

# **Wind Turbine**

New Mexico

Supercomputing Challenge

Final Report

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Team Number 20

Cepi 1

Team Members

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Teacher

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Project Mentor

Jerry Esquivel

# **Executive Summary**

The question that we ask (Zach and Anthony) how we can get alternative energy source if our natural gas runs out? This report will tell you how we created wind turbine to find this alternative source. It will go over what we did to create a control environment so were we are able to collect data from different wind speeds. Data that were collecting is the energy output to wind speed. We are building a wind turbine. This Turbine is connecting to a wind tunnel. This project will help create natural, clean, and safe energy source.

## **Statement of Problem**

Problem that we are trying to solve is how we can get energy from a safe, clean, and natural source. The answer to our problem is a wind turbine. Wind turbine is a natural source that will not hurt our environment. It is also a unlimited resource. We would be able to use wind energy for our entire life time.

## **Method to Solve Our Problem**

To solve our problem we built a wind turbine that is connected to a wind tunnel. By doing this we have created a control environment. We will be able to test the wind and not only that also test the energy to wind speed ratio.

# **Data**

Data is still in progress. The data that we are collecting is wind speed to energy output ratio. Also we are collecting is if the we change the degrees of the blades to see if that affects the out come of voltage that is being produced. We are changing the degrees of the blades in increments of 15 degrees.

# **Software and Products**

Wind tunnel is Airtech Xstream by PITSCO

Wind Anemometer by Inspeed

WindWare software

Wind turbine was built by Zach Romero

Wings were built by Zach Romero

Microsoft Office Excel

# **Achievement on the Project**

Achievement on this project that I got was that energy is very important to us as culture.

To see that if were start to use different sources of energy that we can save our environment and save oil and gas for when we really need them. To see that wind energy can save a lot of problem and be cheaper to use than other energy sources.

Anthony Archuleta.

My achievement that I have achieved on this project was learning to calculate wind speed to energy output ratio. A goal of mine which I have almost reached was collecting data on my physical model

Zach Romero

## Conclusion

The results that were hoping to get is that wind puts out extreme amount of voltage. Also seeing if the degree on the blades makes a positive difference to our outcome. Using a control environment to get our data will make sure that our data is being to close as possible to being correct. Building the turbine to wind tunnel was a smart idea which gives us the control environment. We are still in the process of getting data of both the voltage and the degree of the wind turbine. That is how we will collect our data.