

Delivering a 200W Small Scale Wind Turbine to Rural Community in Highlands of Peru

Presented by Jennifer Perugi



Introduction



- Jennifer Perugi
- Undergraduate Student: Farmingdale State College
 - B.S. Industrial Technology - Facility Management
 - Certificate in Wind Turbine Technology
- Women of Renewable Industries and Sustainable Energy (WRISE)
Wind Power Fellow 2023
- Aspires to continue to be a part of the renewable energy transition
- Volunteered with NGO WindAid Institute January 2024 in Trujillo, Peru

Background

- Why Peru?
 - The Problem: **1.2 million** Peruvians do not have access to electricity.
 - Rural areas face great challenges to become interconnected with national grid infrastructure, terrain can be isolating (eg. desert area, mountainous areas, ect.)
- Why wind turbines?
 - Provide local renewable energy source
 - Electrical security and independence
 - Self reliant, sustainable
 - Favorable wind profiles
 - Areas considered usually are located by the coast or mountain area
 - Wind energy can be harnessed 24/7, as long as wind is flowing
 - Reliability (longevity of the wind turbine, maintenance)



Blade Fabrication



Workshop Tasks: Welding, Drill Press, Mixing Resin Solution



Fabricating Stator & Rotor Components



Vacuum Resin Injection Process for Blade

Results

- Completed installation of wind turbine and accompanying electrical components Jan. 25th, 2024
 - Remote location, highland region about 10,230 ft in elevation
- Fully operational to date
- Positive community impact



Further Considerations

- Welcome to join me at the Student Symposium to learn more about this project!
- Open to discuss:
 - Career Opportunities in the field, internships for summer 2025
 - Feedback on potential process improvements during fabrication stage
 - Collaborations and partnerships potential with WindAid Institute
 - Various projects of different scopes considered
 - Currently partners with educational institutions corporations, and nonprofits globally
- **Fun Fact:** In 2013, WindAid Institute set the Guinness World Record for the highest altitude wind turbine in the world at 16,000 ft in elevation for the Catac community in Pastoruri, Peru

Thank you for
your time and
attention.