sdmay19-11: MIDI Zeusaphone (Singing Tesla Coil)
Week Report 21
March 28 - April 4
Client/Advisor
Joseph Zambreno
Team Members
Gunnar Andrews — *Webmaster*
Leo Freier — *Interrupter and Micro Controller Lead*
Luke Heilman — *Technical Architect*
William Brandt — *Pulse Width Modulation Expert*
Greg Harmon — *Tesla Coil Construction Expert*
Jacob Feddersen — *Communications Specialist*

Summary of Progress this Report
- Testing and troubleshot PCBs
- Tested bridge circuit with many iterations: baby coil, OneTesla, power supply, and wall power
- Transmitter case design finalized
- Nodogsplash captive portal work

Past Period Accomplishments
- Troubleshot PCBs - Jake
    - Circuits appeared to be working, but on close inspection they were not behaving properly
    - Inspecting the circuits revealed several joints that had not fully bonded, particularly ground joints
    - Researched showed that we were not soldering at a high enough temperature to get good joints
    - Resoldering the PCBs fixed the issues
- Troubleshot bridge circuit - Jake, Leo, Luke
    - Tested our own bridge circuit with the baby coil and power supply.
    - Moved to the OneTesla coil and encountered issues.
    - Tried with both power supply and wall power. Wall power gave sound but no visible arcs.
- Met with Lee Harker about case designs - Luke
    - Discussed best practices of creating laser-cutter designs
    - Verified that both ⅛ inch and ¼ inch clear acrylic can be cut on the laser cutters in the Design College
    - Discussed ideas for attaching the tesla coil to the case, and attaching the top load to the coil
- Finalized transmitter case design and began laser-cutter training - Luke
    - Started Canvas course to be laser-cutter certified
    - Completed fire safety training through ISU EH&S
- Updated team PI - Gunnar
    - Had issues with permissions from apache user, fixed by changing the sudoers file
- Nodogsplash - Gunnar
    - Open source captive portal software. I got it working on my personal machine and am now working on migrating it onto the team PI and merging it with our web server

Pending Issues
- Full power tesla coil running on wall power is vastly underperforming - why? How to boost the power?

Plans for Upcoming Reporting Period

- Debug the bridge circuit with OneTesla coil, try to get expected higher power output
- Get nodogsplash captive portal working on the team PI
- Once debugged, complete and order bridge PCB
- Continue document work, maybe start poster/presentation
- Update schematics, design document
- Finish laser-cutter training, cut transmitter case

Individual Contributions

Team Member	Contribution	Reporting Period Hours	Total Hours
Gunnar Andrews	- Updated the sudoers file on the team PI - Got nodogsplash working on personal machine - Downloaded nodogsplash onto the team PI - Working on implementation on team PI	7	154.5
Leo Freier	- Helped test bridge circuit on perfboard - With both baby coil and OneTesla - With power supply and wall power - Completed first draft of the user manual - Helped fix a PHP bug	8	155
Luke Heilman	- Worked on case designs - Met with Lee Harker to verify case ideas - Started laser-cutter training - Soldered IL/PP PCB - Troubleshot perf-boarded bridge circuit - Purchased tesla coil components - Sent 3rd parts order	21.75	201.25
William Brandt	Continued implementation of explanations in safety manual	5	139
Greg Harmon	- Compiling Datasheets and other technical documentation. - Begin creating operation documents - Keep document-tracker up to date Sheet	5	159
Jacob Feddersen	- Completed perboard bridge circuit - Purchased tesla coil components - Debugged and fixed transmitter circuit - Resoldered PP/IL circuit to fix faulty connections - Tested and debugged full power bridge circuit with oneTesla secondary coil	13	219.25

Gitlab Activity Summary

None to report