

E1.02 - Vortex 1

Zachary Trascher, Matthew Crain, Ryan Middleton, Grant Page
 Sponsored by: Dr. Rich Compeau



Requirements

- Produce electricity when oscillating in at least two directions.
- Output power to user that meets the USB 3.0 power delivery standard.
- Accumulate power to be output while the product isn't producing any power.
- Have no rotating parts.
- Store and display data relating to power generated, DC purity, and accumulation capacity.

Importance

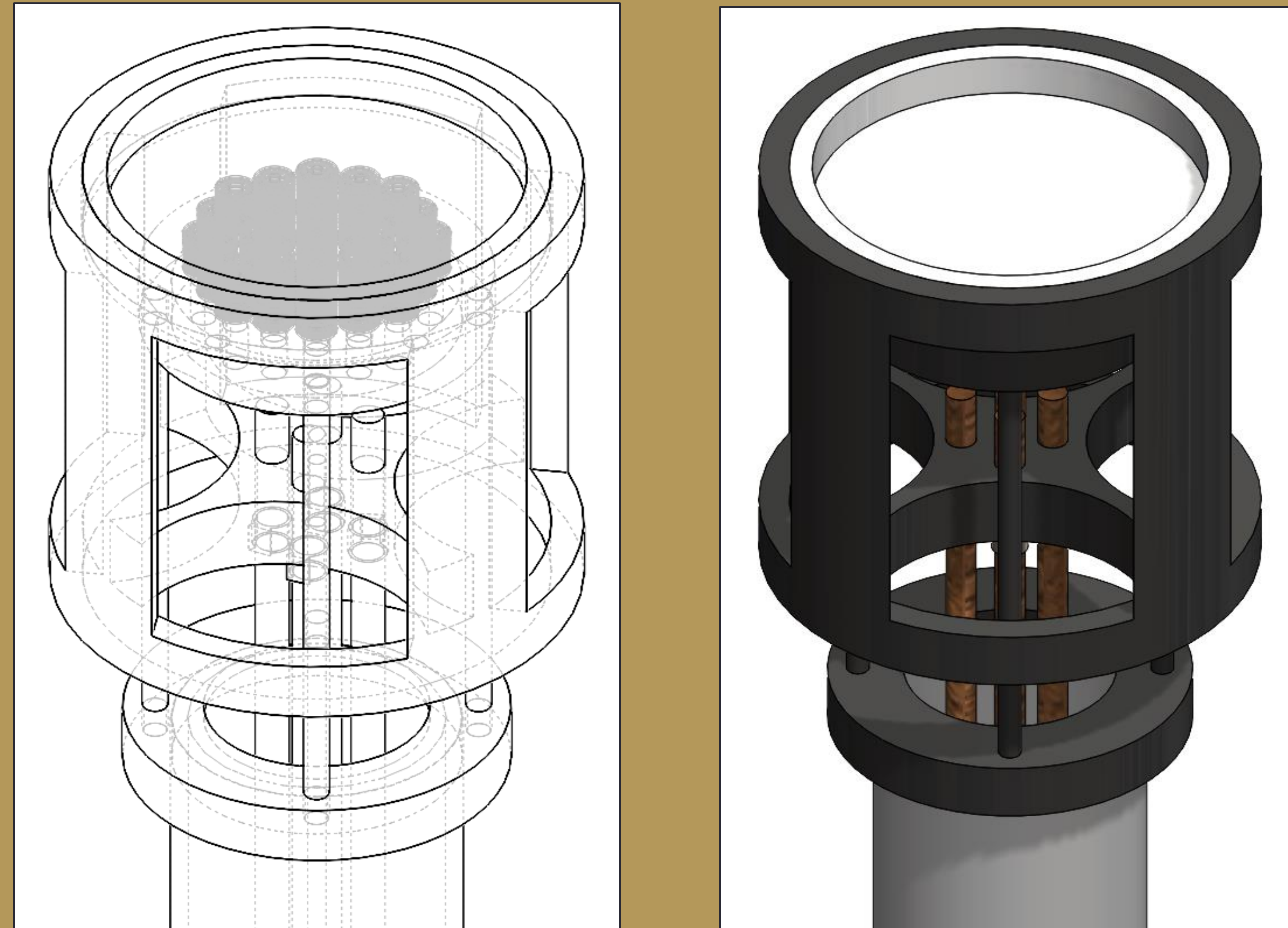
- Cheaper entry into green power
- Much lower maintenance than traditional turbines
- Smaller impact on wildlife than traditional turbines

Team Members



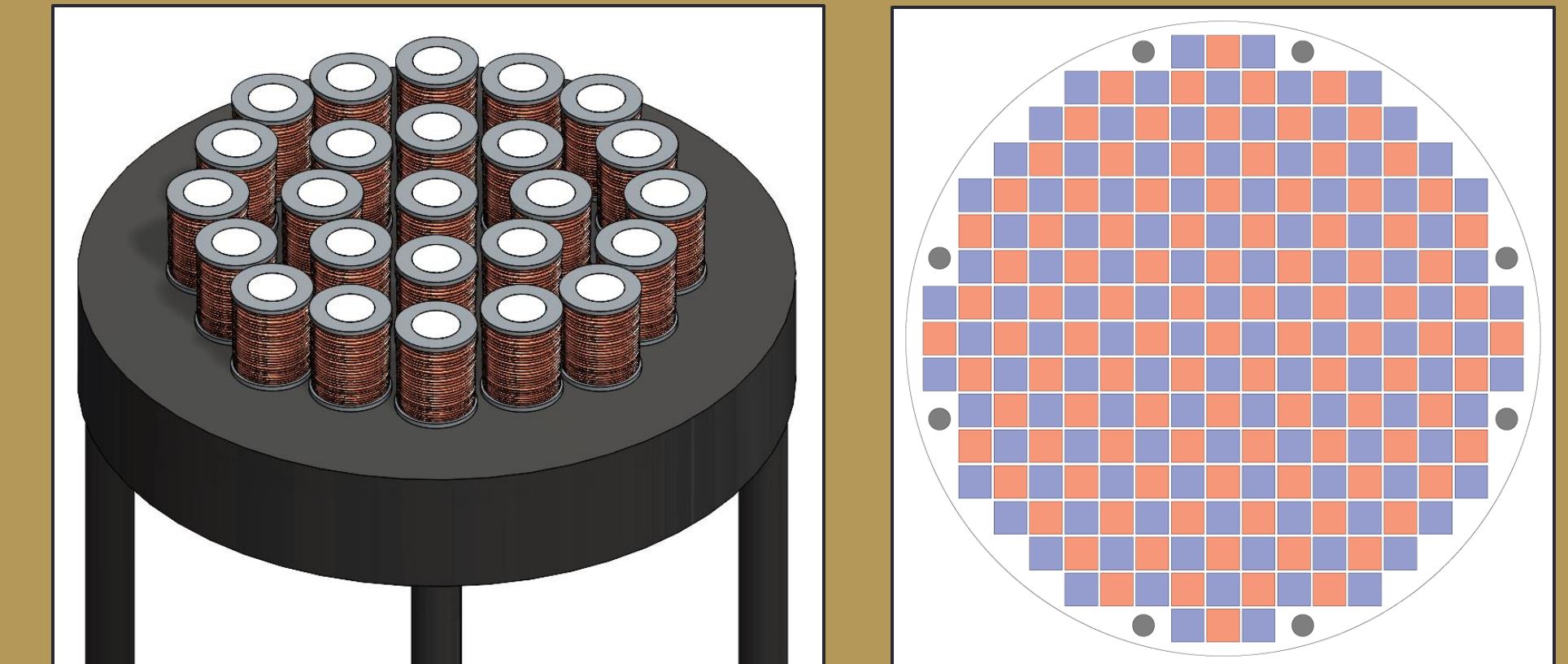
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Design



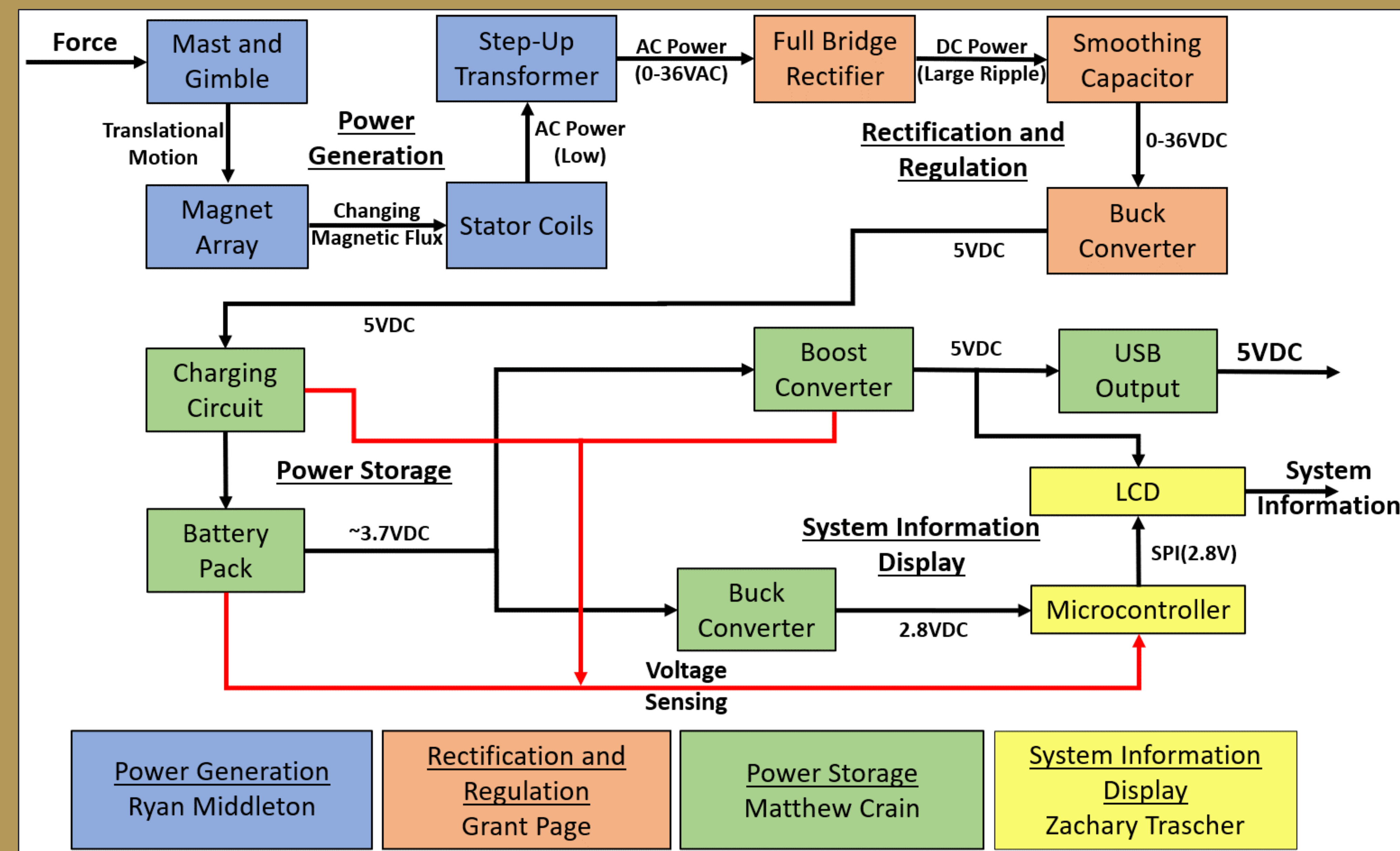
The Vortex One is a generator that uses the phenomenon of vortex shedding to produce electricity by oscillating in the wind.

Power Generation



- The magnets are in an array with alternating poles in a checkerboard pattern.
- Each coil is lined up exactly with a magnet or in between magnets.
- The magnet array is connected to the moving mast, while the coil array is connected to a stationary shaft.

Overall Block Diagram



Design 2 Plans

- Finish construction and testing of rectification, power storage, and information display subsystems

Stretch Goals

- Have the system oscillate in the wind.
- A tuning system to increase the range of windspeeds that cause the system to oscillate.

Acknowledgements

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