CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY

Name(s)
Roxanna Hashemi

Project Number
31519

Project Title
The Effect of Different Material, Shape, Length, and Weight of Turbine on Maximizing Wind Energy

Abstract

Objectives/Goals
The objective of this project was to find the optimum turbine design that will result in maximum electricity using wind energy. Finding more efficient and ultimately cheaper way of generating electricity from wind will hopefully make this alternate energy source more widely used.

Methods/Materials
Different turbines were used in this experiment which varied in terms of their material, shape, length, and weight. The same motor, gear box, and wind energy source (hair dryer) were used as independent variables in all my experiments. For material I used plastic, wood, cardboard, and metal. The length experimented were 2#, 4#, and 6#. Different weight was obtained by changing the thickness of same length and width turbine. Thicknesses used were 2/32#, 3/32#, 4/32#, and 6/32#. For different turbine shape designs I used rectangular, oval, trapezoidal, and spoon shaped. The electrical output were measured and compared using LED bulb intensity as well as voltage generated by the motor.

Results
The spoon shape turbinewith2/32# thickness, and 4# long made out of plastic produced the brightest LED light as well as highest output voltage.

Conclusions/Discussion
My conclusion is the shape of the turbine is the most important design parameter followed by length, and weight. The material should only be chosen based on environmental impacts such as weather quality of a particular region.

Summary Statement
How to maximizing electrical energy output generated by wind through best turbine design?

Help Received
My dad helped me in some assembly and conducting experiment.