Tohid **Harighi**

Ph.D. Candidate

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WWW https://www.linkedin.com/in/tohid-harighi/
WWW https://scholar.google.com/citations?user=yIjAL1EAAAAJ&hl=en
WWW https://www.researchgate.net/profile/Tohid-Harighi

Received a PhD in Electrical Engineering from the University of Bologna in 2024, specializing in Local Energy Communities (LEC) in cooperation with Hera Group, DNO/DSO of the Modena-Italy area (INRETE Distribuzione Energia S.p.A.). Throughout the PhD, conducted stability and reliability tests with a focus on DSO maintenance and R&D, using real case studies. These studies and simulations were primarily based on local grid faults and fluctuations, utilizing software such as DIgSILENT PowerFactory. Earned an MSc in Electrical and Electronics Engineering from Gazi University (Ankara, Türkiye) in 2019, focusing on the placement of EV charging stations in Ankara (grid planning), in cooperation with the R&D department of Turkish Energy Distribution (TEIAS). Experience also includes part-time roles as an R&D engineer at Ankara University and a private company during the master's studies.

Skills

- Grid Planning & Operations
- Extensive AutoCAD knowledge
- Power Systems Analysis
- Electrical design Renewable energy systems
- PV farms / Wind Turbine (Renewable Power Plant)
- Battery Energy Storage System (BESS)

Software Tools:
- DIgSILENT Power Factory, Python, MATLAB / Simulink, PSCAD, PSS/e, Typhoon HIL, HOMER

Engineering & Analysis:
- HVDC / HVAC, MV / LV systems, Power System Stability, Harmonics

Analysis Simulation & Design Tools:
- Autodesk Autocad, Ansys Magnetic, Origin Pro Optimization & Control: - AIMMS (Optimization), Cable Analysis, Energy Policy, Grid Efficiency

Work History

2024-01 - 2024-07

PhD Internship

Gruppo HERA, Bologna, Italy

- Grid modelling and improving reactive/active power provision in grid up to 20%.

Evaluated staff performance and provided coaching to address inefficiencies.

2021-01 - 2021-12

R&D Engineer

Europower Energy and Automation Technologies, Ankara, Türkiye

- Considering Ankara electrification infrastructure design and improve topology of DC-DC and AC-DC converters to use in EV fast chargers.
- Provided technical support to sales and marketing teams, assisting in the creation of accurate product specifications and promotional materials.

2019-06 - 2020-11

Power System Engineer

Turkish Accelerator and Radiation, Ankara, Türkiye

- Adopting dependency of Turkish Accelerator and Radiation complex to dynamic UPS to improve aging of filters and complex converters.
- Managed project timelines and budgets for successful delivery of multiple power systems engineering projects.
- Enhanced grid stability through implementation of advanced control strategies and modern technologies.

Education

2021-12 - 2024-10

Ph.D.: Electrical Engineering

University of Bologna - Bologna

Thesis: Renewable energy communities and storage systems: local ancillary services by renewable energy communities'
• Research with innovation, 2021 from 2024
• PON Internship, Gruppo HERA, Completed 2024
- Tutor in:

1- Electric Power Systems and Smart Grids
2- Electric Power Systems
3- Power plants and distributed generation
4- Smart Grids For Renewable Integration

2016-08 - 2019-10

Master of Science: Electrical, Electronics Engineering

Gazi University - Ankara

Thesis: Optimal Placement of Electric Vehicle Charging Stations on a Distribution Network

- Collaboration with Turkish Energy Distribution DSO (TEİAŞ)
- Tutor in: Electric Power Systems and Smart Grids

2011-08 - 2015-11

Bachelor of Science: Electrical Engineering

Islamic Azad University - Tabriz

Thesis: Coordination of Wind Turbine Renewable Energy and transformer's fault detection in urban electrification

Certifications

2023-07 Driving License AM/B/B1

Languages

English, Italian, Turkish, Persian, Azerbaijani

References

Available upon request

Publication

1- Tohid Harighi, Alberto Borghetti, Fabio Napolitano, Fabio Tossani, “Provision of reactive power services by energy communities in MV distribution networks”, Sustainable Energy, Grids and Networks, Vol. 34, 2023, https://doi.org/10.1016/j.segan.2023.101038
2- Borghetti, A., Harighi, T., Nucci, C.A., Graditi, G., Di Somma, M. and Caliano, M. (2024). Integration of Multiple Energy Communities: Transaction Prices, Reactive Power Control, and Ancillary Services. In Integrated Local Energy Communities (eds M. Di Somma, C. Papadimitriou, G. Graditi and K. Kok). https://doi.org/10.1002/9783527843282.ch9
3- T. Harighi, A. Borghetti, F. Napolitano, F. Tossani, " Flexibility Modeling for Parking Lots with Multiple EV Charging Stations" Electric Power Systems Research, Vol. 234, 2024, https://doi.org/10.1016/j.epsr.2024.110732
4- T. Harighi, S. Lilla, A. Borghetti “Modeling of Independent Energy Communities Sharing the Same Distribution Network” 2024 International Conference on Smart Energy Systems and Technologies (SEST), Torino, Italy (Presented)
5- T. Harighi, A. Borghetti, S. Lilla, C. A. Nucci, A. Calzolari, M. Salicini, C. Cercolani “Quantifying Maximum Limits for Reactive Power Flexibility Provision in Energy Communities: A Case Study of A Real Distribution Power Network” International Conference of CIGRE 2024 (Presented) Poster session C6 PS1
6- T. Harighi, A. Borghetti, F. Napolitano and F. Tossani, "Optimization Model for the Analysis of Multiple Energy Communities in the Same Distribution Network with Different Providers," 2023 IEEE Belgrade PowerTech, Belgrade, Serbia, 2023, pp. 1-6, doi: 10.1109/PowerTech55446.2023.10202985
7- M. De Santis, A. R. Di Fazio, M. Russo, T. Harighi and A. Borghetti, "Voltage Optimization in Distribution Networks using EV Parking Lots and PV systems as flexibility options," 2023 IEEE International Conference on Environment and Electrical Engineering and 2023 IEEE Industrial and Commercial Power Systems Europe (EEEIC / I&CPS Europe), Madrid, Spain, 2023, pp. 1-6, doi: 10.1109/EEEIC/ICPSEurope57605.2023.10194708
8- T. Harighi, A. Borghetti, M. De Santis, A. R. Di Fazio and M. Russo, "Flexible Operation of an EV Parking Lot for Voltage Control of a Distribution Network," 2023 International Conference on Smart Energy Systems and Technologies (SEST), Mugla, Turkiye, 2023, pp. 1-6, doi: 10.1109/SEST57387.2023.10257434
9- T. Harighi, R. Bayindir, U. Gokmen, L. E. Jamal Golzari and A. Khanlari, "Changing Power Transformer Metallurgy to Increase Responsibility of Electric Vehicle Fast Charge Profile," 2020 9th International Conference on Renewable Energy Research and Application (ICRERA), Glasgow, UK, 2020, pp. 483-488, doi: 10.1109/ICRERA49962.2020.9242733.
10- Harighi, T.; Padmanaban, S.; Bayindir, R.; Hossain, E.; Holm-Nielsen, J.B. Electric Vehicle Charge Stations Location Analysis and Determination—Ankara (Turkey) Case Study. Energies 2019, 12, 3472. https://doi.org/10.3390/en12183472.
11- T. Harighi and R. Bayindir, "Load Estimation Use in Electric Vehicle Charge Station Coordination in Different Node and Definite Area," 2018 International Conference on Smart Grid (icSmartGrid), Nagasaki, Japan, 2018, pp. 264-271, doi: 10.1109/ISGWCP.2018.8634506.
12- Harighi, T.; Bayindir, R.; Padmanaban, S.; Mihet-Popa, L.; Hossain, E. An Overview of Energy Scenarios, Storage Systems and the Infrastructure for Vehicle-to-Grid Technology. Energies 2018, 11, 2174. https://www.mdpi.com/1996-1073/11/8/2174.
13- T. Harighi, R. Bayindir and E. Hossain, "Overviewing Quality of Electric Vehicle Charging Stations' Service Evaluation" International Journal of Smart Grids, ijSmartGrid, vol. 2, pp. 40-48, 2017
14- T. Harighi, R. Bayindir and E. Hossain, "Overview of quality of service evaluation of a charging station for electric vehicle," 2017 IEEE 6th International Conference on Renewable Energy Research and Applications (ICRERA), San Diego, CA, USA, 2017, pp. 1180-1185, doi: 10.1109/ICRERA.2017.8191240