

Interim Frontline task Report

Project Role: Electric Vehicle (CRE18) Project Lead

Introduction

Due to the limited manpower at our disposal, We decided to focus on developing only the core of the Electric Vehicle. On closer examination, we determined these tasks to be:

Development of battery housing and supporting electronics

A module was developed to house the cells, accompanying pcbs were designed and the entire assembly modelled on Solidworks. Finally, a housing was developed for the entire battery

Development of gear system and motor assembly

Development of Battery Management system

A battery management system (BMS) was designed from scratch for use in the electric vehicle. It was designed using Temperature sensors, multiplexers for the temperature circuit, an Analog Front End IC for measuring and balancing voltage, A gas gauge IC (for determining state of charge), self designed pcbs for the ICs and other parts and a master microcontroller for monitoring the entire circuit.

So far, the Battery housing, motor assembly and gear are fully developed with the Battery Management system undergoing circuit simulation.

An important milestone was the Creation and Submission of the Business Logic Case(BLC) to IMechE in Nov 2017. We conducted a market survey and determined that our potential customers (mostly male, 18-24 years) were interested in motosport and were willing to pay up to 25000GBP for a racing vehicle. They also required the vehicle to be road legal and easy to setup and maintain (this was a very big influence in our choice of battery design). We computed the cost of potentially mass producing our electric design and were able to get it down to the acceptable level for our potential customers. A plan for cost efficient potential mass production was drawn up and finally, we enumerated the major design features and performance targets of our vehicle. This BLC was successful and our class 2 entry was accepted. However, a decision was made to withdraw our entry because the lack of manpower meant we would be going into the competition with an incomplete car.

We are currently in the process of writing a request for funds to the University in order to obtain batteries and motor. We shall begin testing our designs in order to optimize and set a baseline for future City Racing teams

Future

We are looking into building a scale model of the formula student vehicle in order to test the basics of the sproposed system and its features etc.

Work is still going on in the battery Management system design, next on our docket is the Suspension design. The goal is to do as much as possible this

year and document it properly so that the students that work on the EV next year would not have to start from scratch

Upcoming dates

Cost Report – 02 March 2018

Final Joint report – 03 June 2018