



Journal of Renewable Energies

Revue des Energies Renouvelables



First International Conference on Advances in Energy and Environmental Engineering (ICAEEE) 2024

17 - 18 December 2024



**Dr. Vithalrao Vikhe Patil College of Engineering, Ahmednagar,
Maharashtra, India**

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Editorial of the Special issue ICAEEE'2024

*The First International Conference on Advances in Energy and Environmental Engineering
17–18 December 2024, Maharashtra, India*

The First International Conference on Advances in Energy and Environmental Engineering (ICAEEE) 2024 was organized by the Department of Mechanical Engineering, Dr. Vithalrao Vikhe Patil College of Engineering, Ahmednagar, Maharashtra, India (affiliated with Savitribai Phule Pune University, Pune) on 17–18 December 2024 in hybrid mode (in-person and online), in association with the Technology Research and Innovation Centre, India.

This two-day international event provided a platform for researchers and academicians from around the world working in the field of energy and environmental engineering. The conference aimed to promote advanced research and collaboration to drive global efforts toward a sustainable future. Papers were invited across various thematic tracks. We received 179 submissions from 18 countries and selected research papers were presented in multiple sessions conducted both offline and online.

The conference featured three keynote speeches delivered by internationally renowned experts:

Prof. David Wood, Professor of Renewable Energy (Retired), University of Calgary, Canada

Prof. Veera Ganeswar Gude, NiSource-Meyer Charitable Foundation Professor of Energy and the Environment; Director, Purdue University Northwest Water Institute; Professor, Civil & Environmental Engineering, Purdue University Northwest, Indiana, USA

Prof. Soteris Kalogirou, Department of Mechanical Engineering and Materials Science, Cyprus University of Technology, Limassol, Cyprus

Out of 88 peer-reviewed and presented papers, six papers were selected for inclusion in this Special Issue of the Journal of Renewable Energies (*Revue des Energies Renouvelables*).

This special issue brings together six quality research papers addressing significant research works in renewable energy technologies and their applications. The selected papers highlight innovative approaches in solar energy utilization, energy storage, biofuel development and thermal management strategies showing a multidisciplinary effort toward achieving sustainable energy solutions.

The first paper focuses on improving water generation using a single slope solar still enhanced with paraffin wax as a phase change material (PCM). This work establishes significant improvements in energy and exergy efficiency, contributing to sustainable water purification in off-grid areas. In the second study, an integration of nano-enhanced PCM with functionalized multi-walled carbon nanotubes (FMWCNT) is presented to enhance the drying performance of a cabinet solar dryer. The results disclose extended drying periods and improved energy efficiency, which could benefit agricultural processing and storage, especially in rural areas. The third and fourth contributions investigated the photovoltaic (PV) system performance enhancement. One explores passive water-based cooling under uniform radiation conditions, offering a cost-effective means to maintain panel efficiency. The other used CFD-based numerical simulation to evaluate different nano-fluids for hybrid photovoltaic-thermal (PVT) systems, identifying silver-water nano-fluid as the most efficient option.

The fifth paper investigates the energy potential and chemical composition of palm kernel briquettes. The study confirms their viability as clean biofuels through detailed thermal and structural analyses, promoting biomass utilization in developing regions.



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Lastly, the sixth paper analyzes thermal performance improvements in lithium-ion battery thermal management systems (BTMS) by varying casing thickness. It presents an encouraging strategy to enhance heat dissipation and temperature uniformity in battery arrays, vital for electric vehicle applications.

We extend our sincere thanks to all authors, keynote speakers, reviewers, session chairs, coordinators, technical teams and organizing committee members for their enthusiastic and dedicated contributions to the success of ICAEEE 2024. We are also grateful to the Journal of Renewable Energies for their support in publishing this Special Issue based on extended versions of selected ICAEEE 2024 papers.

Guest Editors

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