

Editorial

Algerian Journal of Electrical Systems and Sustainability (AJESS)
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It is with great pleasure that we present **Volume 2, Issue 1** of the *Algerian Journal of Electrical Systems and Sustainability (AJESS)*. This issue brings together five high-quality research articles addressing current challenges in electrical engineering, renewable energy systems, hydrogen technologies, power electronics, and sustainable energy transition. These contributions reflect the multidisciplinary nature of modern electrical systems and highlight innovative solutions aimed at improving energy efficiency, system reliability, and environmental sustainability.

The first article, "**Hybrid AC/DC Power System Stability: An Attempt of Global Approach**", by **Gianni Bakhos, Seddik Bacha, Luigi Vanfretti, Juan-Carlos Gonzalez-Torres, Abdelkrim Benchaib, Jing Dai, And Kosei Shinoda**, presents a comprehensive framework for analyzing the stability of hybrid AC/DC power systems. As future electrical grids increasingly integrate renewable energy resources, DC networks, and power electronic converters, ensuring stable operation becomes a critical challenge. This contribution proposes a global perspective for stability assessment and provides valuable insights for the design and operation of next-generation power systems.

The second contribution, "**Green Hydrogen for Irrigation : A Pilot Model for Food Security and Energy Transition in Algeria**", by **Pr Hocine Belmili**, explores the promising role of green hydrogen in supporting sustainable agriculture. By combining renewable energy technologies with hydrogen production, the study proposes an innovative irrigation model that contributes simultaneously to food security, water management, and the national energy transition. This work demonstrates how hydrogen technologies can support rural development while reducing dependence on fossil fuels.

The third paper, "**Performance Analysis of an Induction Motor Drive Based on Split-Source Inverter and Field-Oriented Control for Electric Traction Applications**", by **Madjid Si Brahim, Rahma Kachenoura, Rabah Rouas, and Salah Haddad**, investigates advanced power electronic converters for electric traction systems. The proposed Split-Source Inverter combined with Field-Oriented Control improves the dynamic performance and efficiency of induction motor drives, offering an attractive solution for future electric mobility applications.

The fourth article, "**Hydrogen Integration in a Renewable Hybrid Energy System**", by **Adjati Arezki, Hamitouche Kamel, Toufik Rekioua, and Djamila Rekioua**, focuses on the integration of hydrogen technologies within hybrid renewable energy systems. The study highlights the complementary role of hydrogen as a long-term energy storage solution capable of overcoming the intermittency of renewable energy sources. Through intelligent energy management, the proposed system contributes to improving system autonomy, reliability, and overall renewable energy utilization.

Finally, the fifth contribution, "**Design and Implementation of a Single Grid-Current Feedback Active Damping Strategy for LCL-Filtered Grid-Connected Inverters**", by **Dr Fateh ABDOUNE**, addresses one of the key challenges associated with grid-connected power converters. The proposed active damping strategy enhances the stability of LCL-filtered inverters while maintaining a simple implementation based on a single current feedback sensor. This work contributes to the development of reliable and efficient grid integration technologies for renewable energy systems.

Collectively, the papers published in this issue illustrate the rapid evolution of electrical systems toward intelligent, resilient, and sustainable energy infrastructures. They address topics ranging from power system stability and advanced control techniques to hydrogen energy, electric transportation, and smart renewable energy integration. These contributions provide valuable scientific knowledge for researchers, engineers, and decision-makers working toward achieving global sustainability and energy transition objectives.

On behalf of the Editorial Board, I would like to express my sincere gratitude to all authors for their valuable contributions, to the reviewers for their rigorous evaluations and constructive comments, and to the members of the Editorial Board for their continuous support and dedication to maintaining the scientific quality of the journal.

We hope that the research presented in this issue will inspire further investigations and foster scientific collaboration within the international electrical engineering and sustainable energy communities.

Prof. Djamila Rekioua
Editor-in-Chief

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