

# Personal Hydroelectric Generator

## Team 7

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### Aim

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

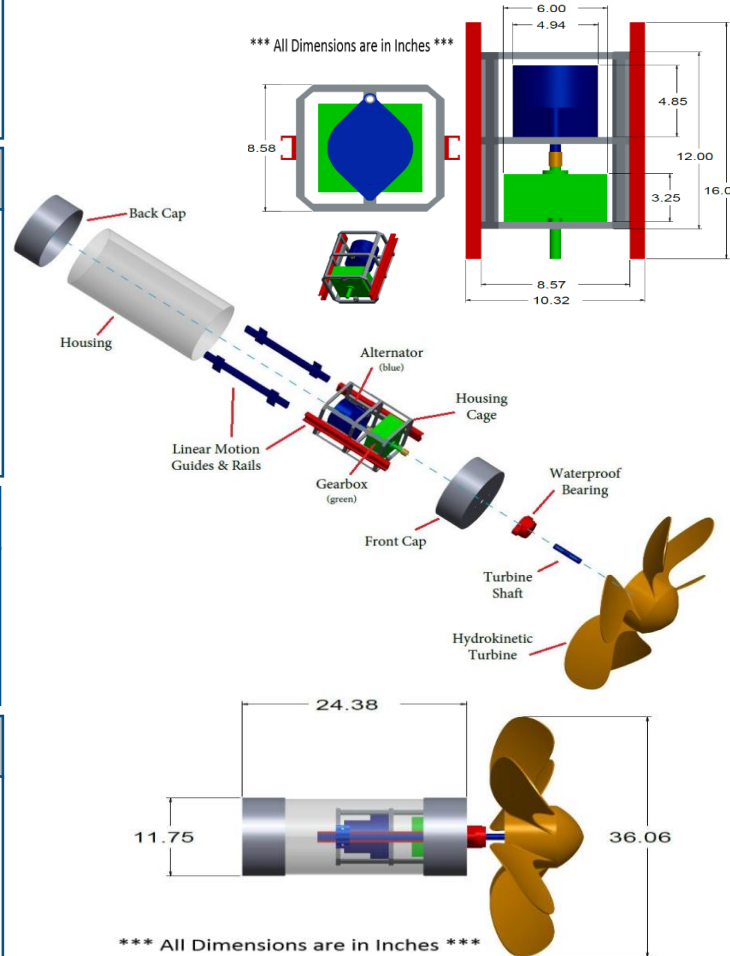
### Project Constraints

1. Weight: <100 lbs
2. Waterproof: Protect electrical components
3. Safe and Reliable: Little environmental and human impact
5. Generate Electricity: In order to charge a battery

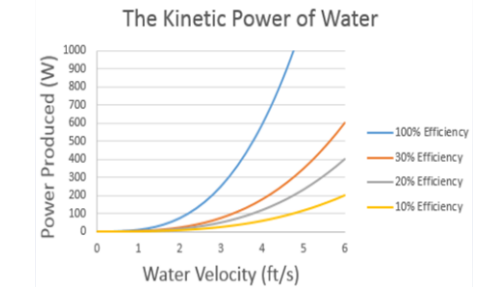
### Potential Challenges

- 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

#### InNOLEvation 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