

PICO-HYDRO ELECTRIC POWER GENERATION FOR THE DEVELOPING WORLD

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Problem:

1.6 Billion people in developing countries currently live without electricity.

Accessible electricity advances economic opportunity, socio-economic standing, and participation in the information age.

Our Mission:

The Pico-Hydro Energy Project (PHEP) believes that all people deserve to have economic prosperity to help them financially support themselves and their families. We believe small-scale hydro can bring jobs and economic prosperity to underdeveloped communities.

Solution:

A small scale hydroelectric system that uses run-of stream water movement to generate electricity and charge batteries.

Specifications:

- Produce 300-800 watts of electrical power
- Operate in stream velocities moving as slow as 2-3 ft./sec
- Operate continuously for 3-5 years with no major component replacement
- Manufactured for under \$500

Working Prototype:

Undershot Water Wheel Mounted on Pontoon:

- Ubiquitous & low cost materials
- Easily adaptable design
- Self clearing



Further Information:

Project Manager: Andrew Breighner—breighner.a@gmail.com
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Student Project Manager 2018-2019: Andrew Reedy—ar1403@messiah.edu
https://www.messiah.edu/info/22228/our_projects

Partner/Client:

The PHEP is partnering with Engineering Ministries International to develop and implement our hydroelectric system in developing communities.



emiworld.org

Vision:

“...see people restored by God and the world restored through design.”

Mission:

“...to develop people, design structures, and construct facilities which serve communities and the Church.”

Semester Goals:

- Choose an Electric Generator
- Develop Battery Charging System
- Design and Build Initial Testing Prototype

Future Work:

- Optimize Testing Prototype
- Combine Electrical and Mechanical Systems

Conclusions:

The PHEP is on its way to developing a small scale hydropower system that meets our clients needs.

The future holds much excitement as we look forward to modifying initial prototype.

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