

Front Cover



# Journal of Mechatronics, Electrical Power, and Vehicular Technology

Volume 15, Issue 2, 2024

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# Journal of Mechatronics, Electrical Power, and Vehicular Technology

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## FOREWORD FROM EDITOR-IN-CHIEF

Most valued Readers,

It is with great enthusiasm that I present the latest issue in 2024 of the Journal of Mechatronics, Electrical Power, and Vehicular Technology. This edition delves into groundbreaking innovations and critical evaluations that bridge the realms of renewable energy, sustainable technologies, and advanced vehicular systems. We are pleased in this issue to present a diverse range of twelve articles and papers written by authors from different countries, such as Bangladesh, Ethiopia, Indonesia, Japan, Malaysia, Taiwan, the Netherlands and the United States of America.

Our first highlighted study investigates an IoT-based monitoring system for on-grid photovoltaic power plants. By achieving an exceptional accuracy of 96.37%, this work exemplifies how modern technologies can elevate the performance and reliability of renewable energy solutions, aligning with global sustainability goals. In another compelling contribution, researchers explore the barriers to electric vehicle (EV) adoption in Bangladesh. Through rigorous surveys and statistical analyses, the study identifies financial, infrastructural, and behavioral challenges, offering actionable insights for policymakers to foster a more inclusive transition to green mobility.

The examination of biogas-fueled generator sets, utilizing cow dung as a sustainable energy source, provides a testament to the potential of bioenergy. With efficiency rates peaking at 14.51%, this research underscores the feasibility of alternative fuels in addressing global energy challenges while reducing environmental impacts. Next, the techno-economic assessment of the Bilacenge PV grid system in Southwest Sumba offers insights into the economic feasibility of solar energy projects in remote areas. Despite the challenges, such studies are essential for understanding the long-term benefits and potential of renewable energy investments.

In the realm of transportation, the assessment of hybrid and battery electric motorcycles provides a comparative analysis of energy consumption, greenhouse gas emissions, and cost efficiency. The study's findings emphasize the benefits of battery electric motorcycles in terms of energy savings and reduced emissions. Then, innovations in sensor technology and autonomous vehicle control are also featured, with research on a three-axis flexible tube sensor for EV charging port alignment and non-linear model predictive control for autonomous personal mobility vehicles. These advancements are paving the way for more efficient and reliable automated systems.

Further, the integration of calcium looping processes in cement plants and the analysis of battery energy storage systems (BESS) for grid stability highlight the ongoing efforts to mitigate environmental impacts and enhance energy efficiency. These studies provide practical solutions for reducing greenhouse gas emissions and improving the reliability of renewable energy sources.

Lastly, the ergonomic analysis of gaming mice using electromyography and subjective assessment addresses the health and comfort of users, reflecting the importance of human-centered design in technology development.

As we navigate an era of unprecedented technological advancements and environmental urgency, these studies not only contribute to academic discourse but also provide practical frameworks for real-world application. I extend my deepest gratitude to the authors, reviewers, and editorial team whose dedication ensures the quality and impact of our publication.

Let this issue inspire further exploration and collaboration in the pursuit of a sustainable future.

Bandung, December 2024

Editor-in-Chief

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