Non-Budget Funding Report

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Introduction:

Requirement D013 in the Statement of Work for the 2014 senior design project required a request for additional funding to cover the costs of a motor and the necessary test equipment. This report provides reasoning for why this equipment should be purchased, as well as gives an explanation for why the specific equipment was chosen.

Necessity for Funding:

This is an important project for both the ECE department, as well as the school as a whole. It promotes the advancement of technology as well as the global effort to provide clean transportation. This year's team has been hard at work designing a critical portion of the future electric vehicle which has embodies the colleges mission to build profession responsibility. This funding is important towards promoting this professional responsibility for future class years.

The class of 2015 will be continuing the work that has already been completed and will require the motor and test configuration to continue that work effectively. This motor will be used to test the battery pack that we have designed this year, and is necessary for testing the pack in a realistic environment. All of the items that are being requested are crucial to insuring that the pack operates in the way that we expect it to.

Additionally past years have already spent a significant amount of time deciding on a motor and running simulation. Much of this work was necessarily replicated this year and it would be ideal if this work did not have to be repeated once more. Time is a luxury that this project cannot afford and having this motor and test configuration in the building and ready to run will greatly advance this project towards its goal of competition.

Equipment:

Several items have been requested as part of the non-budget funding proposal. These items include, a motor and controller, test stand and dynamometer, power supply, parts required for assembly and upkeep, potential installation costs, and a dedicated pc for data analysis. All of these items were selected after much careful consideration as outlined below.

1. Motor:

The motor is an AC induction motor manufactured by High Performance Electric Vehicle Systems. It is designed for use in small kart sized vehicles such as the car we are working on. The power graphs for this motor have been examined to meet our needs, and extensive simulations have been run using Simulink to verify its operation on the race course.

2. Controller:

The controller is a Curtis 1238R motor controller, manufactured by Curtis Instruments. It is provided with the motor and is therefore guaranteed to work properly with the motor and meet all of our required specifications.

3. Dynamometer:

The dynamometer we have selected is the Huff HTH-100 dynamometer. This dynamometer will be designed to correctly contain our motor and provide a sufficient load. It operates off of a standard wall outlet, and has self contained cooling for simple use and maintenance.

4. Power Supply:

The power supply we have selected is the Magna Power TSD100-250/208. This power supply was selected due its user friendly display and proper voltage and current output necessary to power our motor.

Additional information regarding each of the following items and can found in the accompanying documents, or at their respective websites listed below.

Links:

HPEVS AC 5X 27.28 - http://www.electriccarpartscompany.com/

Huff HTH-100 - http://www.huff-tech.com/

Curtis 1238R - http://curtisinstruments.com/

Magna Power TSD100-250/208 - http://www.magna-power.com/