DESIGN AND DEVELOPMENT OF COST-EFFECTIVE ELECTRIC VEHICLE

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Introduction

- As electric vehicle (EV), having one or more electric motors or sometimes traction motors for propulsion as an alternative to the traditional fossil fuels.
- It is very interesting to know that the first EV was made in 1834, which is almost 190 years back. It was made on a built on a non-rechargeable battery that was available at that time. After the invention of the Lead-acid battery, a rechargeable Battery based EV was possible and was created by David Salomon I 1874.
- With this development, by 1886, it became possible to develop commercial products. Hence, all these developments have popularized Ev's in mainstream automobiles in the global scenario. So, in 1900, of the 4200 automobiles sold in the United States, 38% were Ev's.
- EV's will play an important role in moving towards the initiation of green energy and changing in the economy around the world.

Objectives

- To design and develop the cost effective 3-wheeler Electric Vehicle
- To carry the load capacity of 250kg
- To achieve the milage up to 60km/charge
- With full specification of Anti-theft protection and digital meter to monitor the speed and SOC.
- To determine the crash detection using impact sensor and notified to be preferred numbers through GSM
- To keep track of vehicle location using GPS

METHODOLOGY

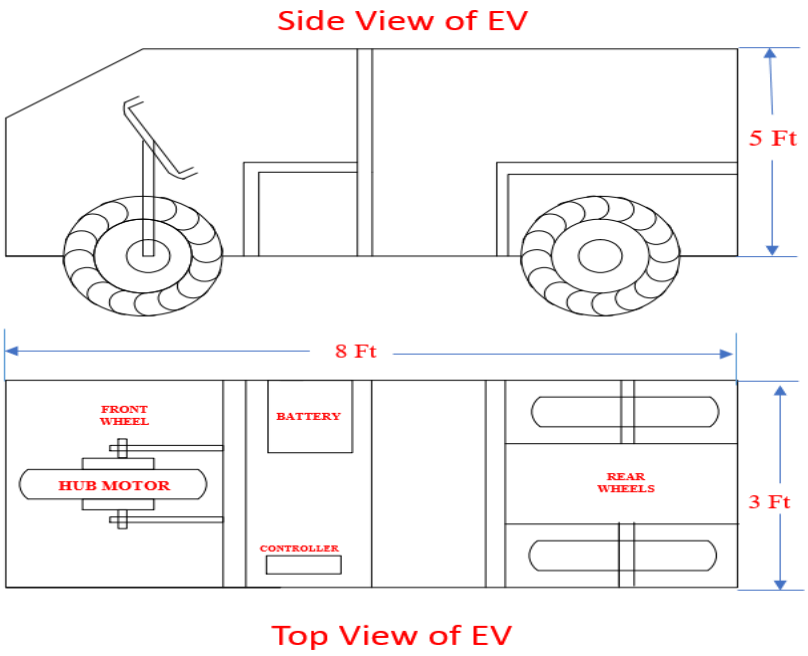

Fig.1: Modelling of EV using AUTO-CAED

BLOCK DIAGRAM OF EV

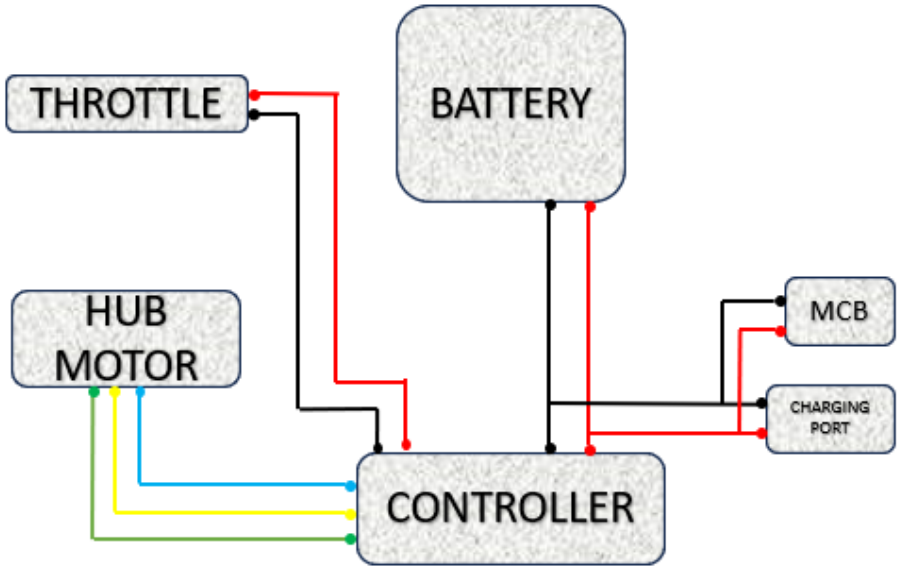

Fig.2: Block Diagram of EV

Result

- After conducting a thorough analysis of the transportation needs on the GMIT campus, for EEE Department, it has been determined that developing an electric vehicle for internal use is a feasible solution.
- The design specification called for a fully assembled vehicle to be tested on a flat road, which yielded positive results and provided the necessary data to proceed with the project.

- The electric vehicle will be designed to comfortably seat three passengers and navigate the various road conditions present on campus.
- This will require a careful analysis of the topography of the campus and consideration of the appropriate battery rating, motor capacity, and chassis design to ensure that the vehicle can efficiently navigate hills, uneven terrain, and tight turns without putting undue strain on the system.
- Passenger comfort is another important consideration in the design process.

Conclusion

- The implementation of an electric vehicle for internal use on the GMIT campus offers a practical and efficient solution to the current transportation problem.
- Through careful consideration of various factors, such as road conditions, passenger comfort, safety, and sustainability, we can create a vehicle that meets the needs of the campus while promoting a sustainable and environmentally conscious culture.
- The development of this vehicle will require collaboration among different departments, including engineering, design, and sustainability, and will necessitate meticulous planning and execution.
- However, with the right resources and expertise, we believe that this project can be successfully completed, providing a valuable and sustainable service to the campus community.

Future Scope

- There is potential for further development of the electric vehicle, including the addition of features such as a wind turbine and dynamo to self-charge the battery while the vehicle is in motion. Increasing addition seat for the passenger.
- Also develop in the suspension design and chassis is also required.
- Additionally, the incorporation of solar panels could improve the economic feasibility of the vehicle.
- Designing with cost-effective electric vehicle we can use for the campus reducing the carbon emission and maintain the environmental benefit also.