Preface

Abdessamad Didi

National Energy Center of Nuclear Science and Technology,
CNESTEN, B.P. 1382 R.P. 1000, Rabat, Morocco
Email: a.didi@ump.ac.ma

As the Editor-in-Chief of the *International Journal of Power and Energy Conversion* (*IJPEC*), it is my privilege to introduce the compelling content of Volume 15, No. 3 for 2024. This edition showcases a rich diversity of contributions from various continents around the globe, all focused on advancing research in power and energy conversion.

The breadth of topics covered in this issue reflects the multidisciplinary nature of the field and the innovative approaches researchers are taking to address key challenges in power and energy conversion and utilisation. From machine learning applications to novel energy storage systems, each article offers unique insights and valuable contributions to the broader scientific community.

The inaugural article, 'Machine learning model for wind direction and speed prediction', delves into the frontier of machine learning techniques applied to meteorological data, promising enhanced accuracy in wind forecasting – a critical aspect for renewable energy planning and management.

Continuing the exploration, 'Mass energy transfer effects of PEM fuel cell flow channels with correlation between geometric parameters and operating conditions', delves into the intricate dynamics of mass and energy transfer within PEM fuel cell systems. This research not only advances our fundamental understanding but also guides improvements in fuel cell design and performance.

The design and validation of cutting-edge technologies are exemplified in 'Design and verification of FPGA-based prototype of VSG controller', providing insights into next-generation power control systems crucial for grid stability and energy efficiency.

Shifting focus to energy storage, 'Investigation on compressed air energy storage system for efficient utilisation of renewable power sources' offers innovative strategies for storing and utilising renewable energy, contributing significantly to sustainable energy practices.

Lastly, the study 'Synthesis, characterisation and stability testing of graphene enhanced paraffin wax phase change material for energy storage' presents a pioneering approach in material science for energy storage applications, highlighting the importance of material engineering in advancing energy technologies.

Collectively, these articles not only contribute to the advancement of scientific knowledge but also serve as a testament to the collaborative efforts and global perspectives driving progress in the field of power and energy conversion. I trust that readers will find these contributions insightful and inspiring as we collectively strive towards a more sustainable and energy-efficient future.

We thank all of the authors who contributed to this issue.