DESIGN AND IMPLEMENT ENERGY-EFFICIENT STRUCTURE FOR ELECTRICAL VEHICLE

विद्युत वाहनों के लिए ऊर्जा – कुशल संरचना का डिजाइन और कार्यान्वयन

A
Thesis
Submitted for the Award of the Ph.D. degree of
PACIFIC ACADEMY OF HIGHER EDUCATION AND RESEARCH UNIVERSITY

By

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2024

DECLARATION

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It gives me immense pleasure in certifying that the **"Design and Implement Energy-Efficient Structure For Electrical Vehicle" (**विद्युत वाहनों के लिए ऊर्जा – कुशल संरचना का डिजाइन और कार्यान्वयन) and submitted by **SHINDE AMOL SHAHAJI** is based on the research work carried out under my guidance. He / she have completed the following requirements as per Ph.D. regulations of the University;

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DATE: - **SHINDE AMOL SHAHAJI**

DEDICATED TO
MY FAMILY, FRIENDS
AND WELL-WISHERS

PREFACE

In an era where sustainability and energy efficiency are paramount, the transition towards more environmentally friendly modes of transportation is inevitable. The research undertaken in this thesis, titled "Design and Implement Energy-Efficient Structure for Electrical Vehicle," embodies a significant stride toward this transition. This study carves out a niche in the burgeoning field of electric vehicles (EVs) by focusing on the innovative design and optimization of energy-efficient structures for three-wheeled electric vehicles.

The inception of this research is rooted in the critical examination of the global transportation sector's impact on carbon emissions, with a keen eye on the burgeoning potential of electric vehicles to mitigate these environmental challenges. The thesis navigates through the historical evolution of EVs, elucidating the shift from conventional internal combustion engines to more sustainable electric alternatives. It intricately explores the design, implementation, and potential of three-wheeled electric vehicles, particularly focusing on the tadpole structure for its advantages in terms of aerodynamics, stability, and energy efficiency.

A multi-faceted approach was adopted in this study, encompassing an extensive literature review, methodological rigor in design and prototyping, and empirical analysis through simulation and real-world testing. This comprehensive exploration is underpinned by a dual objective: to innovate in the design of a tadpole-structured electric vehicle that champions energy efficiency and to empirically validate the performance enhancements through meticulous testing.

The significance of this research is manifold. It not only contributes to the academic and practical knowledge on electric vehicles but also provides a blueprint for future innovations in the design and implementation of energy-efficient structures. The findings underscore the feasibility of three-wheeled electric vehicles as a viable alternative to their four-wheeled counterparts, presenting a compelling case for their adoption in urban settings for a sustainable future.

This thesis is a testament to the collaborative spirit, dedication, and intellectual rigor that characterizes the quest for innovation and sustainability in transportation. It is hoped that the insights gleaned from this study will fuel further research in this vital field and inspire a new generation of engineers and environmental advocates to continue pushing the boundaries of what is possible in the realm of electric vehicles.

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