Fast, Compact, High Strength Magnetic Pulse Generator

EE 492 Weekly Report | May 15-30 | Week 8

Advisors: Mani Mina, John Pritchard, Robert Bouda
Client: High Speed Systems Engineering Lab
Members: Team Leader – Adam Kaas
Team Webmaster – Gregory Fontana, Meiyong Himmtann
Team Communication Leader – Brittany Duffy
Team Key Concept Holder – Megan Sharp, Brandon Dixon
Team Commissioner – Alain Ndoutoume
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Weekly Summary

Board design and minor changes in functionality were discussed this week. We will be using reflow soldering in our professionally fabricated design. The new PCB has been ordered, and the coil choice is in progress. Please view meeting notes for more information.

Meeting Notes

3/2 Meeting with John

Duration: 0.75 hour **Members Present:** Brandon
Purpose and Goals: Continue with board design, discuss functionality as well as usability.

Achievements: Decided to add a few components to the board to help with usability. One element we will add is a green LED branch to let the user know that the DC source is working properly. We will also be adding zener diode branches to the DC and AC inputs to prevent the user from increasing the voltage above the functioning requirements. Each of these branches also has a red LED to let the user know. We discussed creating a User Guide, to help all users to be able to use the board properly.

3/2 Introduction to using the reflow oven

Duration: 2 hours **Members Present:** Alain, Meiyong
Purpose and Goals: Meet with Lee to show us how to use the reflow oven. Instead of soldering by hand, we can use the reflow oven to populate our board.

Achievements: Used the reflow oven in Coover 1316 to populate a prototype board.

3/4 Meeting with John

Duration: .75 hour **Members Present:** Brandon
Purpose and Goals: Meet about finishing and ordering PCB.

Achievements: Continued work on PCB and made sure parts were going to fit using 1 to 1 scale printing. Also used Sketchup to do some 3D modeling of our board.

3/5 Core Team Meeting

Duration: 1 hour **Members Present:** Brandon, Greg, Megan, Meiyong, Alain, Adam + Advisor

Purpose and Goals: Meet with advisor to discuss updates.

Achievements: Continued work on PCB and made sure parts were going to fit using 1 to 1 scale printing. Also used Sketchup to do some 3D modeling of our board.

3/6 Group meeting to obtain Vgs Graphs
Duration: 1.5 hours **Members Present:** Brittany, Greg, Megan, Adam, Meiyong + Advisor
Purpose and Goals: Obtain the Vgs output graphs by using various coils.

Achievements: By changing out the coils in our circuit that vary inductance levels, we were able to obtain Vgs output graphs. Our advisor also gave us a better understanding of where our project will be used in his interferometer with a sagnac configuration. We now have a better grasp on how our project fits in with the ultimate results he would like to see.

Pending Issues
N/A

Plans for Next Week
Adam: Begin some heavy documentation. Meet with Brittany to discuss formatting and layout as well as breakdown of responsibility for final report.
Greg: Analyze the Coil data taken last week.
Meiyong: Contact Advanced Circuits to find out their process of fabrication. Help wherever is needed with documentation.
Brittany: Discuss best coil to use with our circuit and what ways we can improve rise/fall time while meeting specifications. Start thinking about and organizing documentation. Help Brandon with user guide if need be.
Megan: Continue working with John to improve your expertise and understanding of the interferometer setup and how/why we are using it with our project and get access to the MATLAB Vgs graph program. Also, work on documentation.
Brandon: Begin working on user guide.
Alain: Work on documentation. Get in touch with advance circuit to find out the process of copper layer, solder mask layer, Silkscreen layer and etc… Get prepared for our meeting with George on March, 27th.

Individual Contributions This Week
Adam: Obtain Vgs Graphs (1.5 hrs), Attended Core Team Meeting (1 hr)
Greg: Obtain Vgs Graphs (1.5 hrs), Attended Core Team Meeting (1 hr), Being a dinosaur (0h)
Meiyong: Reflow soldering run through (2 hrs), reflow soldering documentation (1hr), Attended Core Team Meeting (1 hr), research mass production and assembly of PCB (1hr), obtain Vgs Graphs (.5 hr)
Brittany: Obtain Vgs Graphs (1.5 hrs)
Megan: Obtain Vgs Graphs (1.5 hrs), Attended Core Team Meeting (1 hr), Making the coils that used for testing (1hr), Reviewing some coil calculations to see which coils should prove best during testing (1.5hr)

Brandon: Meetings with John (1.5 hrs), finalizing and sending out PCB (6 hrs), Attended core team meeting (1 hr)
Alain: Reflow soldering run through (2 hrs), Research on reflow industrial, different layers of PCB (0.75hr), meeting with team and with John(1hr)
Alain: 2/22 Testing (3.5 hrs), 2/26 Meeting with John (0.5 hr), Core Team Meeting (1 hr), Researched on reflow soldering (1hr)

Total Contributions for Project (This Week / Total for Semester)

Adam: 2.5 hrs / 18.75 hrs
Greg: 2.5 hrs / 15.25 hrs
Meiyong: 5.5 hrs / 19.75 hrs
Brittany: 1.5 hrs / 17.5 hrs
Megan: 5 hrs / 17.25 hrs
Brandon: 8.5 hrs / 30.5 hrs
Alain: 3.75 hrs / 16.25 hrs