

**Walied Alfraidi, PhD,**

Assistant Professor, Electrical Engineering Department, Imam Mohammad Ibn Saudi Islamic University (IMSIU), Riyadh, Saudi Arabia

[walfraidi@imamu.edu.sa](mailto:walfraidi@imamu.edu.sa)

+966560544441

**EDUCATION**

**PhD**, Electrical and Computer Engineering Department, University of Waterloo, 2014-2018

*Title of the thesis:* Flexibility Provisions from Energy Hubs for Sustainable Energy Systems

**MASc**, Electrical and Computer Engineering Department, University of Waterloo, 2011– 2013

*Title of the thesis:* Coordinated Operation of Distributed Energy Resources in Renewables Based Microgrids under Uncertainties

**Academic Intensive English Program**, University of California Los Angeles, 2010-2011

**BASc**, Electrical Engineering Department, Qassim University, Saudi Arabia, 2005-2009

**RESEARCH INTERESTS**

Renewable energy-based systems, Energy storage systems, Power system flexibility, Internet of things, Electric vehicles, GHG emissions reductions, and Smart grid.

**WORK EXPERIENCE**

**Assistant Professor**, Electrical Engineering Department, Imam Mohammad Ibn Saudi Islamic University (IMSIU), Riyadh, Saudi Arabia, 2022 – Present

**Chairman of Electrical Engineering Department**, IMSIU, Riyadh, Saudi Arabia, March 2023

**Head of Scientific Research Committee** in College of Engineering, IMSIU, 2022– present

**Head of Higher Education Committee** in College of Engineering, IMSIU, 2022– present

**Member of Engineering Research Center**, IMSIU, 2022–present

**Assistant Professor**, Electrical Engineering Department, Majmaah University, 2019 – 2021

**Member of Engineering Research and Applied Sciences Center**, Majmaah University, 2019–2021

**Member of Quality and Accreditation Unit**, Majmaah University, 2019–2021

**Head of Scientific Research**, Majmaah University, 2019–2021

**Research Assistant**, Electrical and Computer Engineering, University of Waterloo, 2011–2018

- Research techniques for integration of renewable energy sources and electric vehicles- based energy hubs

**Teaching Assistant**, Electrical and Computer Engineering, University of Waterloo, Canada,

- ECE 390: Engineering Design, Economics, and Impact on Society: Fall 2015
- ECE 668: Distribution Systems Engineering: Winter 2013

**Teaching Assistant**, Electrical Engineering Department, King Saud University, September 2009 – February 2010

- Supervised course labs
- Conducted tutorials to students
- Marked assignments and exams

**Operating Engineer**, Saudi Electricity Company, Riyadh, Saudi Arabia, May 2009–August 2009

- Gained experience with Saudi grid's operation and maintenance.

#### **PROGRAM DEVELOPMENT AND ACCREDITATIONS:**

- Development of a Master of Engineering program in Renewable Energy, College of Engineering, IMSIU, 2022.
- Participation and preparation for NCAA Accreditation, College of Engineering, Majmaah University, 2020–2021.
- Development of a Master of Science program in Sustainable Energy Engineering, College of Engineering, Majmaah university, 2021.
- Participation in Institutional Funding Research Program and assistance in securing funding for research priorities, from Ministry of Education, 2019 –2022.

#### **AWARDS AND RESEARCH GRANTS**

- Research funds from the Deanship of Scientific Research, IMSIU, 2022-present
- Institutional research funds from Ministry of Education through Majmaah university, 2020-2022
- Research funds from the Deanship of Scientific Research, Majmmah university, 2019-2021
- PhD Scholarship to study at the University of Waterloo, 2014- 2018
- Student Excellent Award, Saudi Arabian Cultural Bureau, 2012-2018
- MASc Scholarship to study at the University of Waterloo, 2011- 2013
- Academic English scholarship to study at the University of California Los Angeles, 2010-2011

## PROGRAMMING SKILLS

- Excellent skills for solving optimization problems in power systems using GAMS and MATLAB
- Excellent use of MS Office (Word, Excel, Power Point, and EndNote)

## SELECTED PUBLICATIONS

- **W. Alharbi**, "Integrating Internet-of-Things-Based Houses into Demand Response Programs in Smart Grid." *Energies* 16, no. 9, 2023.
- **W. Alharbi**, "Assessment of Distribution System Margins Considering Battery Swapping Stations." *Sustainability*, 15.8, 2023.
- H. Fekri, M. Soltani, M. Hosseinpour, **W. Alharbi** and K. Raahemifar, "Energy simulation of residential house integrated with novel IoT windows and occupant behavior," *Sustainable Cities and Society*, 2022, 78, 103594.
- **W. Alharbi** and K. Bhattacharya, "Incentive design for flexibility provisions from residential energy hubs in smart grid," *IEEE Transactions on Smart Grid*, 2021, 2113-2124.
- **W. Alharbi** and A. Almutairi, "Planning flexibility with non-deferrable loads considering distribution grid limitations," *IEEE Access*, 2021, pp.25140-25147.
- A. Soltani, M. Hosseinpour, **W. Alharbi** and K. Raahemifar, "Integrated anaerobic co-digestion of municipal organic waste to biogas using geothermal and CHP plants: A comprehensive analysis," *Renewable and Sustainable Energy Reviews*, 2021, 152, 111709.
- A.G Abo-Khalil, **W. Alharbi**, A. Al-Qawasmi, M. Alobaid, and I.M. Alarifi, "Maximum Power Point Tracking of PV Systems under Partial Shading Conditions Based on Opposition-Based Learning Firefly Algorithm," *Sustainability* 2021, 13, 2656.
- A.R. Bhatti, A. Bilal Awan, **W. Alharbi**, Z. Salam, A.S. Bin Humayd, R.P. Praveen and K. Bhattacharya, "An Improved Approach to Enhance Training Performance of ANN and the Prediction of PV Power for Any Time-Span without the Presence of Real-Time Weather Data," *Sustainability*, 2021, p.11893.
- A.G Abo-Khalil, A.M. Eltamaly, **W. Alharbi**, A. Al-Qawasmi, M. Alobaid and I.M. Alarifi, "A modified active frequency islanding detection method based on load frequency and chopping fraction changes," *International Transactions on Electrical Energy Systems*, 2021, p.e13033.
- I.M. Alarifi, A.G. Abo-Khalil, A.R. Al-Qawasmi, **W. Alharbi**, and M. Alobaid, "On the effects of nanomaterials on the performance of solar distillation systems-A comprehensive review," *Solar Energy*, 2021, 218, pp.596-610.
- A.G Abo-Khalil, **W. Alharbi**, A. Al-Qawasmi, M. Alobaid and I.M. Alarifi, "Modeling and control of unbalanced and distorted grid voltage of grid-connected DFIG wind turbine," *International Transactions on Electrical Energy Systems*, May 2021.
- **W. Alharbi** and K. Bhattacharya, "Flexibility provisions from a fast charging facility equipped with DERs for wind integrated grids," *IEEE Transactions on Sustainable Energy*, 2018, pp.1006-1014.
- **W. Alharbi** and K. Bhattacharya, "Pricing of flexibility provisions from a reinforced electric vehicle charging facility with DERs," *IEEE Canada Electrical Power and Energy Conference (EPEC) 2018, Toronto, Canada, October 2018*.

- **W. Alharbi** and K. Bhattacharya, Impact of mixed charging requests of PEVs on a charging facility load and a distribution grid, *IEEE Green Energy and Smart Systems Conference (IGESSC), Long Beach, California, USA, Nov 2017.*
- **W. Alharbi** and K. Bhattacharya, "Electric vehicle charging facility as a smart energy microhub," *IEEE Transactions on Sustainable Energy*, pp.616-628, April 2017.
- **W. Alharbi** and K. Raahemifar, "Probabilistic coordination of microgrid energy resources operation considering uncertainties", *Electric Power Systems Research*, 2015.
- **W. Alharbi** and K. Bhattacharya, "Accommodating high penetration of renewable generation in remote microgrids under uncertainties" *IEEE Canada, Electrical Power and Energy Conference (EPEC), Calgary, Canada, October 2014.*
- **W. Alharbi** and K. Bhattacharya, "Coordination of Demand Response and Energy Storage in Microgrids for Optimal Utilization of Distributed Energy Resources", *CIGRÉ Canada Conference, Calgary, Canada, October 2013.*
- **W. Alharbi** and K. Bhattacharya, "Demand Response and Energy Storage in MV Islanded Microgrids for High Penetration of Renewables", *IEEE Canada Electrical Power and Energy Conference (EPEC), Halifax, Canada, August 2013.*

## PROFESSIONAL AFFILIATIONS

- Institute of Electrical and Electronic Engineering (IEEE), Member: 2010- Present
- IEEE Power and Energy Society (IEEE PES) Member: 2011- Present

## SELECTED SCHOLARLY ACTIVITIES

### Reviewer (Journals/ Conferences)

- IEEE Transactions on Smart Grid
- IEEE Power and Energy Society (PES) General Meeting
- IEEE PES Innovative Smart Grid Technologies Europe
- IEEE Transactions on Power Systems
- IEEE Transactions on Sustainable Energy
- Elsevier Energy Reports
- Elsevier Sustainable Cities and Society

## REFERENCE

Provided upon request