



Personal Hydroelectric Generator Team 7

2015 - 2016



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Project Scope

The project will consist of creating a marketable portable power generation system that harnesses power from flowing water. These generators will create a realistic means of providing sustainable power to any location with accessible flowing water.

Background

- Takes kinetic energy of flowing water and converts it to storable electrical energy
- Flowing water spins a turbine which spins an alternator which then charges a battery
- Process is more environmentally friendly than traditional methods
- A drawback is that the kinetic energy in flowing water is much smaller than its potential static energy from head

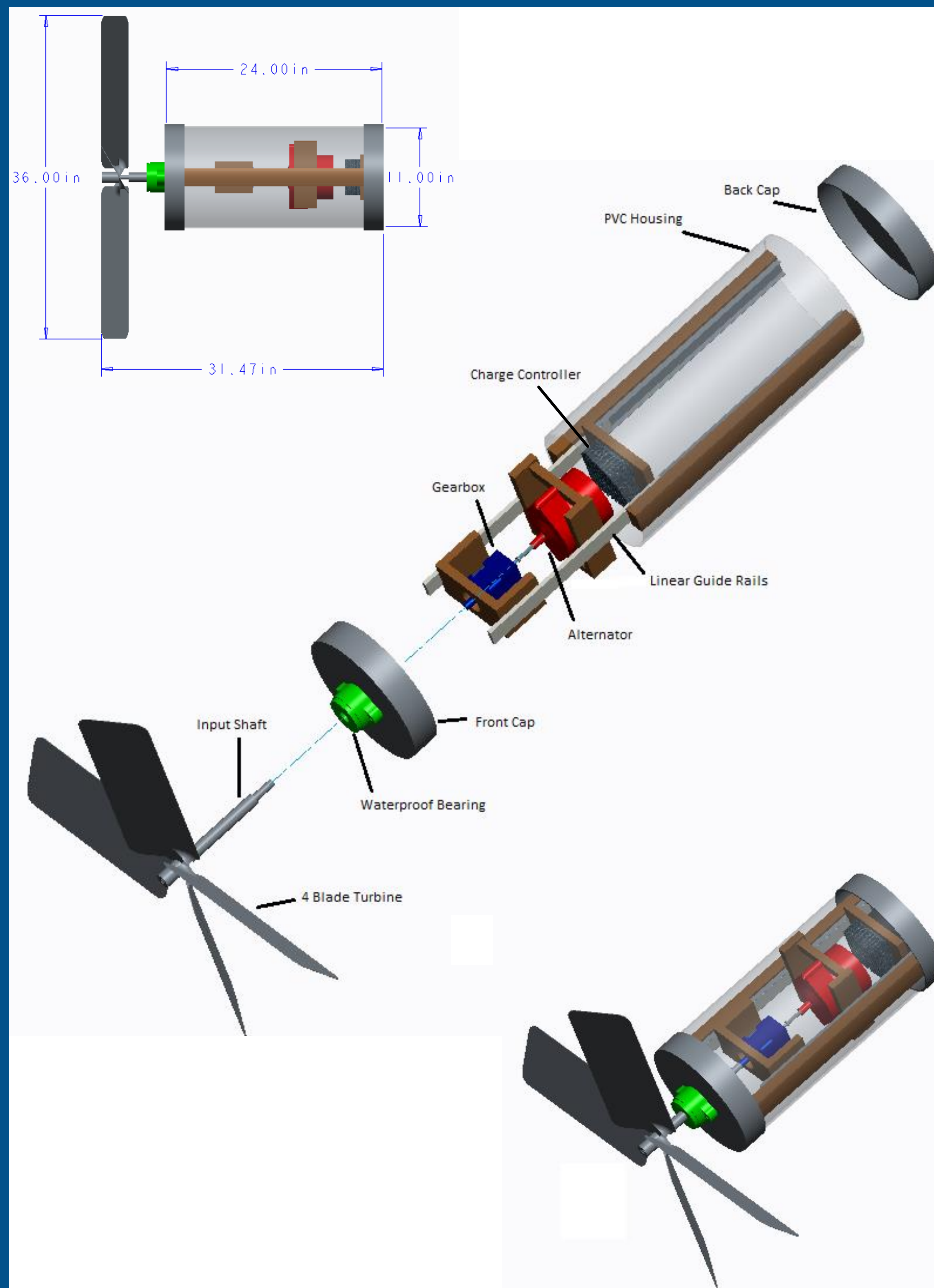
Project Constraints

- | | |
|--------------------------|-------------------------------|
| 1. Weight: | <70 lbs |
| 2. Waterproof: | Protect electrical components |
| 3. Safe and Reliable: | Little environmental impact |
| 4. Generate Electricity: | Charge a battery |

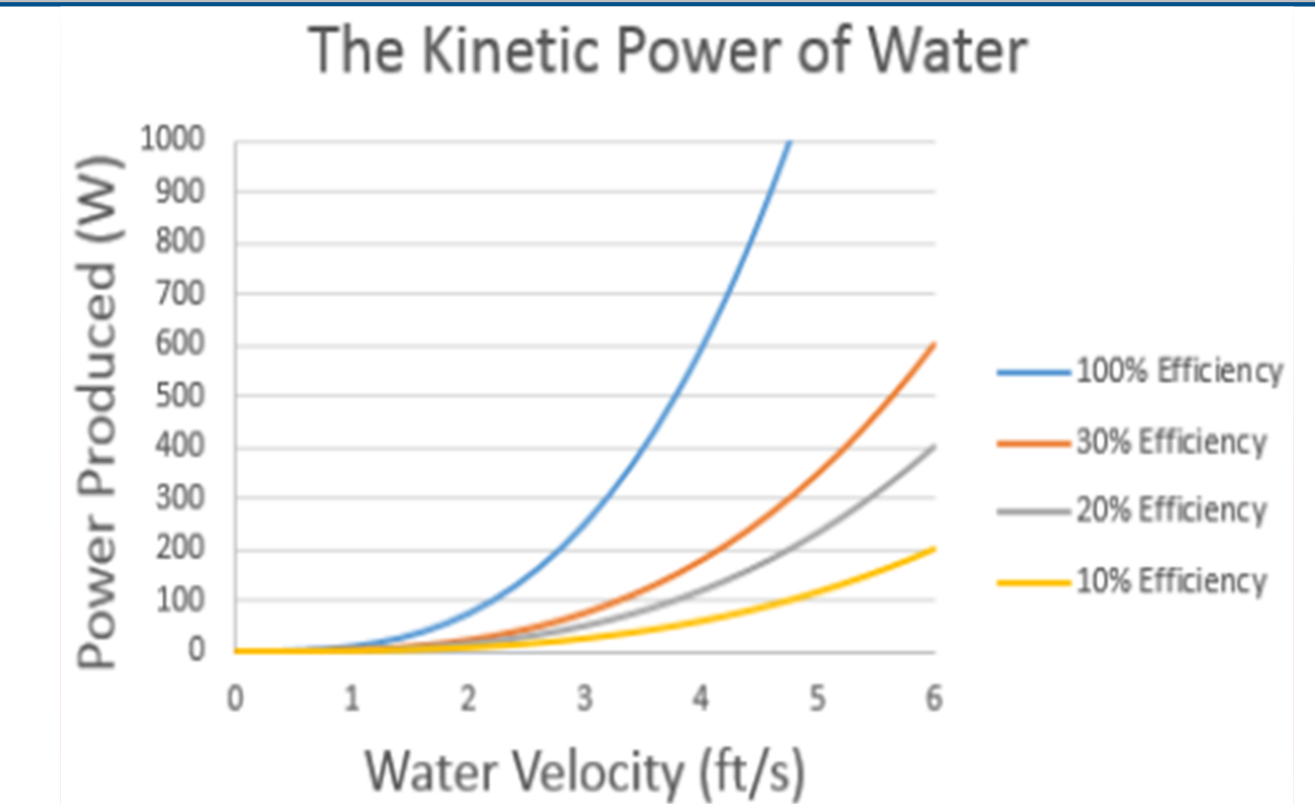
Potential Challenges

- Water contacting electrical components
- Achieving proper gear ratio for desired output
- Submerging the apparatus to desired depth
- Anchoring the system to withstand the necessary forces
- Keeping the design compact and easy to assemble

Design



Kinetic Power of Water



A plot describing the kinetic power output of water at different velocities given a 3 ft diameter blade. Power is plotted at 100%, 30%, 20%, and 10% efficiencies.

Entrepreneurial Aspects

- InNOVation Challenge:**
 - Made a business model canvas
 - Team made it to the semi-finals (top 25)
- ACC Innovation Competition:**
 - Gave a business pitch presentation
 - Made it to top 3
- SharkTank Competition:**
 - Total of 16 teams

Future Work

- Complete a full prototype and test it in a real world environment
- Complete necessary deliverables for SharkTank competition
- Investigate measures to protect turbine and turbine user during operation, and complete the user operation manual

Acknowledgements

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