sdmay19-15: Capacitor Gun

Week 2 Report
September 5 - September 19

Team Members

Grant Larson — *Engineer*
Max Balzer — *Meeting Facilitator*
Bret Tomoson — *Engineer*
Brett Nelson — *Engineer*
Mark Fowler — *Engineer*
Zachee Saleng — *Engineer*

Summary of Progress this Report

Design discussions and ideas. Trying to figure of the best design for this project and keeping in mind the potential challenges that will come later down the road.

Pending Issues

price of materials
Number of capacitors in use
Sizing of materials for price and weight efficiency

Plans for Upcoming Reporting Period

Use the information we have gathered to create a realistic project plan that can be expanded

Individual Contributions

Team Member	Contribution	Weekly Hours	Total Hours
Grant Larson	I made a rough design for a circuit that later attaches to the rails. The design included how our capacitors will be attached and a switch that allows them to charge, discharge into the rails, and then discharge any remaining charge into resistors so the user won't have a shocking experience (pun intended). I also researched magnetic fields and did general calculations that helped us establish parameters for our design.	6	6
Max Balzer	Researched price ranges for materials used in the rails and projectile. This included our design specifications for what material is best used for the rails paired with the projectile. We are initially going with copper rails and an aluminum sled, but we are going to test both	6	8

	in a small scale demo first. The price of copper is more expensive than aluminum, but if we only need to replace the copper rails a tenth of the time as aluminum rails it would be a better option.		
Bret Tomoson	Researched what size of capacitors would be needed to meet the muzzle velocity requirements of the project. This also involved finding what characteristics of the capacitors were important such as(High voltage low capacitance or Low voltage high capacitance). I also looked in to the charging circuit requirements to transfer power from a 12V battery to the ~450V capacitors.	4	6
Brett Nelson	Researched what materials would be good to use for the housing of the rail gun itself. Keeping in mind that it needs to be non conductive and withstand high temperatures. As been looking into the safety measure that will be included in the design of the small and large scale models.	6	8
Mark Fowler	Researched formulas to use to determine size of sled. Went to industry size charts and physics forums to piece together a correct formula for our specific need.	4	6
Zachee Saleng	Research on material resistivity and price. Based on the research, I did figure out the dimension of the cross-section. we are working on calculations to define the type of material that will be used (copper or aluminum). For the next meeting, we will be doing calculations to define the voltage of the charge circuit.	4	6

Gitlab Activity Summary

Nothing to report.