Hussam J. Khasawneh, Ph.D.

Information

Associate Professor
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Research Interests

Advanced automotive systems, renewable energy, energy storage, energy efficiency, smartgrid, microgrid, distributed generation, vehicle-to-grid.

Education

The Ohio State University, Columbus, Ohio USA
Ph.D., Electrical and Computer Engineering, 2011-2015

- Dissertation Title: "Sizing Methodology and Life Improvement of Energy Storage Systems in Microgrids"

The Ohio State University, Columbus, Ohio USA
M.S., Electrical and Computer Engineering, 2011-2014

The Ohio State University, Columbus, Ohio USA
M.S., Mechanical Engineering, 2009-2011

- Dissertation Title: "Analysis of Heat-Spreading Thermal Management Solutions for Lithium-Ion Batteries"

The University of Jordan, Amman, Jordan
B.S., Mechatronics Engineering, 2003-2008

- Graduation Project Title: "Designing of Automated Wireless Dual Solar-Diesel Thermal System for Residential Space and Water Heating"

Academic Experience

The University of Jordan, Amman, Jordan

Associate Professor **Feb. 2020 - Present**

Assistant Professor **May. 2015 - Feb. 2020**
Teaching courses in autotronics, electronics, mechatronics systems design, statics, strength of materials, measurements, and transducers (in blended learning model).
Teaching all the courses online during the university closure due to COVID-19

The Ohio State University, Columbus, Ohio USA

Graduate Teaching Associate (GTA) **Aug. 2013 - May 2015**
Teaching Sustainable Energy and Energy Conversion Laboratory.

Graduate Research Associate (GRA) **Aug. 2012 - Aug. 2013**
Ph.D. research at Center for High Performance Power Electronics (CHPPE).

Graduate Research Associate (GRA) **Apr. 2011 - Jun. 2012**
M.S. research at Center for Automotive Research (CAR).

Graduate Teaching Associate (GTA) **Oct. 2010 - Apr. 2011**
Teaching a course in statics.

Professional Experience

The International Association for the Exchange of Students for Technical Experience (IAESTE) / Jordan Office

National Secretary **Sep. 2019 - Present**

- Ensuring that the core activity of a National Office is the exchange of open offers for students.
- Encourage the widest possible geographical participation in the exchange of academic institutions and employers throughout Jordan.
- Exchanging offers with as many countries as possible.
- Providing and facilitating the issuance of the necessary documentation for work authorization to all IAESTE students.
- Maintaining effective communications, meeting deadlines, and providing prompt responses to requests for information.

School of Engineering / The University of Jordan

Assistant Dean for Training Affairs **Sep. 2019 - Present**

- Assisting the students in finding suitable companies, industrial facilities, or organizations to have their internship in them.
- Approving the training requests submitted by the students and ensuring that the scope of the internship matches the required learning outcomes.
- Following up with the students' progress throughout the training period.
- Evaluating the reports and documentation submitted by the students upon the end of their internship.

Water, Energy and Environment Center (WEEC) / The University of Jordan

Deputy Director **Sep. 2016 - Sep. 2018**

- Planning, organizing, directing, and evaluating many activities and operations at WEEC.
- Writing a successful proposal for a Newton fund call by the British Council in participation with University of Birmingham (topic: the transition to zero/low carbon transportation).
- Participating in multiple executive committees at WEEC (for example, WEEC strategic plan committee, WEEC's laboratories' tests pricing committee, the conversion of WEEC's building into a green building committee).
- Representing WEEC at several national and international meetings and conferences inside and outside Jordan.

Centers for Natural Resources and Development (CNRD) Network

Coordinator **Nov. 2016 - Sep. 2018**

- CNRD connects universities worldwide by promoting academic exchange and cooperation in the field of natural resource management, particularly with regards to water, land, ecosystems, and renewable energy.
- Serving as the coordinator of "Centers for Natural Resources and Development (CNRD) Network," and representing the University of Jordan in CNRD's annual meetings.

- Writing a successful proposal to fund a workshop entitled "Invitation to the Waste-to-Energy: Assessment and Solutions for Vulnerable Communities" by CNRD, and later organizing the funded workshop on 3-5, July 2017 in Amman, Jordan.

Off-Grid 2-kWp PV Solar Tree at the University of Jordan Campus

Energy Expert **Jan. 2018 - Jan. 2019**

- A full design, engineering, and commissioning of a 2-kWp off-grid solar tree.
- The system consists of PV panels with a gel-type battery energy storage system.

Water and Wastewater Utilities for Climate Mitigation (WaCCliM) Project

Team Member - Energy Expert **Jan. 2017 - May 2017**

- The WaCCliM project is a GIZ-funded project that aims at determining the baseline and study the options to improve the carbon footprint of Madaba Water and Wastewater Utility, Miyahuna-Madaba Company.
- The Energy performance and Carbon emissions Assessment and Monitoring (ECAM) tool developed by the International Water Association (IWA) was used to assess the GHG emissions of the utilities.

Dar Al-Handasah, Amman, Jordan

Consultant Engineer **Apr. 2008 - Nov. 2008**

The University of Jordan, Amman, Jordan

Graduation Project **Mar. 2007 - Jan. 2008**

- Design of Automated Wireless Dual Solar-Diesel Thermal System for Residential Space and Water Heating.

Heinz Nixdorf Institute, University of Paderborn, Paderborn, Germany

IAESTE Intern **Jul. 2007 - Sep. 2007**

Awards

- **IAESTE National Secretary Service Award, 2021**
- **Newton-Khalidi Fund Researchers Links Workshop Grant**, 2019.
- **IEEE Industry Applications Magazine Prize Article Award**-second place, USA, 2016.
- **"Made in the Arab World"** Graduation Project Award-first place, Arab Science and Technology Foundation, Egypt, 2009.
- **"Made in Jordan"** Graduation Project Award-second place, The Queen Rania Center for Entrepreneurship (QRCE), Jordan, 2009.
- The University of Jordan School of Engineering **Dean's List**, 2008.

Committee Involvement

Nuclear Safety Committee, Jordan Atomic Energy Commission, Jordan, 2018-present.

Technical Program Committee of the 2019 IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT), Amman, Jordan, 9-11 April, 2019.

The Highest Committee for Engineering Accreditation (ABET), The University of Jordan, 2017-2019.

Technical Committee for studying and evaluating the bids of the 16-MW on-grid PV-system at the University of Jordan campus, 2018.

Receiving Committee of cell therapy center 100-kW PV-system at the University of Jordan, 2018.

Professional Memberships

- The Institute of Electrical and Electronics Engineers (IEEE), 2006-Present.
- Jordan Engineers Association, 2008-Present.
- International Water Association, 2017-Present.

Publications: Journals

[1] **H. Khasawneh**, M. Saidan, M. Al-Addous, "Utilization of hydrogen as clean energy resource in chlor-alkali process," Energy Exploration & Exploitation, vol. 37, no. 3, pp. 1053-1072, 2019.

[2] **H. Khasawneh**, Z. Abo-Hammour, M. Al Saaideh, S. Momani, "Identification of hysteresis models using real-coded genetic algorithms," The European Physical Journal Plus, vol. 134, no. 10, 2019.

[3] M. Saidan, **H. Khasawneh**, H. Aboelnga, S. Meric, I. Kalavrouziotis, J. Porro, "Baseline carbon emission assessment in water utilities in Jordan using ECAM tool," Journal of Water Supply: Research and Technology-Aqua, vol. 68, no. 6, pp. 460-473, 2019.

[4] M. Haj-ahmed, E. Feilat, **H. Khasawneh**, A. Abdelhadi, A. Awwad, "Comprehensive Protection Schemes for Different Types of Wind Generators," IEEE Transactions on Industry Applications, vol. 54, no. 3, pp. 2051-2058, 2018.

[5] M. Saidan, H. Al-Yazjeen, A. Abdalla, **H. Khasawneh**, H. Al-Naimat, N. Al Alami, M. Adawy, M. Jaber, N. Sowan. "Assessment of on-site treatment process of institutional building's wastewater." Processes, vol. 6, no. 4, 2018.

[6] M. Saidan, **H. Khasawneh**, M. Tayyem, M. Hawari, "Getting Energy from Poultry Waste in Jordan: Cleaner Production Approach," Journal of Chemical Technology and Metallurgy, vol. 52, no. 3, pp. 595-601, 2017.

[7] M. Kilani, **H. Khasawneh**, A. Badran, A. Awidi, "Further development on a gentle electromagnetic pump for fluids with stress-sensitive microparticles," Sensors and Actuators A: Physical, vol. 247, no. 1, pp. 440-447, 2016.

[8] **H. Khasawneh**, M. Illindala, "Supercapacitor cycle life equalization in a microgrid through flexible distribution of energy and storage resources," IEEE Transactions on Industry Applications, vol. 51, no. 3, pp. 1962-1969, 2015.

[9] M. Illindala, **H. Khasawneh**, A. Renjit, "Flexible distribution of energy and storage resources," IEEE Industry Applications Magazine, vol. 21, no. 5, pp. 32-42, 2015.

[10] **H. Khasawneh**, M. Illindala, "Battery Cycle Life Balancing in a Microgrid through Flexible Distribution of Energy and Storage", Journal of Power Sources, vol. 261, no. 1, pp. 378-388, 2014.

Publications: Conferences

[1] **H. Khasawneh**, M. Bani Mustafa, A. Al-Salaymeh, M. Saidan, "Techno-Economic Evaluation of On-Grid Battery Energy Storage System in Jordan using Homer Pro," in Proc. of 2019 AEIT International Annual Conference (AEIT), Florence, Italy, pp. 1-6.

[2] **H. Khasawneh**, O. Abdelaal, M. Al Saaideh, Z. Abo-Hammour, "Optimal Lead Compensator for Two-Loop Control System of Linear DC Motor," in Proc. of 2019 IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT), Amman, Jordan, pp. 634-639.

[3] S. Assaid, M. Saleh, M. Kamal, **H. Khasawneh**, "E-ring: A Non-Invasive Electricity Consumption Monitoring System," in Proc. of 2019 IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT), Amman, Jordan, pp. 347-352.

[4] Z. Abo-Hammour, M. Al Saaideh, M. Alkayyali, **H. Khasawneh**, "Optimal Design of Lead Compensator Using Nature-Inspired Algorithms," in Proc. of 2019 IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT), Amman, Jordan, pp. 40-45.

[5] Z. Abo-Hammour, M. Alkayyali, **H. Khasawneh**, M. Al Saaideh, "On the Design of the Integer and Fractional PID Controllers Using Particle Swarm Optimization," in Proceedings of International Conference on Fractional Differentiation and its Applications (ICFDA) 2018, Amman, Jordan.

[6] O. Aljanaideh, M. Rakotondrabe, **H. Khasawneh**, M. Al Janaideh, "Rate-dependent Prandtl-Ishlinskii hysteresis compensation using inverse-multiplicative feedforward control in magnetostrictive Terfenol-D based actuators," in Proc. of 2016 American Control Conference (ACC), Boston, MA, 2016, pp. 649-654.

[7] **H. Khasawneh**, A. Mondal, M. Illindala, B. Schenkman, D. Borneo, "Evaluation and Sizing of Energy Storage Systems for Microgrids," in Proc. of ICPS, pp. 1-8, 5-8 May 2015.

[8] D. Mao, **H. Khasawneh**, M. Illindala, B. Schenkman, D. Borneo, "Economic Evaluation of Energy Storage Options in a Microgrid with Flexible Distribution of Energy and Storage Resources," in Proc. of IEEE ICPS, pp. 1-7, 5-8 May 2015.

[9] M. Kilani, **H. Khasawneh**, A. Abbadi, "Design and testing of a gentle pump with rotating magnetic field for fluids with stress-sensitive microparticles," in Proc. of IEEE ISMA, pp. 1-4, 8-10 Dec 2015.

[10] **H. Khasawneh**, M. Illindala, "Equalization of Battery Life through Flexible Distribution of Energy and Storage Resources," in Proc. of IEEE ICPS , pp. 1-9, 20-23 May 2014.

[11] **H. Khasawneh**, M. Illindala, "State-of-Health based Load Sharing Strategy in Vehicle-To-Grid Systems," in Proc. of IEEE ITEC, pp. 1-6, 15-18 Jun 2014.

[12] **H. Khasawneh**, M. Illindala, "Supercapacitor Cycle Life Equalization in a Microgrid through Flexible Distribution of Energy and Storage Resources," in Proc. of IEEE IAS Annual Meet., pp.1-9, 5-9 Oct 2014.

[13] M. Haj-ahmed, **H. Khasawneh**, M. Illindala, "Autonomous Cooperative Agent Based Flexible Distribution of Energy and Storage Resources," in Proc. of IEEE PEDES, pp. 1-6, 16-19 Dec 2014.

[14] **H. Khasawneh**, M. Illindala, "Quantitative and Qualitative Evaluation of Flexible Distribution of Energy and Storage Resources," in Proc. of IEEE ECCE, pp. 43-50, 15-19 Sept. 2013.

[15] **H. Khasawneh**, M. Smalc, and J. Norley, "Analysis of Heat-Spreading Thermal Management Solutions for Lithium-Ion Batteries," in Proc. of ASME Mechanical Engineering Congress and Exposition IMECE, 2011.

Invited Talks

- Energy Storage Systems for Automotive Applications, University of Cyprus, ERASMUS+, 18/04/2018.
- General Introduction to Batteries: Fundamentals and Applications, The University of Jordan, ERASMUS+, 23/06/2021.

Volunteer Work	Energy Strategy Reviews, Applied Energy, Journal of Natural Resources and Development,IEEE Transactions on Transportation Electrification, IEEE Transactions on Power Electronics, IEEE Transactions on Industry Applications, IEEE IAS Annual Meeting, International Journal of Electrical Power and Energy Systems, IEEE Transportation Electrification Conference and Expo (ITEC), IEEE Applied Power Electronics Conference and Exposition (APEC), IEEE Jordan Conference on Applied Electrical Engineering and Computing Technologies (AEECT).