

EE 491: Wireless Recharging System

Client: National Carwash Solutions

**Weekly Report #9
11/9/18 - 11/16/18**

Team:

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

Faculty Advisor: Craig Rupp

Weekly Summary:

After having rewired our circuit to get rid of the bugs and errors we encountered, we finally got our H-bridge to oscillate for the first time. This achievement was cut short (pun intended) however, by an electrical short in our system that destroyed the IC we were using. So instead of doing more detailed tests, we had to solder a new IC to the previous SOIC breakout board. This then allowed us to get an output from our IC once again and continue testing.

Past Week Accomplishments:

Name	Accomplishments
Miguel Hennemann	Changed some of our existing resistors and capacitors to different values. This was to change the function of the IC and to test what those changes particularly would be.
Benjamin Gisler	Had to solder our second to last IC (of 5) after we accidentally burnt out the previous one. This also caused us to reroute a few wires on our bread board to prevent / minimize the chance of a short on our board in the future.
Kyle Henricksen	Began setting up the circuit for the Power Management System after receiving the parts for it.
Doruk Er	Helped rewire the h-bridge circuit and eliminate the risk of shorts. Evaluated test results regarding the desired frequency levels.

Pending Issues:

Name	Issues
Miguel Hennemann	Not getting square wave voltage signal at the gates of the MOSFETs. The MOSFETs need that gate voltage in order to turn on and off at a fast rate. We will

	test MOSFETs themselves outside of the circuit to see how they perform individually. However, the IC is performing as intended and we have the expected outputs at each of the pins.
Benjamin Gisler	Since we burnt out our previous IC, we now only have one additional back up. The time we spent doing this took away from us trying to test resistor values for our circuit, so those resistor values will still need to be found.
Kyle Henricksen	Need to meet with a EE team member to understand what's going wrong with my circuit.
Doruk Er	Need to evaluate options for the charging and the protection of the battery pack.

Individual Contributions:

<u>Name</u>	<u>Individual Contributions</u>	<u>Hours this week</u>	<u>Hours Cumulative</u>
Miguel Hennemann	Calculated capacitor values based on our desired frequency to build resonator circuit. Capacitors connected to coils allow us to have resonance at much lower frequency. Coils are now transmitting power efficiently around 200kHz.	7	53
Benamin Gisler	Unsoldered old burnt IC off of its SOIC and put new one on. Tested new IC and was able to get the desired operation of it.	7	48

Kyle Henricksen	Tested Code, it works, but I'm getting weird readings from the arduino, such as negative voltage, need to consult team.	5	42
Doruk Er	Estimated load values for the busiest day in order to re-evaluate the battery pack decision with the latest circuit modifications.	6	50

Plans for the Upcoming Week:

Name	Plans
Miguel Hennemann	We may need to change the gate resistors to each of the MOSFETs. The gate resistors help offset the charge and discharging rates of the MOSFETs. We will be testing the MOSFETs and the gate resistors to determine what resistors are best suitable for the high frequency we are inputting to the gate.
Benjamin Gisler	Lower resistance values are needed to get a stable voltage at the gate of our transistors. Once this is stable, we will be able to attach a load to our H-bridge for further testing.
Kyle Henricksen	Consult team members about the read arduino readings, and if possible rectify them so as to proceed with testing.
Doruk Er	Modify calculations for the battery pack with the estimated load values for the busiest day of the car wash.

Summary of Weekly Advisor Meeting:

Unfortunately, our advisor was busy so we were not able to have an advisor meeting this week. We did communicate with him however, and let him know of our progress we made this week (which can be read in the statements above).

