

## Charging Station Progress

Group Number: 22A

Group Advisor: Pr. Bigelow

Group Client: Pr. Bigelow

Group Members: Hamzah Abeer, Aziz Almarzouqi, Nick Riesberg, Derek Schmitz, Matt Stobb, Brandon Umscheid

During our group meeting that took place on Wednesday October 24, 2012, the group discussed the current issues with the design of the circuit. One of these concerns deals with the purchasing of the batteries for the Electric Vehicle. Since our overall team consists of 40+ engineers with three separate groups, finding a fair way to distribute cost is in need. As discussed in previous reports, the vehicle is now looking at implementing Lithium Ion batteries. Lithium Ion batteries are lighter and hold a longer charge, but come at a higher upfront cost.

Along with the use of the Lithium Ion batteries brings new challenges to our design circuit. Since Lithium Ion batteries need to charge at constant current until they reach their designed voltage and then switch to constant voltage, we will need a way of implementing this switch. We have already ordered a microcontroller for the project, but it will not arrive for several more weeks. We are hoping to get the microcontroller as soon as possible so that Hamzah Abeer and Aziz Almarzouqi can start programming and testing some of these features.

On the Tuesday October 23, 2012, (the day before the group meeting) Nick Riesberg, Derek Schmitz, and Brandon Umscheid worked on developing a more accurate model of the circuit with the new information that was brought to the group. The new information included the use of Lithium Ion Batteries. Although we have plans to create a charger that is able to charge multiple types of batteries, our primary focus is being able to first charge Lithium Ion batteries. During the Tuesday meeting we also attempted to contact our Group Advisor (Professor Bigelow). A meeting time was established for Thursday October 25, 2012 with Nick Riesberg and Derek Schmitz.

During the meeting several group concerns were brought up to see if Professor Bigelow knew of any ways to solve them. Some of the questions asked during the meeting are listed below:

- Transformer or Buck Converter?
- Shut-off switches that are able to handle high current with small gate voltage.
- Current monitoring and Voltage Monitoring circuits/components.
- Safety information.

Professor Bigelow was able to answer questions or gave us a resource to find a solution. One topic that was brought up during the meeting was the senior design group that built a lithium ion charging station last year. Professor Bigelow suggested setting up a meeting with their group advisor (Professor Ayman Fayed) to find additional information. An official meeting with Professor Fayed is still pending.

Some tasks scheduled for next week include:

- Better development of the website.
- Design Document.
- Model a circuit in software.

Hopefully the group is able to find time to implement all of these tasks