Preface

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It is with great pleasure that we present to our readers this new issue of the *International Journal of Power and Energy Conversion* (*IJPEC*), Vol. 17, No. 1, 2026. We would like to begin by expressing our sincere gratitude to the members of the editorial board and the journal management team for their continuous support, guidance, and dedication to maintaining the quality and visibility of the journal. Our heartfelt thanks also go to the reviewers, whose rigorous and constructive evaluations have greatly contributed to improving the scientific value of the published articles. Finally, we extend our appreciation to the authors for their valuable contributions and for choosing *IJPEC* as a platform to share their research findings.

This issue brings together a diverse set of articles that reflect the growing interdisciplinarity of research in power, energy, and applied sciences. The topics covered include nuclear applications, energy materials, electrical engineering, and intelligent systems, thus offering our readers a rich and stimulating set of studies.

The first article, 'Assessment of the electrical parameters in silicon/Nickel-63 betavoltaic battery through the MCNP code', explores the modelling and simulation of betavoltaic devices, highlighting the potential of advanced Monte Carlo methods for next-generation energy sources. The second article, 'Effect on the full peak efficiency of HPGe detectors against different sample densities', investigates detector performance optimisation, which is crucial for radiation measurements and nuclear applications. The third paper, 'Evaluation of photon energy shielding and mechanical properties of concrete mixtures based on Tunisian barite: simulation and experimental findings', combines simulation and experimental approaches to assess innovative shielding materials for radiological protection.

In the field of power systems, the article 'Influence of drive train modelling simplification on stability and CCT of a DFIG-integrated power system' provides valuable insights into modelling approaches that impact stability assessment in renewable energy integration. Complementing this, the paper 'Design of 37 kW switched reluctance motor and torque ripple reduction with DTC for electric vehicle' contributes to the advancement of electric vehicle technology through improved motor design and control strategies. Finally, the article 'Intelligent building energy consumption prediction system' demonstrates the application of artificial intelligence in sustainable energy management, underlining the importance of smart technologies in future energy efficiency strategies.

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Together, these contributions not only expand our understanding of energy systems and technologies but also emphasise the role of interdisciplinary research in addressing global challenges related to energy production, conversion, and sustainability.

We hope that this issue will inspire further research and collaboration among scholars, practitioners, and industry experts.