Turbine Blade Specifications for More Profitable Wind Energy Graham Sim, Ronald Dimmerling, Daniel Alatrash, Ryan Rudolph

INTRODUCTION

Our project looked at how to optimize the output given by wind turbines. We innovated upon existing wind turbine designs to create a more efficient and profitable energy source Our group focused on two specific wind turbine blade styles, the straight and flex design Thestraight designonly alters the angle of the blade while keepingit straight. Theflex designcurves the blade at an angle clockwise to the center.

Abstract

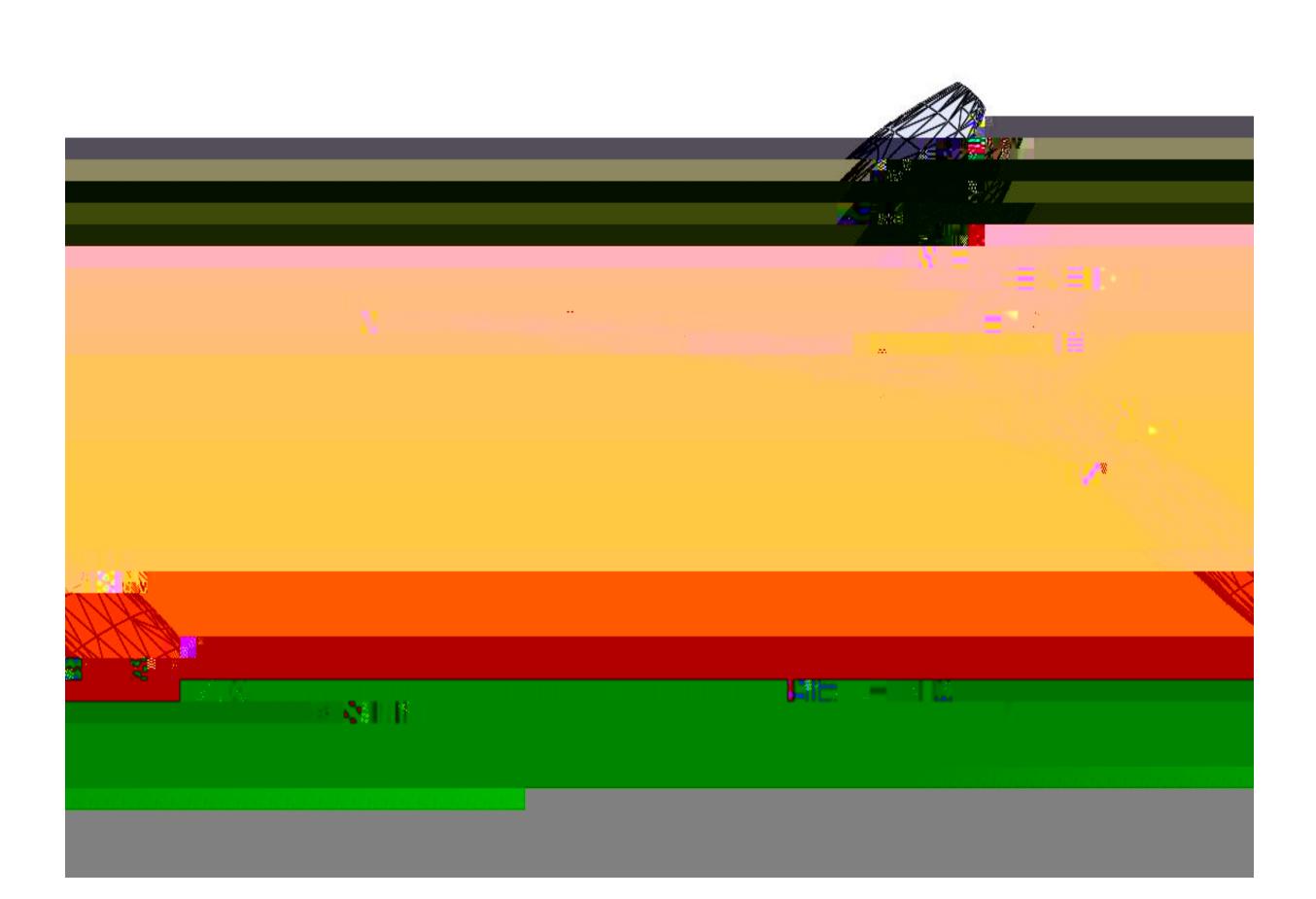
Transforming the prominent source of energy has been a goal for the United States since the late 1800s. Shortages of oil and fossil fuels have been detrimental to the economyand toxic to the environment. Over the last couple of decades, the push for ^ P CE vv CE Pace significant as the U.S. federal government looked to new sources of energy. The importance to innovate greater wind power is momentous towards

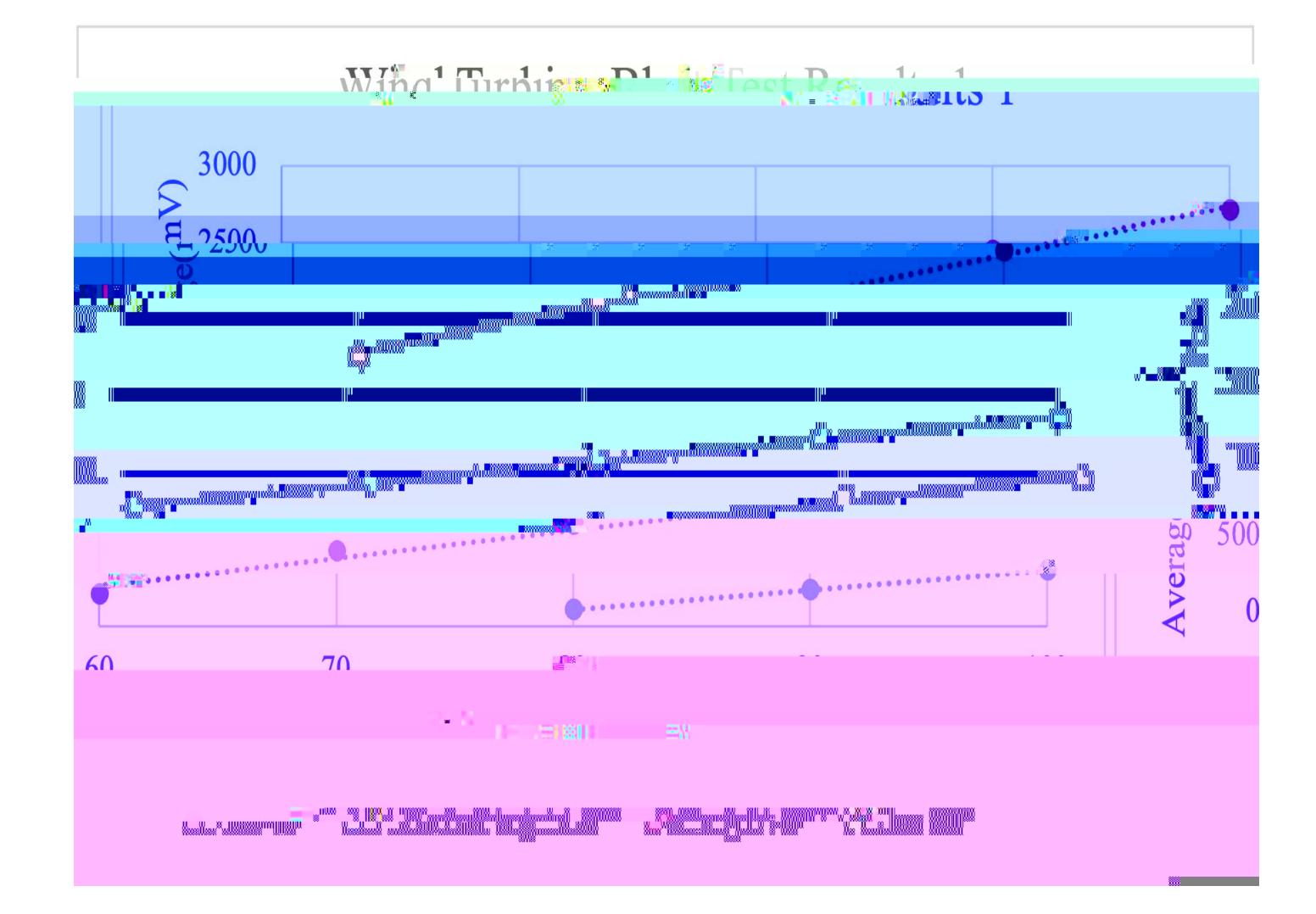
OBJECTIVES

- [‡] Innovate upon modern wind turbine blade designs to increase overall wind energy output
- ‡Investigate the correlation between wind turbine blade designs and how variable wind speeds affect wind power generation

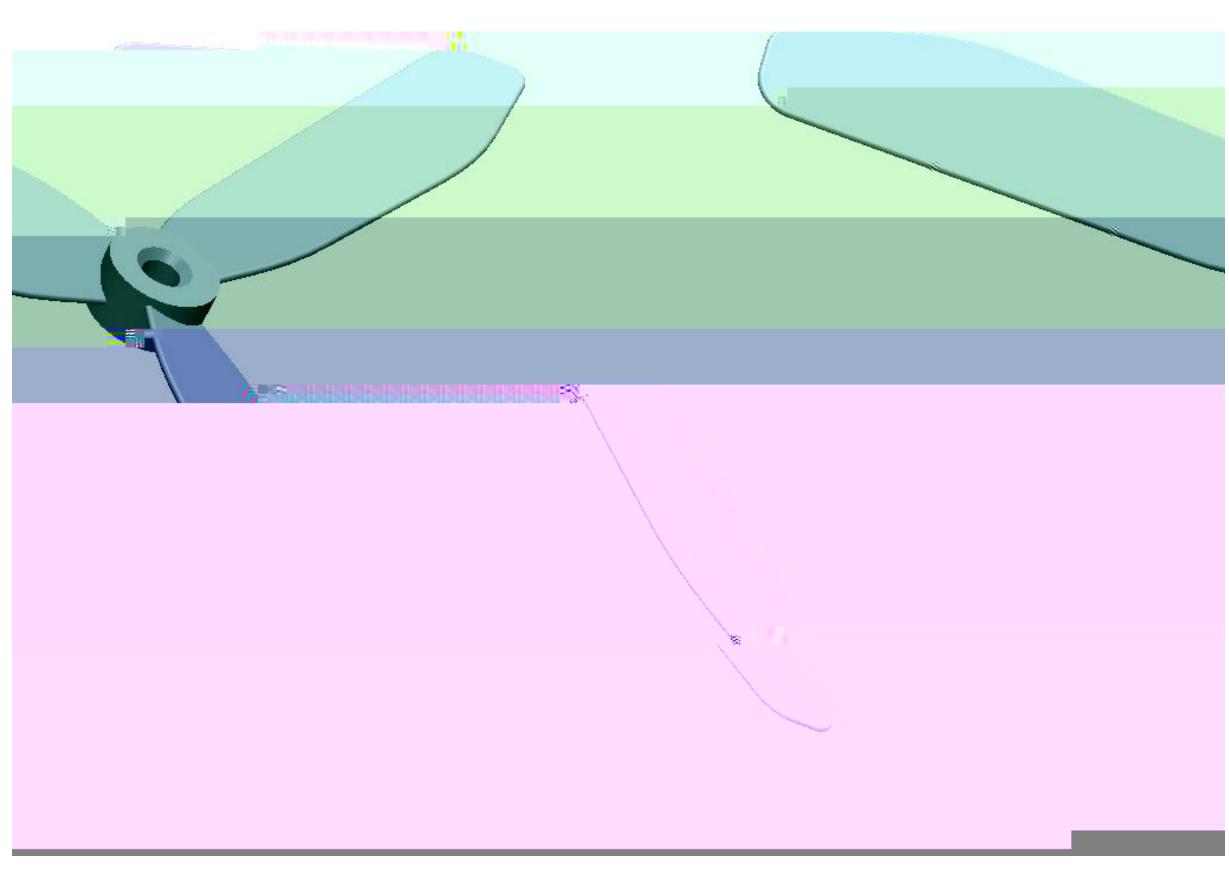
METHODS

- **‡** Useof Solidworksto alter given designs
- **‡** Poweredwind generator createair flow
- ‡ Measurementstaken with a digital multimeter
- **‡** 3D printed wind turbine blades
- [‡] Premadewind turbine set for eachblade model









Solidworks

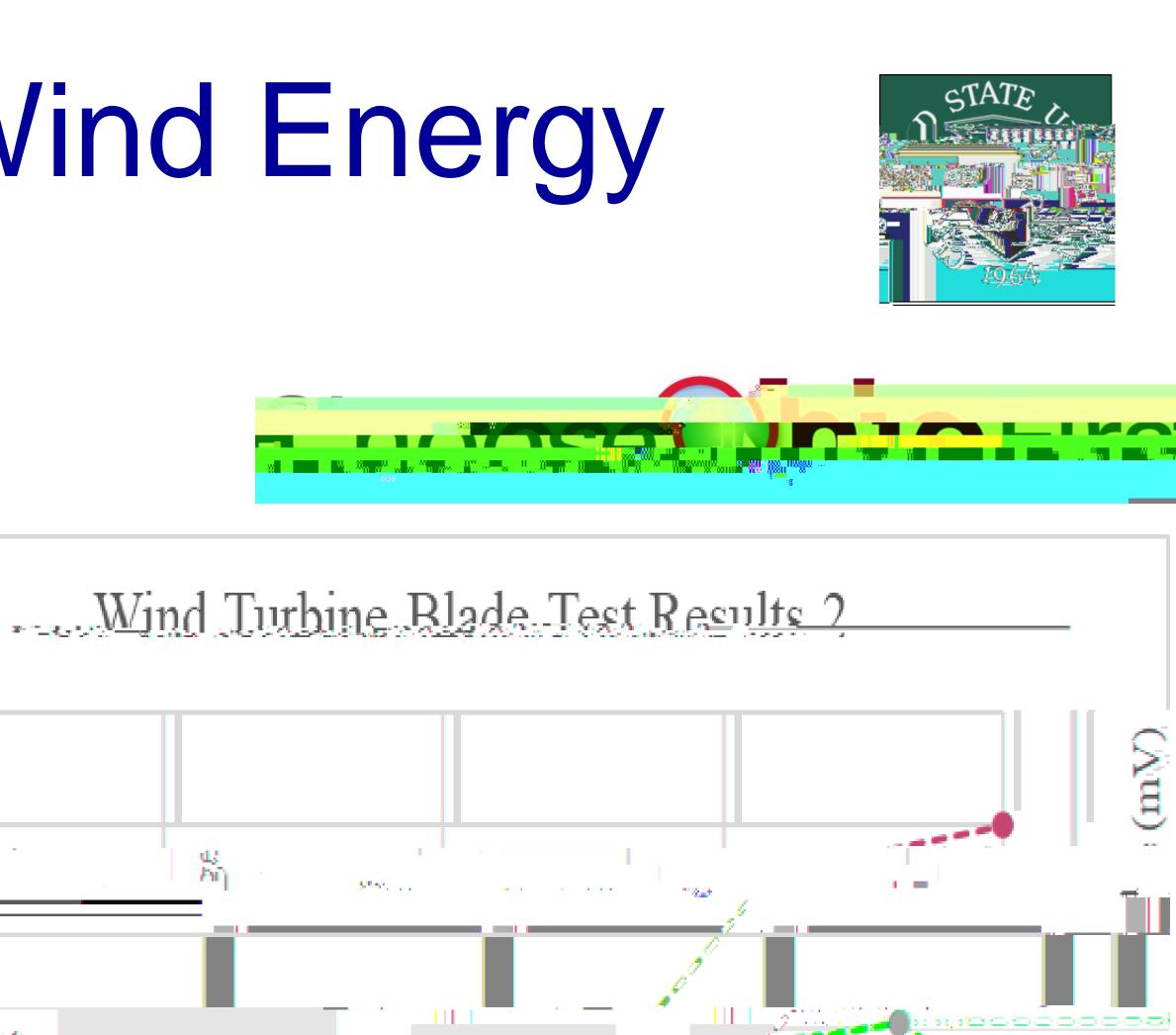
CONCLUSIONS

The wind turbine blade design has a drastic effect in the amount of output voltage which in turn alters the profit gained The wind speedalso affects the output voltage and profit, with higher wind speedsbeingmore efficient on average

Acknowledgments

Dr. Wei Zhangfor help with the project idea and use of materials for data collection.

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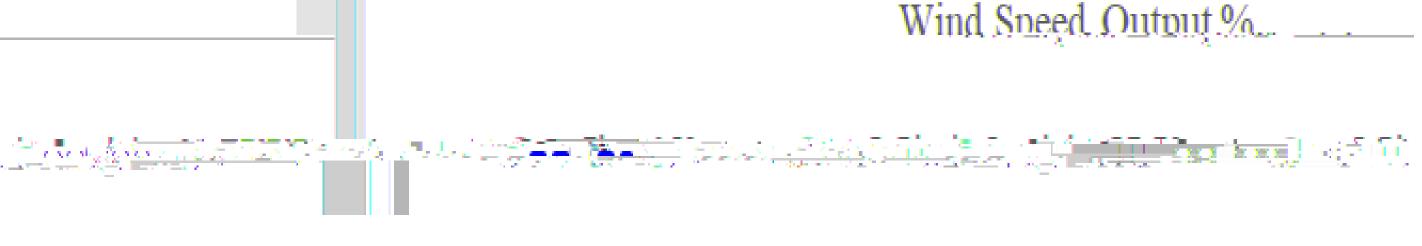


Figure 3. Graph of the second data set collected using different wind turbine blade designs

Dimensional Straight Blade Design via