025, pp. 1–6. DOI: 10.1109/EEEIC/ICPSEurope64998.2025.11169153.

[C10] H. Zhang, L. **Jin**, K. Kok, and N. G. Paterakis, "Surrogate model-based reinforcement learning for bidding strategies in local flexibility markets," in *2025 IEEE International Conference on Environment and Electrical Engineering and 2025 IEEE Industrial and Commercial Power Systems Europe (EEEIC / I&CPS Europe)*, 2025, pp. 1–6. DOI: 10.1109/EEEIC/ICPSEurope64998.2025.11169071.

[C9] L. **Jin**, X. Li, S. De Lange, H. Slootweg, and N. G. Paterakis, "Response allocation of domestic hybrid heat pumps flexibility for congestion management," in *2024 IEEE PES Innovative Smart Grid Technologies Europe (ISGT EUROPE)*, 2024, pp. 1–5. DOI: 10.1109/ISGTEUROPE62998.2024.10863630.

[C8] F. Mennilli, L. **Jin**, M. Rossi, and G. Comodi, "A fitting process for the optimal modelling of an anion exchange membrane (aem) electrolyser," in *Proceedings of the ASME Turbo Expo 2024: Power for Land, Sea, and Air*, vol. 2: Ceramics and Ceramic Composites; Coal, Biomass, Hydrogen, and Alternative Fuels, Jun. 2024, V002T03A017.

[C7] M. D. Somma, L. **Jin**, N. Bianco, and C. Papadimitriou, "Advancing multi-energy hub design: An integrated approach for optimizing residential clusters in high res penetration scenarios," in *2024 International Conference on Smart Energy Systems and Technologies (SEST)*, 2024, pp. 1–6. DOI: 10.1109/SEST61601.2024.10694519.

[C6] J. C. Alberizzi, M. A. Pérez Estevez, M. Renzi, L. **Jin**, M. Rossi, and A. Alberizzi, "Optimal management of a hydro – wind energy system with hydrogen storage," in *2023 12th International Conference on Power Science and Engineering (ICPSE)*, 2023, pp. 46–50. DOI: 10.1109/ICPSE59506.2023.10329307.

[C5] A. Bechmann, T. Barlas, H. L. Frandsen, L. **Jin**, and R. N. Nakashima, "The hydrogen wind turbine: Design of a wind turbine optimised for hydrogen production," 1, vol. 2507, IOP Publishing, May 2023, p. 012 010. DOI: 10.1088/1742-6596/2507/1/012010. [Online]. Available: https://dx.doi.org/10.1088/1742-6596/2507/1/012010.

[C4] M. Di Somma, A. Buonanno, M. Caliano, L. **Jin**, M. Rossi, G. Graditi, and G. Comodi, "Stochastic energy management for the italian univpm campus as a multi-carrier energy hub participating in the day-ahead market," in *IEEE EUROCON 2023 - 20th International Conference on Smart Technologies*, 2023, pp. 251–256. DOI: 10.1109/EUROCON56442.2023.10199000.

[C3] L. **Jin**, R. N. Nakashima, H. L. Frandsen, and G. Comodi, "Alkaline electrolysis for green hydrogen production: Techno-economic analysis of temperature influence and control," in *Proceedings of the 36th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS)*, 2023. DOI: 10.52202/069564-0082. [Online]. Available: https://doi.org/10.52202/069564-0082.

[C2] L. **Jin**, M. Rossi, F. Caresana, L. Pelagalli, and G. Comodi, "Metal hydrides in hydrogen storage: Optimization of dynamic control strategies," 1, vol. 2648, IOP Publishing, Dec. 2023, p. 012 056. DOI: 10.1088/1742-6596/2648/1/012056. [Online]. Available: https://dx.doi.org/10.1088/1742-6596/2648/1/012056.

[C1] F. Mennilli, L. **Jin**, M. Rossi, A. Mugnini, and G. Comodi, "Energy analysis of a hydrogen integrated system in the residential sector," 1, vol. 2648, IOP Publishing, Dec. 2023, p. 012 057. DOI: 10.1088/1742-6596/2648/1/012057. [Online]. Available: https://dx.doi.org/10.1088/1742-6596/2648/1/012057.

SUPERVISION AND SUPPORT

Msc thesis:

[S9] **Yuanchun Chen**, *Data-Driven Efficiency Parametrization from Operational Telemetry: Improved State-of-Energy Tracking and Aging-Aware Dispatch for Battery Energy Storage Systems*, MSc Sustainable Energy Technology, Eindhoven University of Technology, 2026.

[S8] **Chengyuan Guan**, *Optimal Sizing of Hybrid Renewable Energy Solutions for Data Centers: Case Studies of Non-Firm Grid, Reduced- and Off-Grid Scenarios*, MSc Sustainable Energy Technology, Eindhoven University of Technology, 2025.

[S7] **Dennis Hollanders**, *Graph Neural Networks for Distribution Network Reconfiguration Optimization*, Department of Industrial Engineering & Innovation Sciences, Information Systems Research Group, Eindhoven University of Technology, 2025.

[S6] **Stefan De Lange**, *Hybrid Heat Pump Optimization for Flexibility Provision: Modeling and Simulation*, Department of Electrical Engineering, Eindhoven University of Technology, 2024.

[S5] **Fabian Caipa Cure**, *Adaptive Distributionally Robust Optimization for Residential Energy Management under Non-firm Capacity Contracts*, Department of Mechanical Engineering, Master's in Sustainable Energy Technology, Eindhoven University of Technology, 2024.

[S4] **Francesco Panara**, *Study of Hydrogen-to-Power systems: state-of-the-art of alkaline and Proton Exchange Membrane fuel cells and performance evaluation through Python modelling*, Dipartimento di Ingegneria Industriale e Scienze Matematiche, Università Politecnica delle Marche, 2023.

[S3] **Filippo Onori**, *Design and management of a "Battery Energy Storage System" (BESS) to provide flexibility service to the national electricity grid*, Dipartimento di Ingegneria Industriale e Scienze Matematiche, Università Politecnica delle Marche, 2023.

[S2] **Francesca Mennilli**, *Study of systems related to Power-to-Hydrogen: state of art of the electrolyser and its modeling using Python*, Dipartimento di Ingegneria Industriale e Scienze Matematiche, Università Politecnica delle Marche, 2022.

[S1] **Luca Ciotti**, *Study of systems related to Power-to-Hydrogen: state of art of the storage and its modeling using Python*, Dipartimento di Ingegneria Industriale e Scienze Matematiche, Università Politecnica delle Marche, 2022.

PhDs supervision support:

[P3] **Ranier Alexsander Arruda Moura**, *Copula based synthetic profiles genaration for the MV distribution networks*, Eindhoven University of Technology, 2025 - present.

[P2] **Niek Brekelmans**, *MV/LV power transformer reliability and aging analysis for the system operations*, Eindhoven University of Technology, 2025 - present.

[P1] **Yifan Zhang**, *MV/LV cables reliability and aging analysis for the system operations*, Eindhoven University of Technology/DNV-GL, 2025 - present.