CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)
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Project Number
J0133

Project Title
Producing Electricity with Different Angles and Measurments for Wind Turbine Blades

Abstract

Objectives/Goals
The purpose of my science project is to produce more electricity more efficiently. Evaluating the level of efficiency produced by different lengths, angles, and number of fan blades on turbines, a change in the wind turbine design will help produce more energy to transform into electricity.
My project simulates a wind turbine. The wind is driven by an industrial fan, an alternator is used as a turbine, the power travels through a regulator in place of a transformer, and a twelve volt battery acts as the storage unit. The light bulb shows that wind has been converted into energy and the volt meter tells me how much energy the new wind turbine is putting out.

Methods/Materials
Second Experiment- A taller prototype with new angles. The two blade turbines: New angles of 28(°), 29(°), 32(°), and 34(°) increased wind flow for comparison with the new findings of four blade turbines. The new four blade turbine angles are: (<)15(°), at angles of 13(°), 12(°), 11(°), and no (<)10(°). The new turbine is connected to a generator, 12 volt light bulb, and a 12 volt battery was added for energy storage. The volt meter gave higher readings and the light bulb lit up with power generated by greater wind flow. The tower height was increased to 36 inches. The new turbine blades are 32 inches long. The base plate is 18 inches in diameter to accommodate the new tower height.

MATERIALS
Flat round steel base plate, 1 small spool of aluminum automotive wire, White spray, paint, 12 inch copper pipe, 12 volt alternator to a turbine, 12 volt regulator, 12 volt battery, 2-way connection switch, 1 12 volt light bulb red clearance light off of a truck, 32 inch turbine blades made out of 12 gauge flat bar = 1/16 inch x 2 inch steel.

EQUIPMENT USED
Volt meter, Grinder, Protractor, Industrial Fan, Iron Press, Pry bar, Cutting torch, Number punches, Lathe, Table vice.

Results
Results pending more trials

Summary Statement
Changing angles and measurements of wind turbine blades, to produce electricity more efficiently.

Help Received
My mom helped me type this report, and my grandpa helped me by showing me how to run the machinery and working with the lathe.