Middle School Clean Tech Awards:

Region III: Southwest MA
Recognition:

Erica Corbiere, New England Christian Academy, Swansea

"A Wind Turbine That Will Blow You Away"

My name is Erica Corbiere. I am in 8th grade at New England Christian Academy in Swansea, MA. I have been involved in science fairs for several years and have advanced to regional and state fairs. I enjoy all types of Science and Science projects.

When I'm not at school I spend time playing the piano, doing crafts, babysitting, and attending church youth group activities. The church offers me opportunities to serve in the community and develop my leadership skills. This summer I am going on a two week mission project in South Carolina.

Growing up in New England, I've naturally become a Boston Red Sox fan. We watch all of the local sports, go to the games occasionally. I spend time in Maine each year at my family's camp. We hike mountains, go boating, and sight-seeing. Since I live on Cape Cod, we go to the beach often!

This year's project was fun to research and build. My Dad helped me select the wind turbine and he gave advice on the best way to assemble and test for my results. As always, I've learned a lot.

My PROJECT:

The purpose of this project was to investigate the properties of the Vertical Axis Wind Turbine design developed by Savonius (which looks essentially like a can cut in two and then the two parts displaced, creating two circular cavities that can catch the wind), and find out if the blade design modified by Benesh is more efficient. My hypothesis was that the Benesh blade design would work better. I used a Pico-Turbine kit for the standard Savonius design.

The wind turbine was constructed using five main steps: gluing templates to cardboard and cutting out, assembling the axis and yoke, assembling the alternator, positioning the magnets on the rotor, and constructing the stator.

The Pico and Benesh blades were then assembled. Using the templates from the kit, the Pico blade supports and blade coverings were cut out and glued together. The Benesh blades were assembled using a design printed off from the Internet. The Benesh blade supports and blade coverings were then also cut out and glued together.

Both blades were tested three times in front of a fan set on high. A multi-meter was hooked up to the turbine, and the volts produced were recorded.

The results for the three Pico blade tests were 1.2, 1.1, and 1.2 volts. The Benesh blade results were .76, .82, and .81 volts. The Pico blade averaged 1.17 volts, and the Benesh blade averaged .8 volts, the difference being an average of .217 volts. These results indicate that the Pico blade design is more efficient, unlike my hypothesis that stated the Benesh blade would be more efficient. This could be because the Pico blade has larger air pockets than the Benesh blades, causing it to turn faster.

REFERENCE LIST

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