Mohammad Mousa Shalby

Associate Professor- Mechanical Engineering- Renewable Energy Engineering.

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Sex Male | Date of birth 10/08/1982 | Nationality Jordanian
Relationship Status | Married

Experience

- **October 2022 –Present**
  Director of the Center for Studies, Consultations and Community Development • Al-Hussein Bin Talal University, Ma'an, Jordan

- **May 2023 – August 2023**
  Director of the Human Resources Unit • Al-Hussein Bin Talal University, Ma'an, Jordan

- **September 2019–October 2022**
  Chair of Mechanical Engineering Department, College of Engineering • Al-Hussein Bin Talal University, Ma'an, Jordan.

- **July 2024– present**
  Associate Professor of Mechanical Engineering • Al-Hussein Bin Talal University, Ma'an, Jordan.

- **July 2019– July 2024**
  Assistant Professor of Mechanical Engineering • Al-Hussein Bin Talal University, Ma'an, Jordan.

- **March 2019–June 2019**
  Teaching Assistant • University of Technology Sydney, Sydney, Australia
  1- Mechanical Design.
  2- Material Handling.
  3- Advanced Manufacturing.
  4- Fundamentals of Mechanical Engineering.
- **February 2006- June 2015**
  Technical Support Engineer • Al-Hussein Bin Talal University, Ma'an, Jordan.
- **June 2010- January 2015**
  Director of Engineering Workshops Department • Al-Hussein Bin Talal University, Ma'an, Jordan.
- **June 2010- January 2015**
  Associate Lecturer • Al-Hussein Bin Talal University, Ma'an, Jordan.
  1- Teaching a project management topic
  2- Teaching a statics topic
  3- Teaching an Engineering drawing topic
  4- Thermodynamic and Heat Transfer laboratory supervisor
  5- Fluid Mechanics Laboratory supervisor

Education

University of Technology Sydney, Sydney, Australia

- PhD Mechanical Engineering. 2019

University of Mu'tah, Karak, Jordan

- M.Sc. Degree in Engineering Management. 2012
- First Class Honors (Excellent 85.78%)

University of Science and Technology, Irbid, Jordan

- B.Sc. Degree in Mechanical Engineering. 2005

Key Achievements, Honors, and Awards:

- Al-Hussein Bin Talal University staff representative in Manisa Celal Bayar University International staff week, April 2023, Manisa, Turkey.
- Al-Hussein Bin Talal University staff representative in UMinho International Staff Week, July 2022, Braga, Portugal.
- Academic advisor for the Dual-Study program- Renewable Energy track at AHU University 2022-2025
- Al-Hussein Bin Talal University staff representative in Frontiers of Science in Jordan Symposium, 2021, Jordan.
- Establishment of the Renewable Energy Engineering Department at Al-Hussein Bin Talal University. Including setting study plans, course catalogs, accreditation, laboratory preparation, etc.
- An established member of the energy research and development center at Al—Hussein Bin Talal University.
- Winning a two-time Vice-Chancellor's Postgraduate Conference Travel Fund, University of Technology Sydney, Sydney, Australia,
- Winning Ph.D. scholarship in Engineering, 2014, Study place: University of Technology Sydney – Australia, Support from Al-Hussein Bin Talal University.
- Technical member of the established scientific centers and laboratories in Al—Hussein Bin Talal University.

Communication Skills

I was a key speaker for the following conferences and workshops

1- 3rd Asian Wave and Tidal Energy Conference – AWTEC 2016, 24-28 October, Singapore.

2- 4th International Conference on Energy and Environment Research ICEER 2017, ISEP (Polytechnic of Porto, Portugal), in Porto, Portugal, July 17-20, 2017.

3- The 13 Pacific-Asia Offshore Mechanics Symposium, October 14-17, Jeju, Korea; 2018.

4- IEEE-ECCE 2019, CONFERENCE & EXPO, Baltimore, MD | Sept. 29 – Oct. 3, 2019.

5- Frontiers of Science in Jordan Symposium, Renewable Energy issues in South Jordan held at the Royal Scientific Society (RSS), 2021.

6- Regular speaker at most activities organized by the Center for Studies, Consultations, and Community Development -October 2022 – Present.

Courses Taught

- Engineering Drawing
- Engineering Mechanics (Statics and Dynamics)
- Theory of Machinery
- Engineering Measurements
- Renewable Energy System
- Machine Drawing
- Fluid Mechanics
- Engineering Measurements
- Fluid Power Control
- Energy Conversion

Examining/Advisory Committees

- **Supervision of postgraduate students**

1. MSc in Renewable Energy Engineering, Department of Mechanical Engineering, College of Engineering, *Ahmad Khanjer Abuseif*, Al Hussein Bin Talal University, Ma'an 2020, Thesis Title: Effect of Dust on the Wind Turbine Nacelle.
2. MSc in Renewable Energy Engineering, Department of Mechanical Engineering, College of Engineering, *Wa'ad Madallah Alhasanat*, Al Hussein Bin Talal University, Ma'an 2022, Thesis Title: Modelling and Simulation of Solar Cell Using PC1D.

- **Member of the master's thesis examination committee for the following dissertations:**

1. MSc in Renewable Energy Engineering, Department of Mechanical Engineering, College of Engineering, *Reem Ahmad At-Tawarah*, Al Hussein Bin Talal University, Ma'an 2020, Thesis Title: Investigation and evaluation of Wind Energy Potential for Selected Areas In Jordan.
2. MSc in Renewable Energy Engineering, Department of Mechanical Engineering, College of Engineering, *Wala'a Farouq Zaid Alomary*, Al-Hussein Bin Talal University, Ma'an 2021, Thesis Title: Geothermal Energy Harvesting In Jordan And Its Applications.
3. MSc in Renewable Energy Engineering, Department of Mechanical Engineering, College of Engineering, Hazem Abdulqader Alshakhanbeh, Al-Hussein Bin Talal University, Ma'an 2021, Thesis Title: Novel Vehicle Ventilation System Powered by Solar Energy.
4. MSc in Renewable Energy Engineering, Department of Mechanical Engineering, College of Engineering, Jehad Tawfiq Al Bdour, Al-Hussein Bin Talal University, Ma'an 2021, Thesis Title: Analysis and Study of Hybrid Renewable Energy System for Green Building to Improve Efficiency and Reduce GHG Emissions.
5. MSc in Renewable Energy Engineering, Department of Mechanical Engineering, College of Engineering, *Laith Mohammad Arrfou'*, Al-Hussein Bin Talal University, Ma'an 2021, Thesis Title: Development of Sustainable Renewable Energy System to Reduce Carbon Emission in Irrigation Stations at Off Grid Remote Area by Hybrid System.
6. MSc in Renewable Energy Engineering, Department of Mechanical Engineering, College of Engineering, *Dana Osama Al-Kabariti'*, Al-Hussein Bin Talal University, Ma'an 2021, Thesis Title: Waste to Energy; Disposable Tires to Carbon Fuel.
7. MSc in Renewable Energy Engineering, Department of Mechanical Engineering, College of Engineering, Ala'a Mahmoud Faleh, Al-Hussein Bin Talal University, Ma'an 2022, and Thesis Title: Waste Heat recovery form Wind turbine cooling system using an organic Rankin cycle: Case study (Ma'an Wind Turbine farm).
8. MSc in Renewable Energy Engineering, Department of Mechanical Engineering, College of Engineering, Samah Radeh Zawadah, Al-Hussein Bin Talal University, Ma'an 2022, and Thesis Title: Lighting Management in residential sector in Jordan (Case Study).
9. MSc in Renewable Energy Engineering, Department of Mechanical Engineering, College of Engineering, Ahmad Hasan Aqatameen, Al-Hussein Bin Talal University, Ma'an 2022, and Thesis Title: Evaluation of The Impact of Heat Sink on The Solar Cell By Using A Perforated Wavy Shape Fins.

Workshop and training program

- Quality Assessor for Higher Education Institutions.
- Participate in the Manisa Celal Bayar University International staff week, April 2023, in Manisa, Turkey
- Participate in the UMinho International Staff Week in July 2022 in Braga, Portugal.
- Participate in a meeting of EPSRC International Partnership – Wave Energy in South Africa, University of Edinburgh, April 2022, Edinburgh, UK
- Attending IREEDER Renewable Energy Training Workshop, Nov. 2021, Patras, Greece.
- Support the Integration of Resource Efficient and Cleaner Production (RECP) in Academia, Jordan
- Frontiers of Science in Jordan Symposium, 2021, Jordan
- Training Program for STEMM Early Career Academics, 2021, Jordan
- Financing Schemes for Energy Efficient Buildings in Jordan and the BEP Tool, 2020, Jordan

Research Interest:

My primary research interests include:

- Design and development of Oscillating Water Column (OWC) devices for ocean wave energy harvesting.
- Enhancement of efficiency and sustainability in renewable energy technologies, including wind and solar energy systems.
- Investigation of the potential for Concentrating Solar Thermal Power (CSP) generation in Jordan.
- Utilization and performance analysis of various small-scale turbines for domestic wind power generation.

Publications

- **Journal Papers**

1. **Shalby, M**., Marachli, A. and Salah, A.A., 2025. Working Fluid Selection and Performance Analysis for Subcritical Organic Rankine Cycles. *Results in Engineering*, p.104120.
2. **Shalby,M.,** M Ahmed, 2024.Energy and Economic Comparative Study of Dry and Wet Cooling in Solar Tower Power Plants. International Review of Mechanical Engineering (IREME),18(6):283
3. Marashli, A., Al-Kassab, A.I., Gab-Allah, D.M., **Shalby, M**. and Salah, A., 2024. Numerical Life Cycle Assessment of Lithium Ion Battery, Li-NMC Type, integrated with PV system. Results in Engineering, p.102489.
4. Salah, A.A., **Shalby,M**. and Basim Ismail, F., 2023. The status and potential of renewable energy development in Jordan: exploring challenges and opportunities. Sustainability: Science, Practice and Policy, 19(1), p.2212517.
5. **Shalby, M**., Salah, A.A., Ghayda'A, M., Marashli, A. and Gommaa, M.R., An investigation of a 3D printed micro-wind turbine for residential power production. International Journal of Renewable Energy Development, 12(3), pp.550-559.
6. **Shalby, M**., Gomaa, M.R., Salah, A., Marashli, A., Yusaf, T. and Laimon, M., 2023. Impact of the Air Filtration in the Nacelle on the Wind Turbine Performance. Energies, 16(9), p.3715.
7. Albdour, M.S., **Shalby**, M., Salah, A.A. and Alhomaidat, F., 2022. Evaluating and Enhancing the Energy Efficiency of Representative Residential Buildings by Applying National and International Standards Using BIM. Energies, 15(20), p.7763.
8. Al-Rawashdeh, H., Hasan, A.O., Gomaa, M.R., Abu-jrai, A. and **Shalby**, M., 2022. Determination of

Carbonyls Compound, Ketones and Aldehydes Emissions from CI Diesel Engines Fueled with Pure Diesel/Diesel Methanol Blends. Energies, 15(21), p.7933.

9. **Shalby**, M., Abuseif, A., Gomaa, M.R., Salah, A., Marashli, A. and Al-Rawashdeh, H., 2022. Assessment of Dust Properties in Ma'an Wind Farms in Southern Jordan. Jordan Journal of Mechanical & Industrial Engineering, 16(4).
10. Marashli, A., Gasaymeh, A. and **Shalby**, **M**., 2022. Comparing the Global Warming Impact from Wind, Solar Energy and Other Electricity Generating Systems through Life Cycle Assessment Methods (A Survey). International Journal of Renewable Energy Research (IJRER), 12(2), pp.899-920.
11. Salah, A.A., Dorrell, D.G. and **Shalby**, **M**.M., 2022. Control mechanism of unbalanced magnetic pull in doubly fed induction generator using extra pole-specific stator windings. IET Electric Power Applications.
12. Marashli, A., Alfanatseh, E., **Shalby**, **M**. and Gomaa, M.R., 2022. Modelling single-effect of Lithium Bromide-Water (LiBr–H2O) driven by an evacuated solar tube collector in Ma'an city (Jordan) case study. Case Studies in Thermal Engineering, 37, p.102239.
13. Marashli, A., Al Shabaan, G., Al-Twaissi, W., **Shalby, M**. and Al-Rawashdeh, H., 2022. Impact of Accumulated Dust on Performance of Two Types of Photovoltaic Cells: Evidence from the South of Jordan. International Journal of Renewable Energy Development, 11(2).
14. Albdour, Mohammad S., Bálint Baranyai, and Mohammad M. **Shalby**. "Overview of whole-building energy engines for investigating energy-related systems." Pollack Periodica (2022).
15. Marashli, A., Gasaymeh, A. and Rawashdeh, H., **Shalby**, **M**,. 2021. Effect of Specific Geometrical Parameters on the Performance of Small Straight Blade–Vertical Axis Wind turbine (SB-VAWTs) of Darrieus-type. International Journal of Renewable Energy Research (IJRER), 11(4), pp.1917-1927.
16. Marashli, A., Alburdaini, M., Al-Rawashdeh, H. and **Shalby**, **M**., 2021. Statistical Analysis of Wind Speed Distribution Based on Five Weibull Methods for Wind Power Evaluation in Maan, Jordan.
17. **Shalby**, M., Elhanafi, A., Walker, P., Dorrell, D.G., Salah, A. and Gomaa, M.R., 2021. Experimental Investigation of the Small-scale Fixed Multi-chamber OWC Device. Chinese Journal of Mechanical Engineering, 34(1), pp.1-14.
18. Hani, E.B., Marashli, A., **Shalby, M**. and Al-Rawashdeh, H.A.N.I., Experimental Investigation of Basic Properties Biodiesel Fuels (B100, B20, B5) Produced from Waste Cooking Oil (WCO) Using Trans-Esterification Process.
19. Gomaa, M.R., Ghayda'A, M., **Shalby**, **M**. and AL-Rawashdeh, H.A.,2020, A State--of--the--art Review on a Thermochemical Conversion of Carbona-ceous Materials: Production of Synthesis Gas by Co-gasification Process-Part I.
20. Gomaa, M.R., Al-Dmour, N., AL-Rawashdeh, H.A. and **Shalby**, **M**., 2020. Theoretical model of a fluidized bed solar reactor design with the aid of MCRT method and synthesis gas production. Renewable Energy, 148, pp.91-102.
21. **Shalby** M, Elhanafi A, Walker P, Dorrell DG. CFD modelling of a small–scale fixed multi–chamber OWC device. Applied Ocean Research. 2019;88:37-47.
22. **Shalby** M, Dorrell DG, Walker P. Multi–chamber oscillating water column wave energy converters and air turbines: A review. Int J Energy Res. 2018;1–16. https://doi.org/10.1002/er.4222.

- **Conference Proceedings**

1. Salah, A.A., **Shalby, M.** and Al-Soeidat, M.R., 2024, January. Design and Development of a Hybrid Electric Vehicle Charging Station in Jordan. In 2024 4th International Conference on Smart Grid and Renewable Energy (SGRE) (pp. 1-6). IEEE.
2. Salah, A.A., **Shalby, M**. and Dorrell, D.G., 2022, November. Design of a Concentrated Pilot Solar Power Tower in Al Hussein Bin Talal University, Jordan. In 2022 IEEE PES 14th Asia-Pacific Power and Energy Engineering Conference (APPEEC) (pp. 1-5). IEEE.
3. Ismail, F.B., Mahdi, M.N., Salah, A.A., Al-Muhsen, N.F., **Shalby**, M.M. and Al Nafie, Y.K., 2021, October. Feasibility Study of Wind Energy Generation Systems in Masirah Island: Real Case Study. In 2021 International Conference on Electrical Engineering and Informatics (ICEEI) (pp. 1-6). IEEE.
4. **Shalby**, M., Dorrell, D.G., Walker, P. and Elhanafi, A., An Experimental Investigation into the Wave Power

Extraction of a Small–Scale Fixed Multi–Chamber OWC Device. In 2019 IEEE Energy Conversion Congress and Exposition (ECCE) (pp. 4982-4987). IEEE.

5. **Shalby** M, Walker P, Dorrell DG, Elhanafi A. Validation of a Numerical Model for a SmallScale Fixed Multi-Chamber OWC Device.In: Proceedings of the Thirteenth Pacific-Asia Offshore Mechanics Symposium, October 14-17, Jeju, Korea; 2018.
6. **Shalby** M, Walker P, Dorrell DG. Modelling of the multi-chamber oscillating water column in regular waves at model scale. In: Proceedings of the 4thInternational Conference of Energy and Environmental Research, Energy Procedia, July 17-20, Porto, Portugal; 2017.
7. **Shalby** M, Walker P, Dorrell DG. The investigation of a segment multi-chamber oscillating water column in physical scale model. In: Proceedings of the5th International Conference on Renewable Energy Research and Applications, November 20-23 Birmingham, UK; 2016.
8. **Shalby** M, Walker P, Dorrell DG. The Characteristics of the Small SegmentMulti Chamber Oscillating Water Column. In: Proceedings of the 3rd AsianWave and Tidal Energy Conference, October 24-28 Singapore; 2016.

Internet Multimedia

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References

To be given upon request.