University Academic Curriculum Vitae

Personal information	**Marwa Ben Ali**

Education since leaving school

- 02/2022: Ph.D. in Electrical Engineering, Laboratory of Electrical Systems and Renewable Energies (LSEER) - National Engineering School of Sfax (ENIS) and the National Engineering School of Gabes (ENIG)
- 2016: National Engineering Diploma: Automation Electrical Engineering, National School of Engineering of Gabes (ENIG)
- 2013: National exam for admission to engineering schools, Preparatory school of engineering (Physics/Chemistry), Faculty of Science in Monastir (FSM)
- 2011: Baccalaureate Diploma **Baccalauréat**

Present appointment

- **From 10/2023 to 10/2025,** Postdoctoral Research Fellow| Sustainable Manufacturing, Free University of Bolzano, Faculty of Engineering
- **09.2022- 09.2023,** Lecturer: Electrical Engineering, Electrical department, Higher Institute for Industrial Systems of Gabes (ISSIG), University of Gabes, Tunisia.
- **2019 –2022**, Teaching Assistant, Electrical department, National Engineering School of Sfax (ENIS), University of Sfax, Tunisia

Experience in academic teaching

- Lecturer for the LM-30 course during the winter semester (6h lecture and 12h exercise) "Technologies and Production Processes for Energy Engineering" Lecturers: Prof. Erwin Rauch, Dr. Marwa Ben Ali, Dott. Davide Don
- Lecturer for the Civil Engineering "Electrical installation of residential buildings "
- Lecturer for Electrical Engineering" Electrical Technology"
  Other courses:
- Guest lecturer: Industrial Energy Management, Faculty of Engineering, Chiang Mai University, Thailand, Master level, 2 hours in person guest lecture. Language: English.
- Co-supervising Master's thesis project:
  Thesis title: "Integration of Real-Time Energy Consumption Data and Long Short-Term Memory Algorithm for Industrial Equipment Behaviour Identification".
- Co-supervising study projects (Master):
  Study project "Needs Analysis and Concept Design for Female Makerspaces for Educational Use as well as Ex-curriculum Use.".
- Co-supervising Master thesis UNIBZ,2025:
  Title: "Integration of Real-Time Energy Consumption Data and Long Short-Term Memory Algorithm for Industrial Equipment Behavior Identification
- Co-supervising Final Year Project at undergraduate level (Electrical Engineering), ENIS, 2022:
  Project Title: Mise en place d'une plateforme d'essai pour une application BMS dédiée au véhicule électrique

Other academic responsibilities

- Invited Expert at Student Sprint, "Challenge: The Service Station of the Future," 25 February 2025, NOI Techpark, Bolzano, Italy
- Invited member of the EDUCON 2026 Organizing Committee:

	Women in Engineering
	• Special session chair: Reimagining Engineering and Applied Curriculum for Transformation in Africa (REACT-Africa), 28th International Conference on Interactive Collaborative Learning, 54th IGIP International Conference on Engineering Pedagogy Innovation via Collaborative Learning in Engineering Education 01–03 October 2025, Budapest, Hungary
	• Invited speaker at a Female Founders / Mentoring Event on July 25th at NOI Techpark in Brunico; Title: Empowering Women Through Transformative Female MakerSpaces
	• Special session co-chair: Virtual Laboratories and Makerspaces (VLabSpace), 28th International Conference on Interactive Collaborative Learning, 54th IGIP International Conference on Engineering Pedagogy Innovation via Collaborative Learning in Engineering Education 01–03 October 2025, Budapest, Hungary
	• Invited session chair: 4th International Conference on Computing and Machine Intelligence (ICMI 2025) held at Central Michigan University, USA on April 05–06, 2025
	• Keynote Speaker How Do European Lecturers Cooperate with Companies?, International Workshop on Makerspaces for Lecturers, Researchers, Students, and SMEs at Samara University, Ethiopia, November, 2024.
	• Member of the Program Committee: Special Session "Immersive Technologies: Training Future Engineers (ITo-Train'25), 7th Experiment@ International Conference
	• Member of the Program Committee: 7th Experiment@ International Conference
	• Member of the International Scientific Committee: 4th International Symposium on Industrial Engineering & Automation 2025, Manufacturing 2030: A perspective to Future Challenges in Industrial Production
Memberships	• Member of the program committee: Workshop session
	• Title: Makerspace - Training On Soft-skills and Entrepreneurial Thinking27th International Conference on Interactive Collaborative Learning 53rd IGIP International Conference on Engineering Pedagogy, 24–27 September 2024, TalTech, Tallinn, Estonia
Research stays abroad	• Visiting Researcher at Chiang Mai University from May 28, 2025, to July 5, 2025
National and international collaboration	• Collaboration with Prof. Poti CHAOPAISARN from Chiang Mai University in preparing a joint publication.
	• Collaboration with TU Wien, University of Malta, University of Skopje, and EIT Manufacturing in project/proposal.

Publications

1. Marwa Ben Ali, Reda Makeda Fasil and Erwin Rauch, Female University Makerspaces: Conceptual Design for Sustainable and Tech-Integrated Learning, 7th Experiment@ International Conference (expat'25), Horta, Faial Island, Azores, Portugal, from September 3 to 5, 2025.

2. Ali Asghar Bataleblu, Benyamin Ebrahimi, Marwa Ben Ali and Erwin Rauch, Multi-Agent Systems for Data-Driven Decision-Making in Forest Fire Management, 7th Experiment@ International Conference (expat'25), Horta, Faial Island, Azores, Portugal, from September 3 to 5, 2025.

3. Marwa Ben Ali, Erwin Rauch, Integrating ISO 50001: 2018 into Engineering Education: Advancing Energy Skills for Industry 4.0 and 5.0, International Conference on Control, Decision and Information Technologies (CODIT2025), 15-18 July, 2025 at Split, Croatia.

4. Marwa Ben Ali, Erwin Rauch, Comparative Analysis of Energy Management Strategies for a Hybrid Electric Vehicle in Urban Transportation: A Case Study, International Conference on Control, Decision and Information Technologies (CODIT2025), 15-18 July, 2025 at Split, Croatia.

5. Katherin Salamanca Cano Angie, Marwa Ben Ali, Erwin Rauch, and Dominik Matt, Strategic Selection of Environmental Indicators in Precast Concrete Industry Using a Fuzzy Delphi Analytic Hierarchy Process, 11th IFAC Conference on Manufacturing Modelling, Management and Control, (MIM 2025).

6. Ali Asghar Bataleblu, Marwa Ben Ali, Humberto Alejandro Barrero-Arciniegas, Erwin Rauch, Sustainable Mobility Design Decomposition – A Holistic Perspective, CIRP DESIGN 2025 – 35th CIRP Design Conference, 02-04 April 2025, Patras, Greece:

7. Marwa Ben Ali, and Erwin Rauch. 2024. Sustainable Mobility Transition: A SWOT-AHP Analysis of the Case Study of Italy, Sustainability 16, no. 11: 4861. https://doi.org/10.3390/su16114861.

8. Marwa Ben Ali, and Erwin Rauch, The Influence of Electric Vehicle Technologies on Environmental Sustainability in Industrial Reporting: A Bibliometric Study, 3rd International Symposium on Industrial Engineering and Automation Latest Advancements In Mechanical Engineering 19th-21st June 2024, Bozen-Bolzano, Italy.

9. Leila Zare, Marwa Ben Ali, and Erwin Rauch, Industry 5.0 and SMEs Future Work Competency Fields: A Literature Review, 3rd International Symposium on Industrial Engineering and Automation Latest Advancements In Mechanical Engineering 19th-21st June 2024, Bozen-Bolzano, Italy.

10. Fucci Fekadu, Marwa Ben Ali, and Erwin Rauch, Development of an IoT-enabled Energy Monitoring and Energy Flow Analysis Model for SMEs: A Case Study, 10th 2024 International Conference on Control, Decision and Information Technologies (CoDIT 2024), 01-04 July, 2024 at Valetta, Malta.

11. Marwa Ben Ali, Erwin Rauch, and Dominik Matt, Exploring the Synergy of Digitalization and IoT: A Literature Review on Energy Monitoring for SMEs, 10th 2024 International Conference on Control, Decision and Information Technologies (CoDIT 2024), 01-

04 July, 2024 at Valetta, Malta.

12. Leila Zare, Marwa Ben Ali, and Erwin Rauch, Challenges and opportunities in integrating human-centric artificial intelligence solutions in industry, 4th EurOMA CEE Research Network Workshop 2024 & 17th EPIEM Conference 2024.

13. Leila Zare, Brian Walter Benedini, Marwa Ben Ali, Erwin Rauch, and Sergio Salimbeni, Opportunities and Barriers for Implementing Human-Centric Manufacturing in SMEs: Results from Focus Group Workshops in Argentina, International Conference on Industry 4.0 and Smart Manufacturing Prague - Czech Republic 20-22 November 2024.

14. Marwa Ben Ali, Lars Jakobs, Reda Makeda Fasil, Angelika Hofer, and Erwin Rauch, Empowering Female Academics: A Needs Analysis Study in Ethiopia and Djibouti Universities, 27th International Conference on Interactive Collaborative Learning, 53rd IGIP International Conference on Engineering Pedagogy, 24–27 September 2024, TalTech, Tallinn, Estonia.

15. Lars Jakobs, Marwa Ben Ali, Reda Makeda Fasil, and Erwin Rauch, European Best Practices: Makerspaces and Fablabs for fostering Education and Carrer in Ethiopia and Djibouti, 27th International Conference on Interactive Collaborative Learning, 53rd IGIP, International Conference on Engineering Pedagogy, 24–27 September 2024, TalTech, Tallinn, Estonia.

16. Hana Getachew, and Marwa Ben Ali. Empowering Females In Academic And Research Through Makerspaces: An Introduction to The Ethiopian-Djibouti – Females at Makerspaces, 27th International Conference on Interactive Collaborative Learning, 53rd IGIP, International Conference on Engineering Pedagogy, 24–27 September 2024, TalTech, Tallinn, Estonia.

17. Marwa Ben Ali, Lars Jakobs, and Erwin Rauch, SME 5.0 - Why Digital Transformation is An Enabler For Sustainable Development Within Industry 5.0, Poster presentation, ESOF2024 conference, Life changes science, 12–15 June 2024, Katowice, Poland.

18. Katherin Salamanca Cano Angie, Marwa Ben Ali, and Erwin Rauch, Challenges and Opportunities in Life Cycle Assessment for Precast Concrete Production: A Case Study, International Conference on Industry 4.0 and Smart Manufacturing Prague - Czech Republic 20-22 November 2024.

19. Ben Ali, Marwa et BOUKETTAYA, Ghada. Analysis of barriers and opportunities in the transition towards sustainable electric mobility in Tunisia: An experimental survey. Research in Transportation Business & Management, 2023, vol. 50, p. 101022.

20. ELLOUMI Mariem, BEN ALI Marwa, Kallel Randa, and BOUKETTAYA Ghada, Combined Optimal Sizing and Energy Management of a Hybrid PV-Battery Production System into Smart Home Application with Plug-in hybrid Electric Vehicle, Energy Systems.

21. Ben Ali, Marwa, et BOUKETTAYA, Ghada. Urban Transport Solutions for a Sustainable and Smart Mobility Future: Macro-Environmental Analysis. Book chapter Smart Cities for Sustainability: Approaches and Solutions, Emerald publishing.

22. Ben Ali, Marwa, and BOUKETTAYA, Ghada and ABBES, Dhaker. Classical Boolean and Fuzzy Logic Energy Management

Strategies for a Parallel HEV Powertrain System, International journal of computing digital systems (IJCDS), 2021.

23. Ben Ali, Marwa and BOUKETTAYA, Ghada. Optimal energy management strategies of a parallel hybrid electric vehicle Based on different offline optimization algorithms. International Journal of Renewable Energy Research (IJRER), 2020, vol. 10, no 4, p. 1621-1637.

24. Ben Ali, Marwa, et BOUKETTAYA, Ghada. JAYA Optimization Algorithm for Solving Economic Problem: Efficient Algorithm for the Electric Automotive Applications. 1st International Conference on Trends and Innovations in Smart Technologies (ICTIST), London, UK, October 7-8, 2022

25. Ben Ali, Marwa, and BOUKETTAYA, Ghada. Evaluation of the Consumer's Intention to Shift to Electric Transportation System in Tunisia. Conference paper. Journées écoles doctorales Sciences et technologies (JEDST) 2022 – ENIS, Sfax, Tunisia – May 20 - 22, 2022.

26. Ben Ali, Marwa, and BOUKETTAYA, Ghada. EV or CV? Are Tunisian Consumers willing to shift to Electric Mobility Systems?. (Poster). Journées écoles doctorales Sciences et technologies (JEDST) 2022 – ENIS, Sfax, Tunisia – May 20 - 22, 2022.

27. Ben Ali, Marwa, and BOUKETTAYA, Ghada. A Review of Factors Influencing the Adoption of Electric Vehicles in the World. 19th International Multi-Conference on Systems, Signals & Devices (SSD2022) - Conference on Power Systems & Smart Energies, May 06-10, 2022 Faculty of Technology, University Ferhat Abbas Setif 1, Algeria.

28. Ben Ali, Marwa, and BOUKETTAYA, Ghada. Integrating PESTEL and Fuzzy Logic Methods for Risk Management Process—Case of Electric Mobility Transition in Tunisia. International Conference on Ecological Innovation, ECONOV'22, 7 to 9 May 2022 at Sousse – Tunisia.

29. Ben Ali, Marwa and BOUKETTAYA, Ghada. Effect of Optimal Energy Management Strategy on Parallel Hybrid Electric Vehicle Performances. In: 2021 18th International Multi-Conference on Systems, Signals & Devices (SSD). IEEE, 2021. p. 1099-1106.

30. Ben Ali, Marwa, BOUKETTAYA, Ghada, and ELLOUMI, Mariem. "Modelling, Control, and Simulation of Parallel PHEV Powertrain System", 4th International Conference on Recent Advances in Electrical Systems, Hammamet, Tunisia, pp. 53-58, 23-25 December 2019.

31. Ben Ali, Marwa, ELLOUMI, Mariem, and BOUKETTAYA, Ghada. Review on optimization algorithms for plug in hybrid electric vehicle. In: 2019 19th International Conference on Sciences and Techniques of Automatic Control and Computer Engineering (STA). IEEE, 2019. p. 134-139.

Further data	Electric Mobility Transition Project in the Arab Region: Are Citizens Ready to Shift to Electric Vehicles?| Keynote by Marwa Ben Ali, EIT Urban Mobility marketplace
Experience in research projects	**EtD-FaM**- Ethiopia-Djibouti Female at Makerspace (Erasmus CBHE) Role: Project Manager

SME 5.0 – A Strategic Roadmap Towards the Next Level of Intelligent, Sustainable and Human-Centred SMEs

Role: Member

Areas of scientific interest	**Sustainable Mobility** **Energy Management** **Energy Efficiency in manufacturing**

Improving energy efficiency in industrial manufacturing processes and factories is crucial for reducing operational costs, minimizing environmental impact, and enhancing sustainability. Key aspects of energy efficiency in an industrial context include:

Process Monitoring and Optimization: Implementing automated systems to monitor and optimize the performance of manufacturing processes from a sustainability aspect and reduce energy consumption.

Energy Management Systems: implementing energy management standards like ISO 50001 and related Energy Audits in companies to identify inefficiencies and opportunities for energy savings.

Digitalization of LCA: Lifecycle Assessment is a common tool for measuring the carbon footprint of factories and industrial processes. For the future such LCA studies need to be automated for being an integral part of daily decisions on manufacturing choices.

Sustainable Mobility: New and renewable energy is key for a more sustainable mobility also from an industrial point of view. This is related to traffic caused by trucks as well as traffic caused by employees for coming to work.

Language competence

Arabic: first language
French: C1
English: C1
German: A1.2

Date 24.07.2025