

# Hydropower Turbine

## Ocean Energy to Electric Current



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# Project Goals



- Utilize ocean current energy as a source
- Provide storage capability
- Advance current ocean energy technology and contribute to existing research

# Block Diagram



Energy extracted  
from fluid flow

Extracted energy becomes  
mechanical energy

Mechanical energy  
becomes electrical energy

Water  
Flow

Turbine

Generator



# Laws



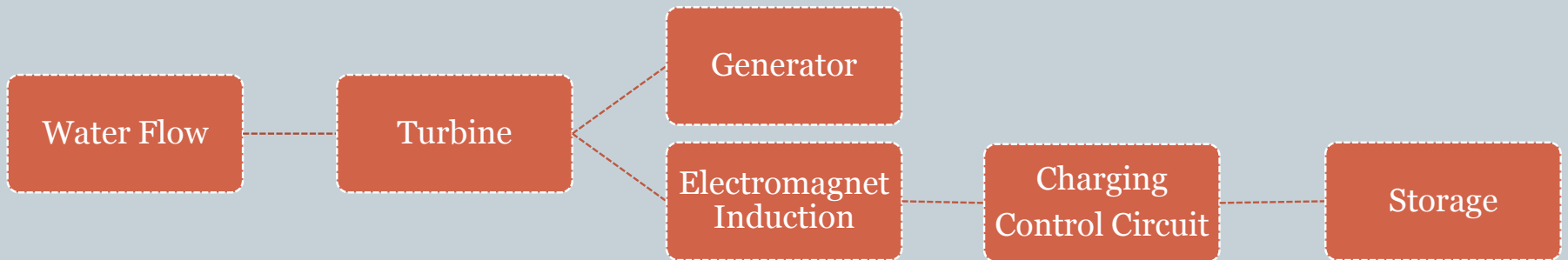
- **Michal Faraday's Law**

- Electromotive force (EMF) generated is proportional to the rate of magnetic flux through the circuit
- Electrical current will be induced in a closed circuit when magnetic flux through a conductive surface changes

- **Heinrich Lenz's Law**

- Gives relationship to the direction of the induced EMF and current resulting from electromagnetic induction
- "An induced current is always in such a direction as to oppose the motion or change causing it"

# Block Diagram



# Ocean Energy Forms



- Three types of Ocean Energy Sources:
    - Waves
    - Tidal
    - Current
- Lastly...Our Choice....

# Option 3 – Paddle Wheel Type Blades

- Multiple blade design gives for easier rotation and adaptability to air or water
- Lighter design gives for less initial momentum and less force while in rotation
- Larger surface area ideal for maximum motion



# Modifications



Anchor Support Legs



Motor Removal and Extension





# Final Design

