

## *Special Session Proposal*

### **Title**

*AI solutions for Hybrid Renewable Energy Systems*

### **Session organizers**

#### **Monia Bouzid**

*e-mail : [monia.bouzid@yahoo.fr](mailto:monia.bouzid@yahoo.fr)*

*Affiliation: Researcher at « Laboratoire des systèmes électriques (LSE) » ENIT*

*Associate professor in Ecole Nationale d'Ingénieurs de Carthage (ENICarthage) Tunisia*

#### **Biography:**



*Monia Bouzid (M'08) Was born in Tunisia in 1965. She received the Ph.D. degree and the "Habilitation degree" from the "Ecole Nationale d'Ingénieurs de Tunis", Tunisia, in 2009 and 2018 respectively. She is currently an Associate Professor in the "Ecole Nationale d'Ingénieurs de Carthage" Tunis. She is also a permanent member of the LR11ES15 "Laboratoire des Systèmes Electriques" (LSE) of the "Ecole Nationale d'Ingénieurs de Tunis". Her major research interests include modelling and fault diagnosis of electrical machines, renewable energy systems, power quality and fault diagnosis in electrical machine using the artificial intelligence.*

#### **Sondes Skander Mustapha**

*e-mail : [sondes.skander@enit.utm.tn](mailto:sondes.skander@enit.utm.tn)*

*Affiliation: Researcher at the Laboratoire des Systèmes Électriques (LSE), ENIT (National School of Engineering of Tunis), Tunisia. Associate Professor at the National School of Architecture and Urban Planning of Tunis (ENAU), Tunisia.*

#### **Biography:**



*Sondes Skander Mustapha. received a diploma in engineering and a Ph.D. degree from the Ecole Nationale d'Ingénieurs de Tunis, Tunisia in 1997 and 2007, respectively and Accreditation to direct research in Electrical Engineering from the Ecole Nationale d'Ingénieurs de Tunis, Tunisia in 2021. She is currently Associate Professor at the National School of Architecture and Urban Planning (ENAU), University of Carthage, Tunisia. Since 2020 she headed the Department of Architecture, Human Sciences and Techniques of ENAU. Her research interests include energy management systems, control and supervision of residential microgrids, and optimization algorithms.*

### **Brief Description of the session thematic**

Hybrid renewable energy systems (HRES) integrate multiple renewable energy sources, including solar, wind, hydro, geothermal, and biomass, alongside energy storage systems to enhance electricity generation efficiency and reliability.

HRES may be autonomous as standalone units or may be interfaced with the grid. The increasing adoption of HRES is due to their ability to offer stable and sustainable energy alternatives, particularly in remote areas with limited access to traditional power sources, thereby aiding global decarbonization efforts by curbing greenhouse gas emissions.

The management and optimization of these dynamic energy systems is a challenging issue, essentially regarding the balance between supply and demand.

This special session is dedicated to fostering knowledge exchange and progress in hybrid renewable energy systems, including the integration of Electric Vehicle Energy Management Systems (EVEMS). EVEMS play a crucial role in enhancing grid stability, accommodating vehicle charging demand, and leveraging vehicle-to-grid (V2G) capabilities for bidirectional energy flow. By integrating EVEMS, hybrid renewable energy systems can achieve higher levels of efficiency and resilience in managing energy resources.

- Optimization methods for hybrid energy systems
- Intelligent hybrid energy management systems
- Management of hybrid energy storage
- Sizing and dimensioning of hybrid systems
- Forecasting hybrid renewable energy generation
- Hybrid integration of Electric Vehicle Energy Management Systems

## Topics and Keywords

*Hybrid renewable energy systems, Solar energy; wind energy; Hybrid Renewable energy integration; battery energy storage; energy management; Optimization, Forecasting, Grid integration, Micro grids, Hybrid Intelligent energy systems, Electric vehicle integration, Demand-side management.*

## Number of pages

*Full paper of 6 pages is recommended, short papers showing ongoing investigations may also submitted for evaluations.*

## Deadlines

*Full paper submission: June 15<sup>th</sup>, 2024*

*Paper acceptance notification: August 30<sup>th</sup>, 2024*

*Camera-ready paper submission: September 15<sup>th</sup>, 2024*

## List of potential reviewers

*Monia Bouzid, Tunisia*

*Sondes Skander Mustapha, Tunisia*

*Sameh Romdhani, Tunisia*

*Khaled Nouri, Tunisia*

*Marwa Ben Said-Romdhane, Tunisia*