**Tesla Coil Project**

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**Purpose:** To research and learn about generating high voltage frequency and converting high frequency electromagnetic fields into useable energy. In doing this, we explore the field of wireless energy transfer, a well known idea recognized around the world, yet not fully explored. By exploring this, we hope to understand how to implement the technology into daily lives of people. With this research idea, we can create a new way to distribute energy to large areas, power electronics, charge batteries, and possibly even completely stop the use of batteries.

**Approach:** At the beginning of this project, research was the most important component. In order to do this building a Tesla Coil was the primary concern, but first we had to understand how a tesla coil operates. We based our design on ElectroBoom’s schematic to form a basis on which to move forward. Once we compiled our information, we began to bring our own ideas into the design.

**Source**:

S, Mehdi . "Music, Magic and Mayhem with Tesla Coil." ElectroBoom. May 26, 2015. Accessed April 09,

2017. http://www.electroboom.com/?p=575.

**Findings:** During our building and testing phases, we collected valuable knowledge and data about our tesla coil. While building, we learned important troubleshooting techniques. We also learned how to use tools such as multimeters, oscilloscopes, and function generators to extend our knowledge on Tesla Coil. We found valuable data such as, resonant frequency, pulse frequency, and duty cycle. Our latest phase of our project allows us to gain experience with Altium Design, a schematic and Printed Circuit Board (PCB) software, to design a custom PCB. Throughout this process we have learned a lot, and these skills will serve to help us in our future classes and our career paths.

**Conclusion:** During our researching, designing, and building of this tesla coil, we have learned about electromagnetics, circuit design, build design, hardware choices, and perseverance. Our results allowed us to explore the growing field of electromagnetics and learn about wireless energy transmission.

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