



Scienxt Journal of Electrical & Electronics Communication
Volume-2 || Issue-2 || May-Aug || Year-2024 || pp. 1-9

Enhancing energy efficiency in electric vehicles: innovations and barriers

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Abstract:

The transition to electric vehicles (EVs) represents a pivotal shift in the automotive landscape, driven by a collective commitment to mitigate environmental impacts and reduce dependence on fossil fuels. This paper delves into the critical theme of enhancing energy efficiency in electric vehicles, exploring both innovations and persistent barriers hindering widespread adoption. As the demand for sustainable transportation intensifies, the focus on maximizing energy efficiency becomes paramount. The abstract encapsulates a comprehensive examination of cutting-edge innovations in battery technologies, electric motor designs, and vehicle architectures, each contributing to the overall goal of minimizing energy consumption. Simultaneously, the paper dissects barriers that impede the seamless integration of these innovations, including cost implications, charging infrastructure challenges, and consumer perceptions. Through insightful case studies and a forward-looking exploration of future directions, this paper aims to provide a nuanced understanding of the dynamic landscape of energy efficiency in electric vehicles. By navigating the delicate balance between advancements and barriers, this study contributes to the ongoing discourse on sustainable mobility and informs future developments in the realm of electric transportation.