Renewable Power Pole

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Many outdoor extremists encounter loss of power for lighting, navigation, and communication devices in times of demand. Small problems soon escalate to major issues in absence of these technologies. Drawing many solutions from the idea of recycling human energy along with our previous knowledge of Faraday's Law of Induction led to the concept of harnessing the kinetic energy from walking with the application of this law embedded in a trekking pole. Research shows from Faraday's Law that more coiling of wire yields more electricity; therefore, our design uses 42 gauge magnetic wire to maximize the coils in this design. Our design also incorporates custom designed 3D printed bobbins to create a solenoid sleeve yielding high voltage, then this power supply is run through a series of circuits that converts excess voltage into amperes as well as making a safe steady flow of electrons with which to charge a battery with. Neodymium magnets were used inside this solenoid sleeve with spacers between each magnet to force a change in the magnetic field with motion, we created a vertical movement inside this tube by placing one grounded magnet at either end opposing the force of those that are moving. This creates a spring effect for those non-permanent magnets. Power output from the design flows into a permanent 2200 mAh 3.7V Lithium-ion battery stored in the handle which is also ran through a 5V step up circuit providing power to two USB hubs mounted into the top of the trekking pole. The USB hubs can provide a charge from a AAA battery to a cell phone while on the go or at camp. This design is sustainable in the fact that the permanent battery can be recharged as many times as needed and is only limited to the amount of walking or movement of the trekking pole.

Awards Won:

Third Award of $1,000