Design & Fabrication of Self Charging Device

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Abstract

The development and implementation of an Electric Vehicle (EV) self-charging device utilizing a dynamo connected to the wheel of the vehicle represent a significant advancement in the quest for sustainable and efficient electric vehicles. This innovative approach harnesses the kinetic energy generated by the vehicle's motion, converting it into electrical energy that can be used to recharge the electric vehicles battery. This process of energy harvesting not only enhances the overall efficiency of the vehicle but also contributes to a reduction in the reliance on external charging infrastructure. Throughout this project, we have explored the feasibility and practicality of integrating a dynamo system into electric vehicles.

Keywords: Self-Charging Device, Dynamo System, Booster

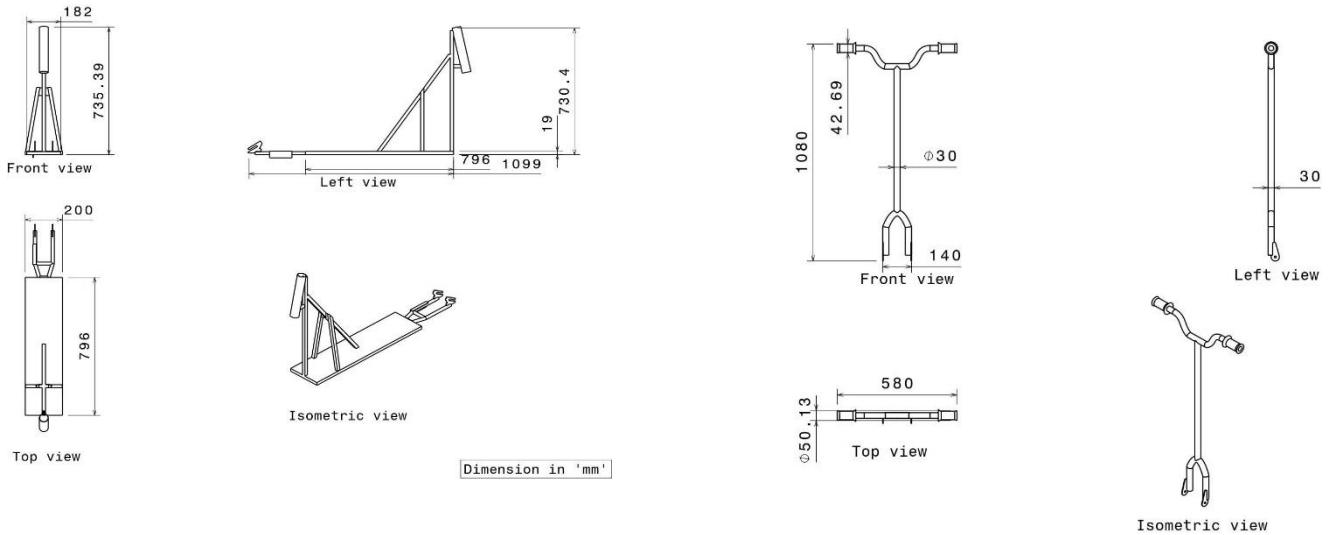
1 INTRODUCTION

Introducing the EV Self Charging Device an ingenious solution poised to redefine the landscape of electric vehicle (EV) technology. At its core lies a compact mini dynamo seamlessly integrated with the vehicle's wheel assembly, poised to capture the untapped potential of kinetic energy during motion. As the EV traverses roads and highways, the dynamo rotates in tandem with the wheels, converting mechanical energy into electrical power. This self-sustaining process ensures a continuous and renewable source of energy generation, eliminating the need for frequent stops at conventional charging stations.

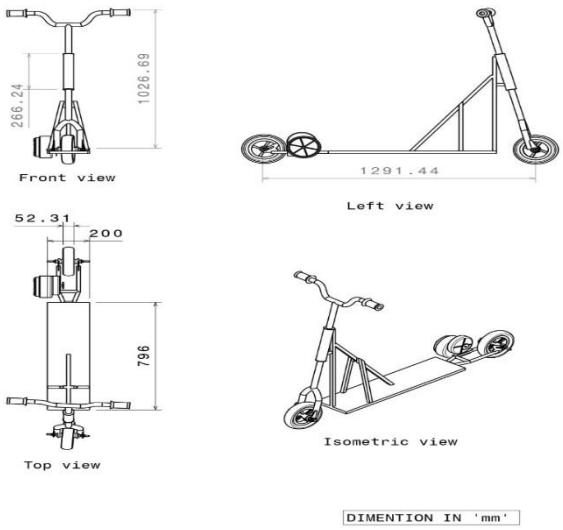
2 OBJECTIVE

The primary objective of this research project is to evaluate the feasibility and efficacy of integrating an EV Self Charging Device into existing electric vehicle systems. Specific research questions to be addressed include: Efficiency Assessment, Integration Compatibility, Performance Impact, Energy Storage and Management & Cost-Benefit Analysis.

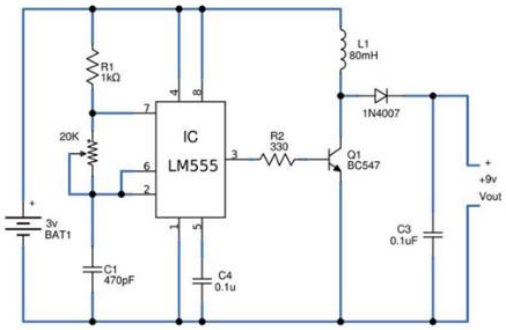
3 DESIGN



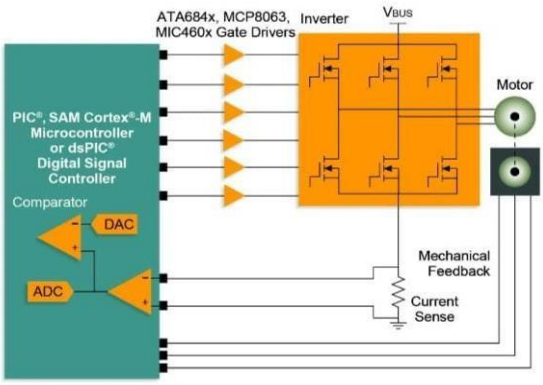
Fig(a): Frame design with dimensions



Fig(b): Assembly Drafting



Fig(c): Circuit of Booster



Fig(d): Controller Circuits

4. FABRICATION

Fabrication involves several critical processes, including grinding, welding, and jointing. Each of these processes plays a crucial role in ensuring the structural integrity, performance, and safety of the final product

Fig(e): Wiring process

Fig(f):Painting process

Table: Cost of the Project

SL No	LIST OF VARIOUS COST	Amount
1	Materials Cost	9000
2	Labor Cost	3000
3	Travel Cost	3000
4	Miscellaneous Cost	4000
5	Total Cost	**Rs 19000**

5 SELECTION OF MATERIALS

i) Electric Cycle DC Motor-Continuous Power Output 250 Watts, No-load Current ~2.5 Amps, Rated Load Current ~11-13 Amps. Max Load Current ~13 Amps.

ii) Rechargeable Battery- Sealed Lead-Acid (SLA) battery, 12V voltage, 7.5Ah, Cyclic Use -14.10V - 14.40V. Max Load Current ~13 Amps

iii) Motor controller- A typical DC motor controller has several key terminals.

iv) Dynamo: Rotation Speed (RPM): Typically, between 1000 to 6000 RPM, Output Voltage: 12V DC, Output Current: Can vary widely, often between 1 to 30 amps,

6 CONCLUSION

The development and implementation of an EV self-charging device utilizing a dynamo connected to the wheel of the vehicle represent a significant advancement in the quest for sustainable and efficient electric vehicles (EVs). This innovative approach harnesses the kinetic energy generated by the vehicle's motion, converting it into electrical energy that can be used to recharge the EV's battery. This process of energy harvesting not only enhances the overall efficiency of the vehicle but also contributes to a reduction in the reliance on external charging infrastructure.

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