Project Overview

Electric powered vehicles, also known as EVs are not a new concept. In fact, they have been around for at least 100 years in some form or another. Interestingly in the last 5 or so years EV technology has improved drastically enough that the field is rapidly regaining consumer attention. With a renewed interest in EVs, new uses for them are being discovered. New applications often require unique technologies and our case is no exception.

At the heart of every EV, is an electric motor. An electric motor in its purest form consists of a combination of magnets and wires. That means that another system is required to control which wires in the motor turn on at a given moment. This control system is called a motor controller. There are many types of motor controllers already in existence to meet the demands of different sizes and shapes of motors.

The motor controller requested is a high-voltage and high current design. This motor controller must be able to deal with higher amounts of power when compared to industry standard motor controllers. This poses many unique design challenges, from heat dissipation, to noise reduction within the circuit. The components we select will need to be able to handle the higher current demands from the motor, while maintaining perfect operation in high noise levels to ensure the safety of the driver.

The benefits of completing this project could be far reaching for the future of EVs. By pioneering a motor controller for such heavy duty usage, we would allow future designers to have a prototype to work with.

Our basic motor controller will be created by utilizing the design flow chart seen in **figure A**. This is a forward only design. The existing transmission on the vehicle will be used to reverse direction. Braking operation will be handled by the hydraulic brakes mounted on the wheels, thus our motor controller will not require this function.

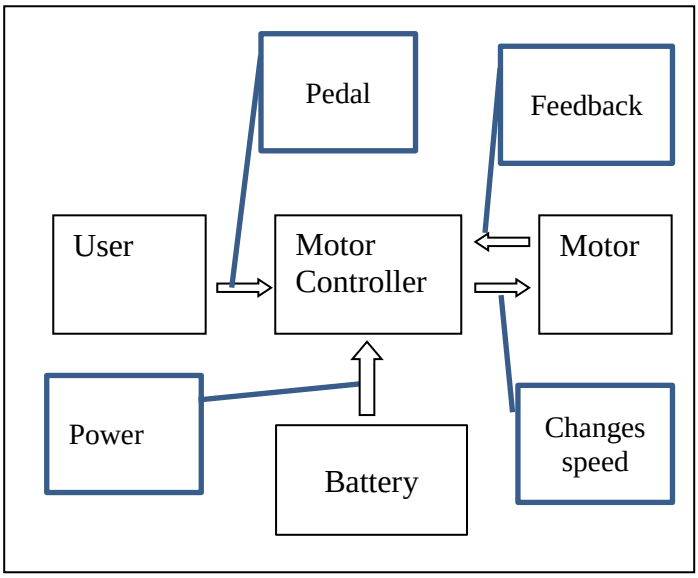

Figure A – Motor Controller Circuit