HYDROKINETIC WAVE POWER GENERATOR

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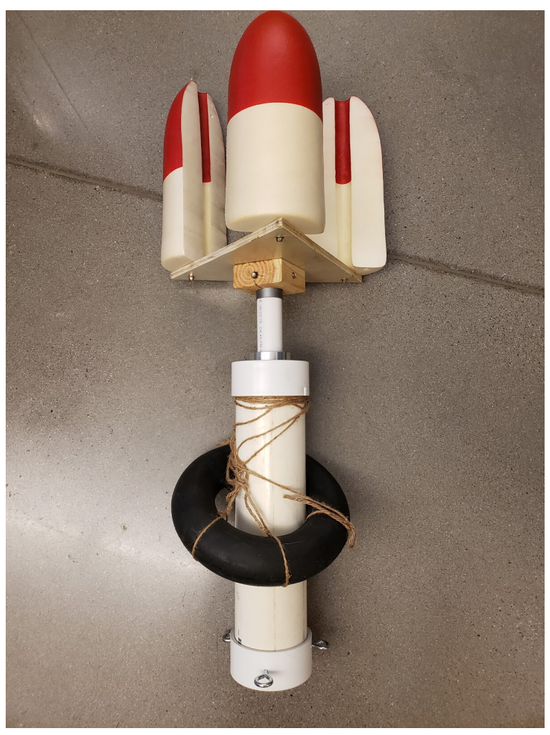
OBJECTIVE STATMENT

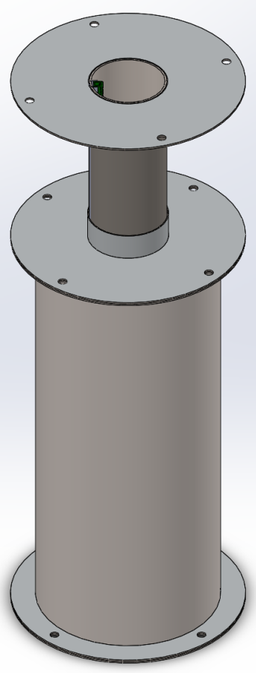
The Hydrokinetic Wave Power Generator utilizes the motion of the waves and converts it into usable energy. The energy created will be used to help those in 3rd world countries that do not have access to electrcity.

BACKGROUND

The Hydrokinetic Wave Power Generator uses the vertical motion of the waves as they move to drive a piston. The piston uses a rack and pinion gear system to convert the linear motion of the piston into rotational motion. A generator is spun using the rotational motion generating electricity which is stored in a battery.

PROTOTYPE/ CAD MODEL





DESIGN PROCESS

The design process for the Hydrokinetic Wave Power Generator began by identifying how the motion of the waves could be utilized to generate energy. After having a basic concept of how to use the motion of the waves requirements were established. CAD models and small scale prototypes were created using the requirements a rigid guidelines for the project.

ENGINEERING STANDARDS

Requirements	Description	Achieved
Continuous and Uniform Motion	The device must be functional at any wave height with minimal effect to the total power output	Min Wave Height: 0.75 ft Max Wave Height: 6 ft
Waterproof / Anti-Corrosive	Resistant to saltwater corrosion, electronics must be isolated	Housing Material: ABS DWV Schedule 40 Foam Core Pipe
Portable	Capable of being transported by a vehicle	Scale: 4 ft x 2 ft Weight: Approx. 51 lbs.
Power Small Electronics	Power devices such as radios, rechargeable lights, and phones	Battery Power Output: 12 V

TESTING

- Waterproofing: The device will be submerged in tank of water with 3' of water over top for 8 hours which complies with IP68 standards. The device will then be examined for any ingress of moisture.
- Power Output: The device it will be placed in a custom built testing apparatus and cycled for 24 hours, the data will be logged and analyzed to verify it maintained power throughout the test.
- Corrosion: A sample of each material present in the final build will be placed in a salt sprayer with a 5% aqueous NaCl solution for 2 weeks and examined for corrosion.