

EE 491: Wireless Recharging System

Client: National Carwash Solutions

Weekly Report #2

9/23/18 - 9/30/18

Team:

**Benjamin Gisler
Miguel Hennemann
Kyle Henricksen
Doruk Er**

Faculty Advisor: Craig Rupp

Weekly Summary:

This week we went into more detail about what our design would look like. We designed a very specific block diagram detailing all the components for our system. The following were the different components listed from input to output: Power Supply, Oscillator, Transceiver Coil, Receiver Coil, Rectifier, and a Voltage Regulator. Specifically, we focused on trying to figure out a design for the oscillator. Essentially, we need a high frequency square wave to transfer a wireless signal via the transceiver coil. We decided that an H-bridge would be ideal in order to obtain this high frequency square wave. Ben and Miguel got 4 MOSFETS from the parts shop in Coover and tested the H-bridge design. We realized that we would need a MOSFET IC to turn the gates on and off effectively, because we were not getting the expected output.

Past Week Accomplishments:

We had a discussion with our advisor regarding the overall design of charging system.

Pending Issues:

We still need to figure out whether we are going to use a pre-designed H-bridge circuit board or design one ourselves. We are also scoping out various types of batteries and coils for the system and need to make our choices to start testing.

Individual Contributions:

<u>Name</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>Hours Cumulative</u>
Miguel Hennemann	Tested H-Bridge design in Coover Lab	4	12
Benamin Gisler	Assembled and tested H bridge Looked up potential components for transmission.	3	7
Kyle Henricksen	Began drafting pseudo-code for Power Management System	2	6

Doruk Er	Narrowed down the battery and coil list Started to calculate marginal load values to compare component compatibility Determined pros/cons of different frequency rates with coils	3	11
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Plans for the Upcoming Week:

We are going to do more research into the H-bridge and try to understand whether it will be easier and more practical to buy a pre-designed PCB. We also have to ensure that this H-bridge is rated for more than 24W.

Summary of Weekly Advisor Meeting:

We had a deep discussion into the functionality of an H-bridge. We also discussed how important it is to have an in-built diode for MOSFETs in order to prevent damage to components from an increase in voltage.