

The background features abstract, overlapping green geometric shapes in various shades, including light lime green, medium green, and dark forest green. These shapes are primarily located on the left and right sides of the frame, creating a modern, clean aesthetic. The central area is white, providing a clear space for the text.

Producing Electricity from Wind

Wind Turbines and WindMills

What are wind turbines used for?



Photo by Dennis Schroeder/NREL

Where have you seen this type of windmill?



Photo Source Pexels by Andrej Zeman

We see this type of windmill on the plains. What is it used for?



Photo Source Pexels by Aaron Fox

How about this one from 1888?

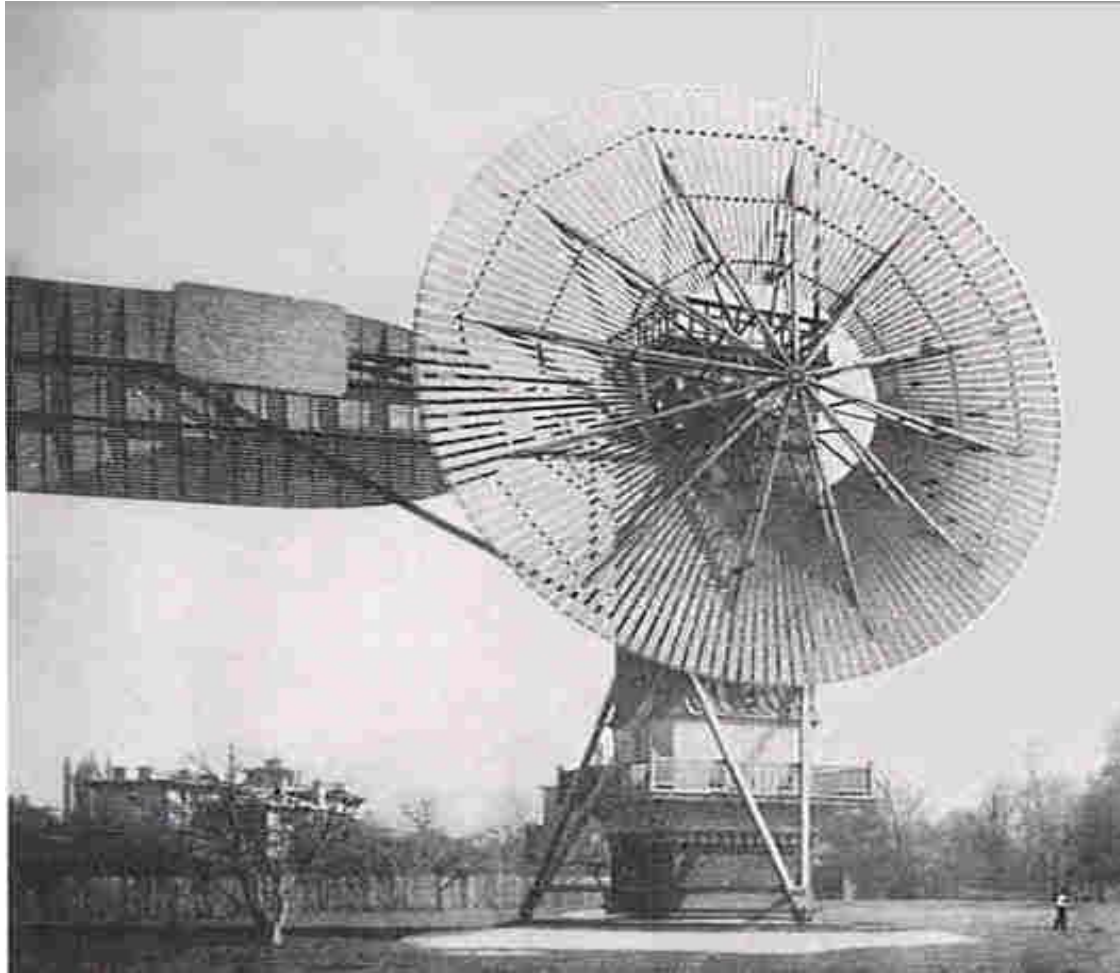


Image Source Public Domain

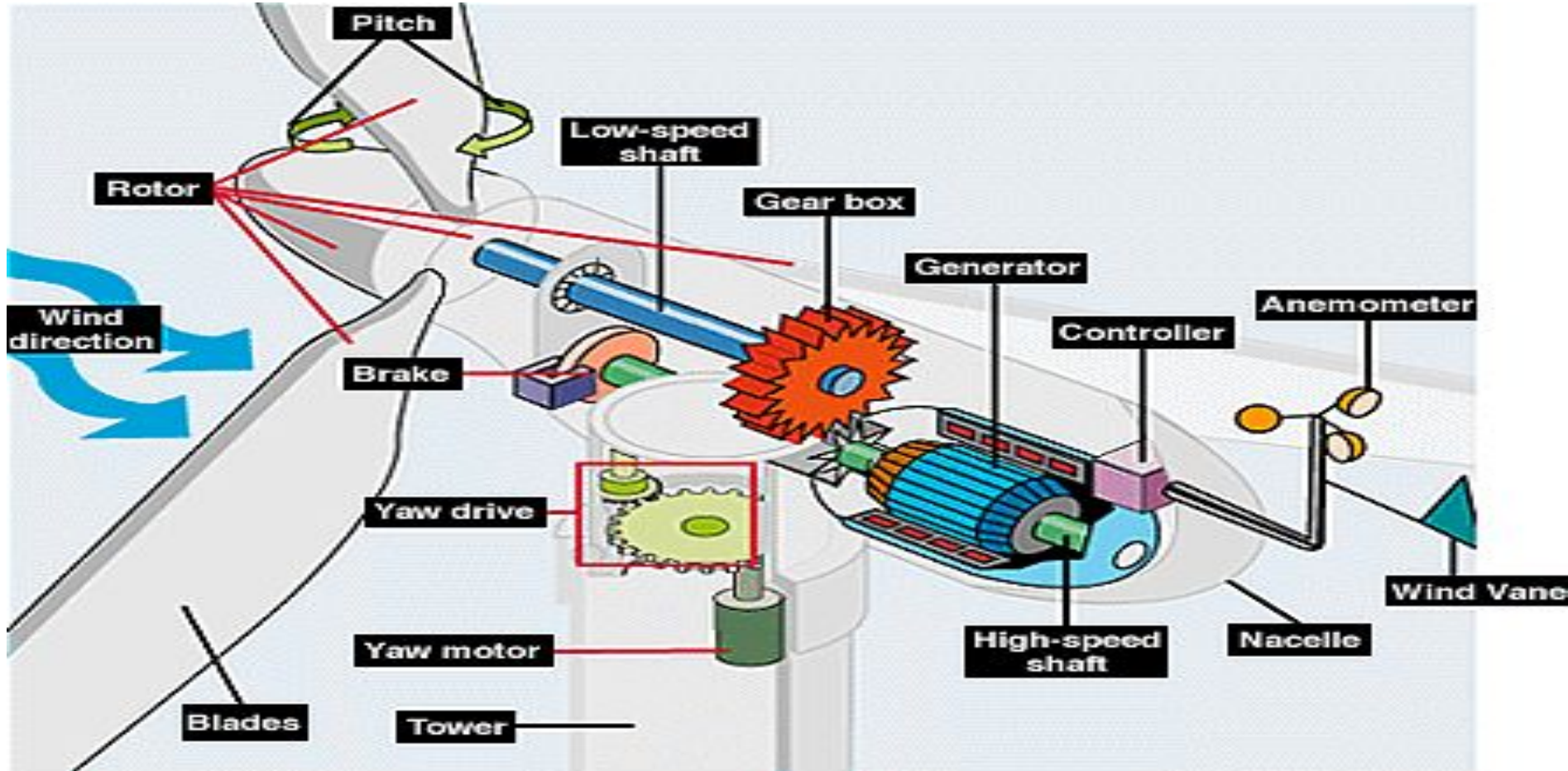
When the blades move what happens?

- ▶ Water is pumped
- ▶ Grain is ground up
- ▶ Turn a wheel that will do some kind of work
- ▶ Electricity is generated

Do you think the design of the structure or the blades affect how fast they turn?

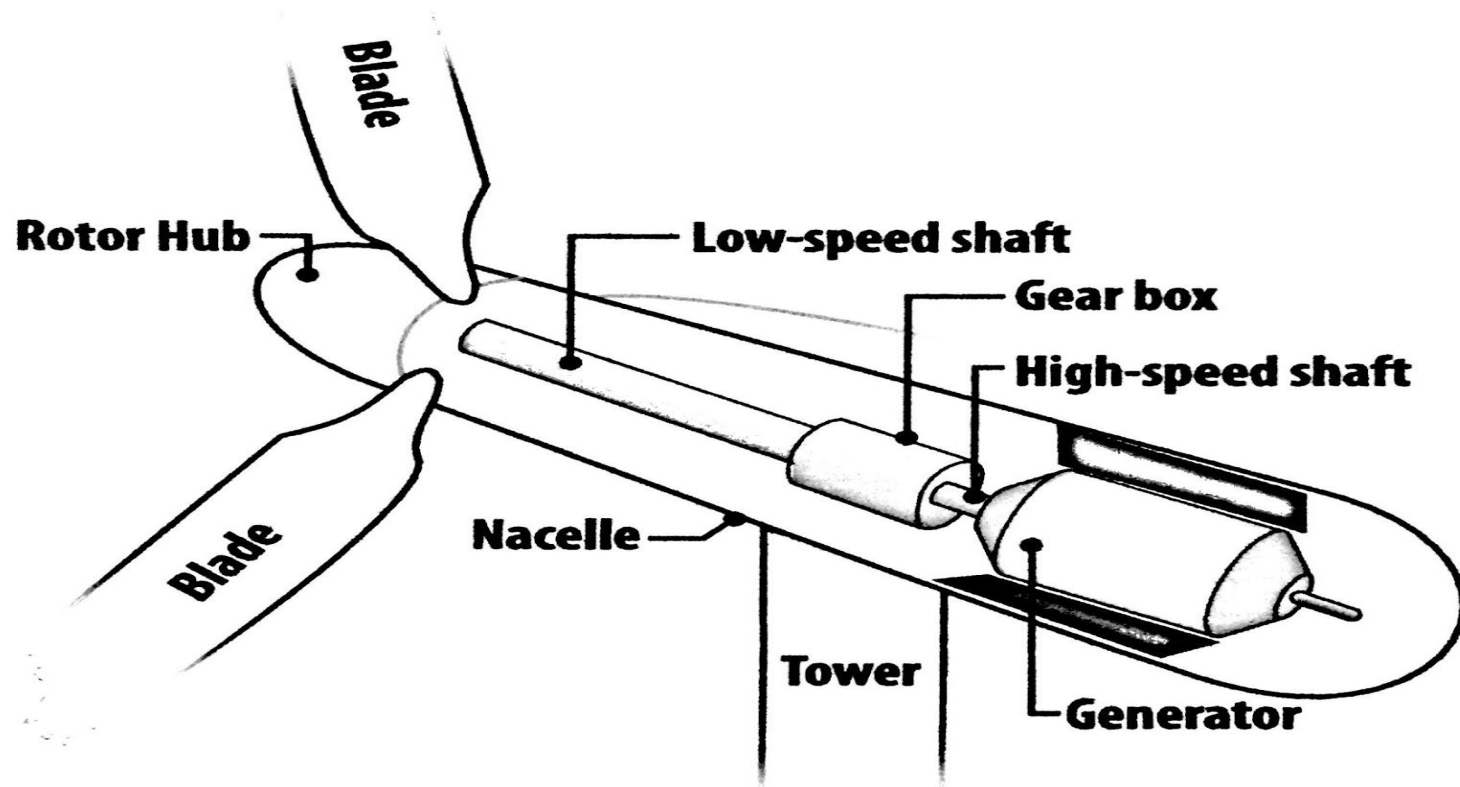
- ▶ Modern wind turbines have two or three long, light-weight blades that turn quickly.
- ▶ The longer the blade and the greater the wind speed, the more electricity generated.
- ▶ Steady wind speeds of no less than 12 miles per hour year round are required to effectively generate electricity.

What does the inside of a modern wind turbine look like?



A Simpler Picture

Wind Turbine Diagram



Source from NEED.org

EXPLORATION:

- ▶ Set up the wind turbine using the red blades. Look at the picture.

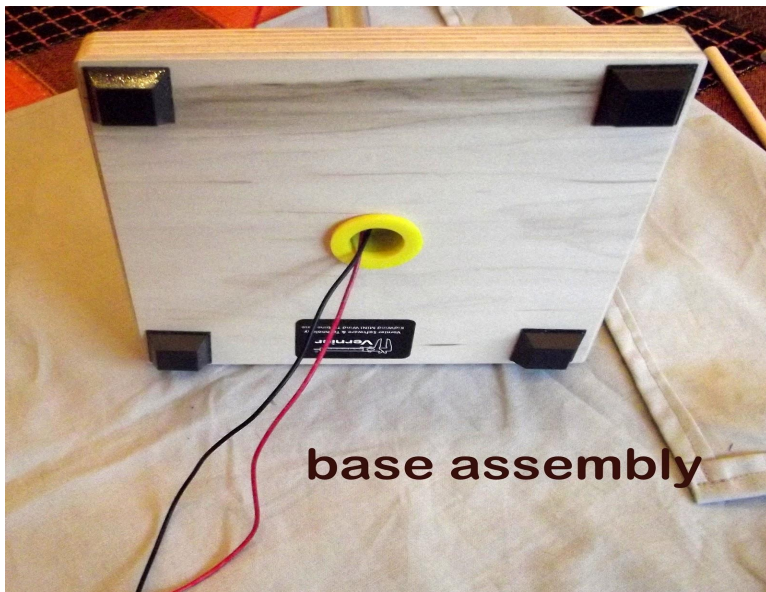
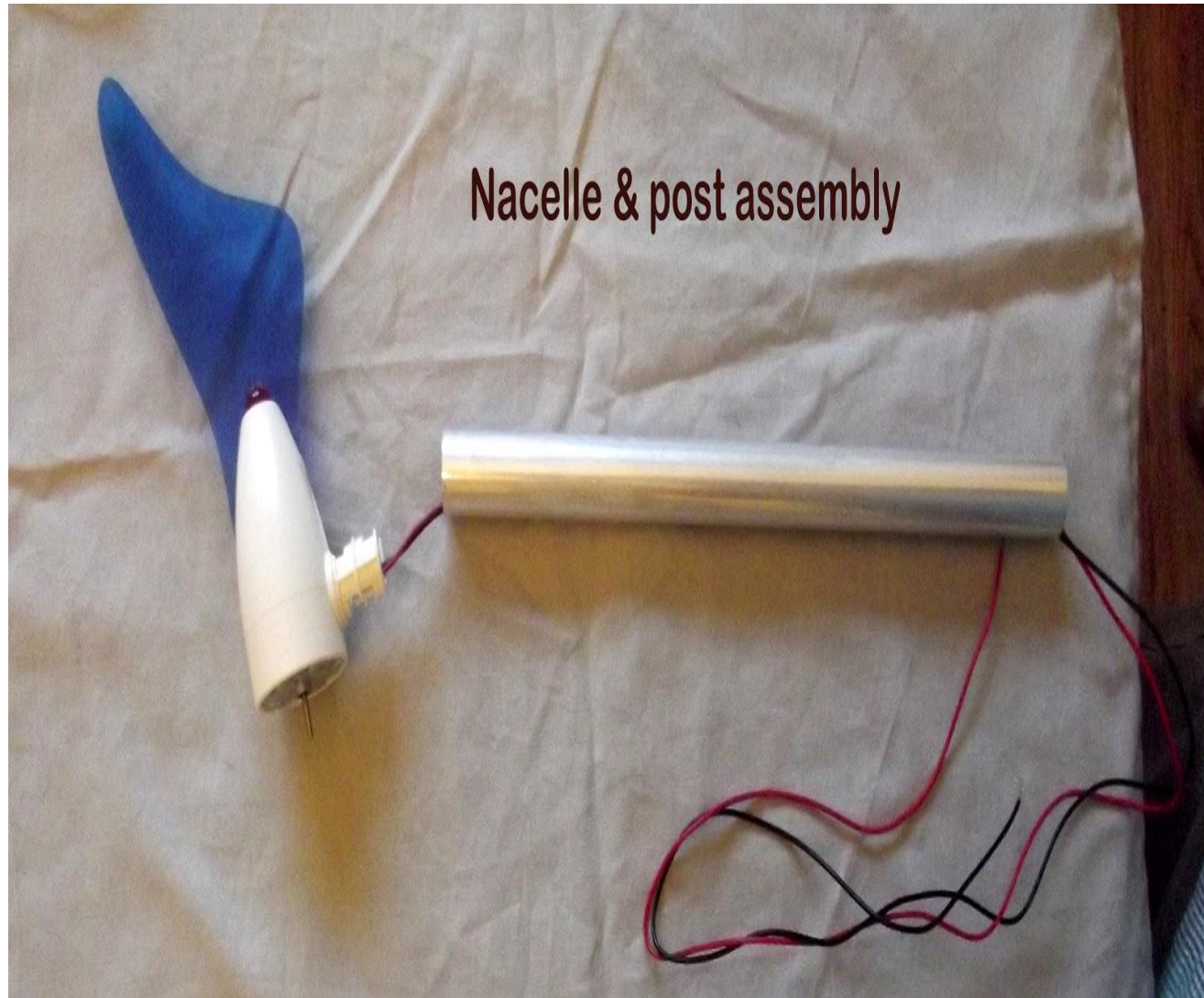


Photo by Van Barker



Nacelle & post assembly

Photo by Van Barker

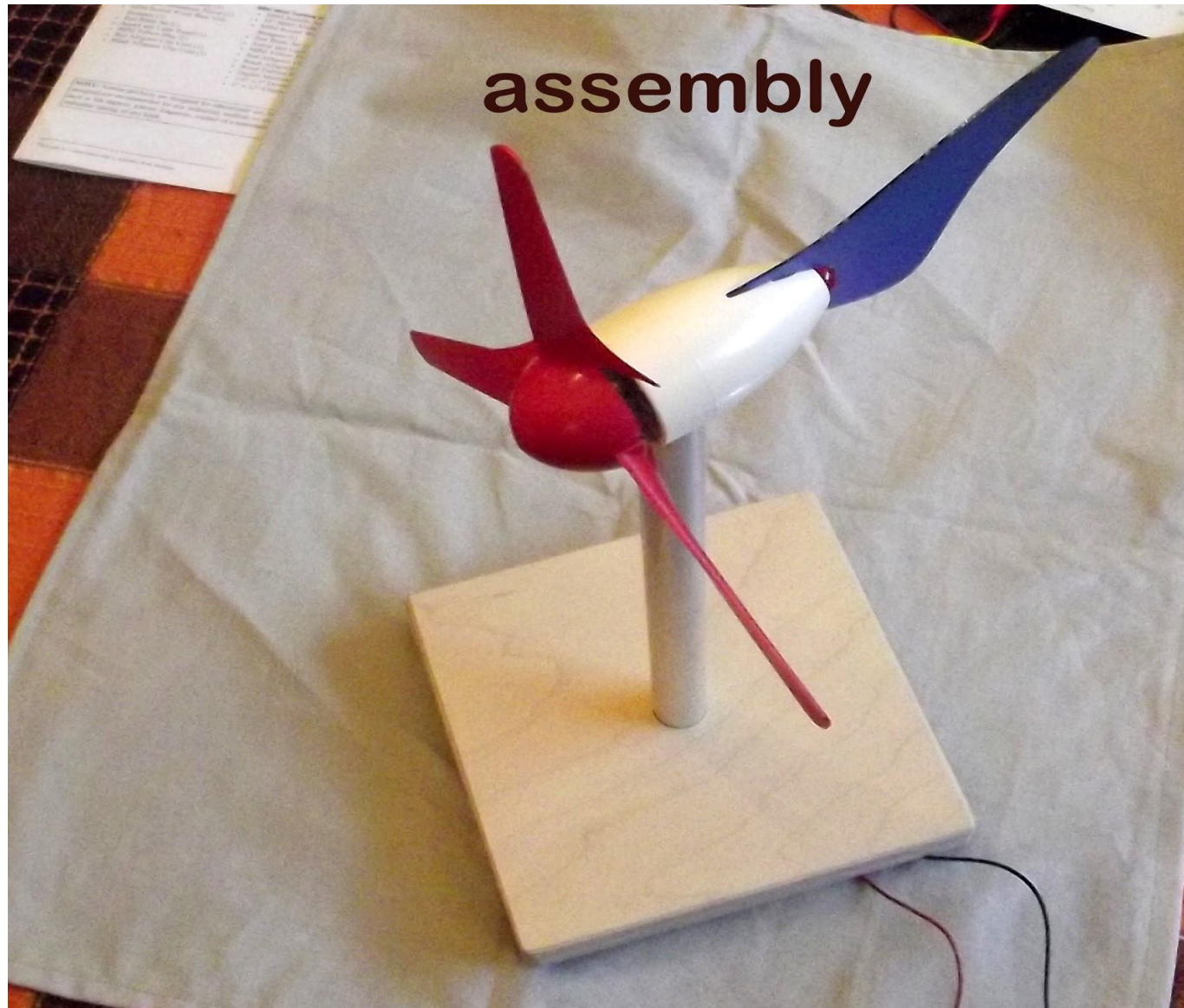


Photo by Van Barker

Connect the wires to the interface board and turn the fan on to medium, see if you can get the music to play.

- ▶ Answer the questions on the student sheet

- ▶ Now let's look at blade design.

Take off the red blades and use the hub.

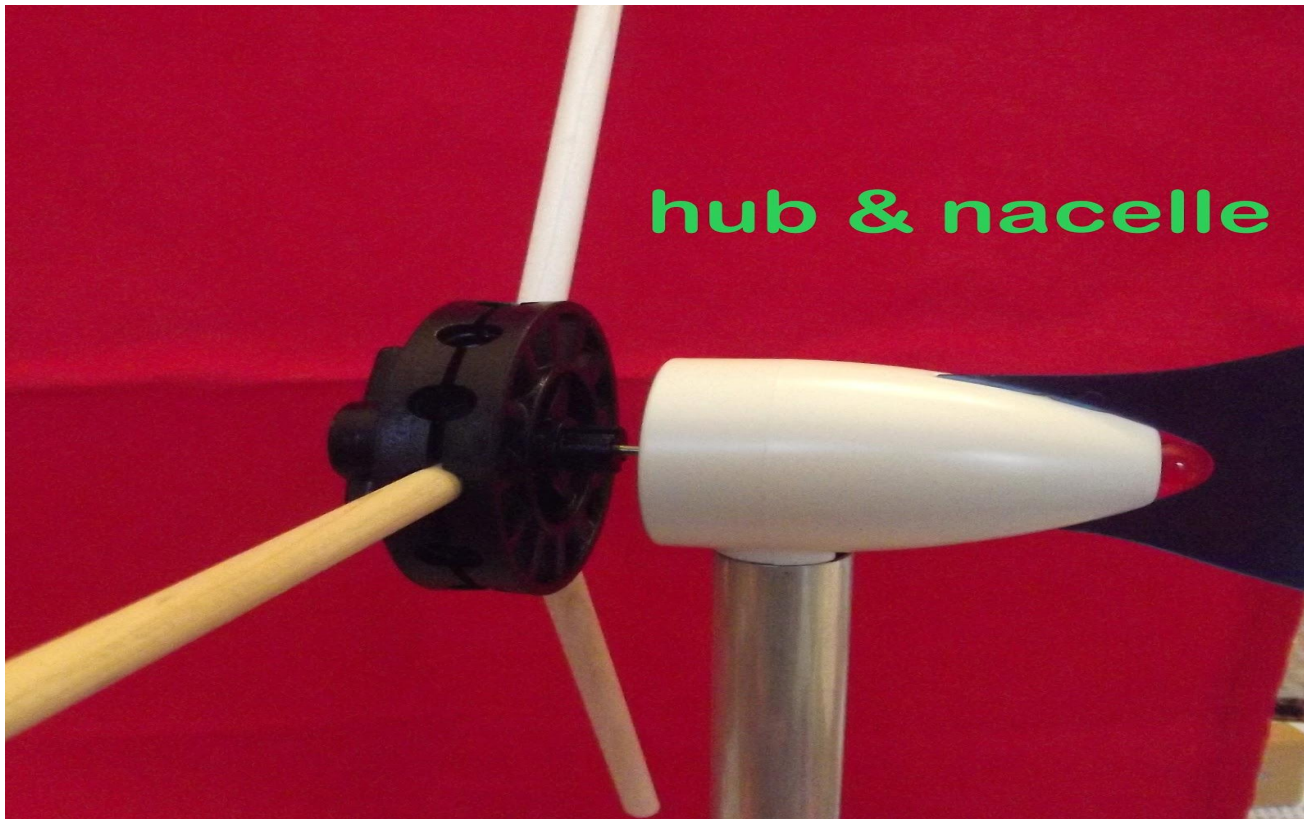


Photo by Van Barker

Design blades for your turbine

- ▶ Materials you could use:
- ▶ Cardboard
- ▶ Paper plates
- ▶ Construction paper
- ▶ Plastic cups
- ▶ Balsa wood

Set up the wind turbine using the hub with the fan 2 meters away and attach the wires of the turbine to the multimeter.

- ▶ This is your testing area.
- ▶ Once your blades are designed, test your blades.
- ▶ Answer the questions on the student sheet.