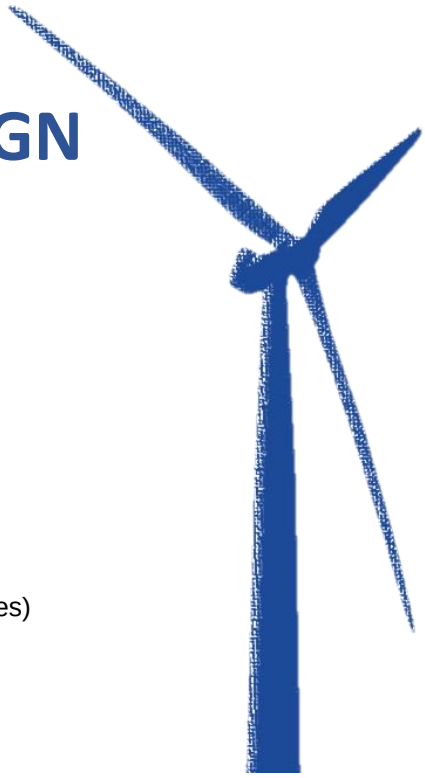
WIND TURBINE BLADE DESIGN



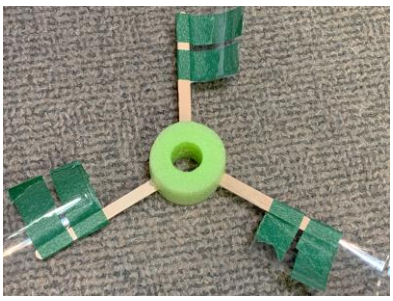
Convert wind energy into electrical energy

WHAT YOU'LL NEED:

wind turbine model kit
1 ½" pool noodle hub sections
cork hub
craft sticks
cardstock
cardboard
craft foam
recyclables (water bottles, paper towel rolls, paper and foam plates)
scissors
ruler
masking tape
rubber bands (mixed sizes)
hot glue gun and glue sticks (optional)
multi-meter
fan

WHAT TO DO:

1. Assemble wind turbine (see instruction sheet)
2. Carefully push a cork onto the end of the motor spindle.
3. Design and fabricate blades for a wind turbine out of the materials provided. Attach blades to the 1 ½ "pool noodle sections. and then slide the finish assembly over the cork hub for testing.



Variables to consider:

- Length of the blade
- Shape of the blade
- Pitch or angle of the blade on the shaft
- Number of blades
- Weight of the construction material
- Smoothness of the construction material

4. To test, slide the finished blade assembly over the cork hub and place the wind turbine in front of a fan or other wind source. Turn on the fan.
5. Following the instructions on your multi-meter measure how much voltage is being produced. Record the voltage.

6. Make changes to the test configuration and note any changes in the voltage produced.

   Try adjusting

   - the speed of the fan
   - the distance from the wind source
   - the pitch or angle of the blades on the turbine

7. Use your observations and the data you've collected to modify the wind turbine's blade design to better capture the wind and produce more voltage.

TAKING IT A STEP FURTHER

Using what you've learned about blade design, try designing a wind turbine that rotates on a vertical shaft.

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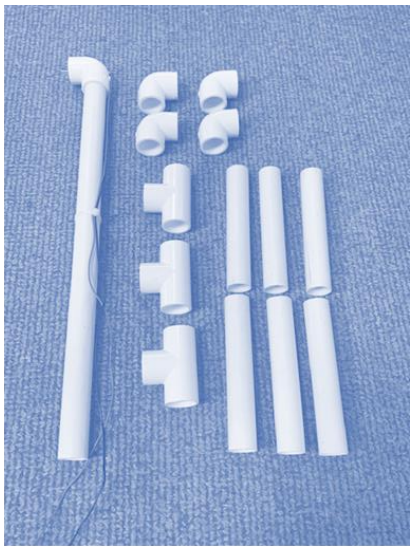
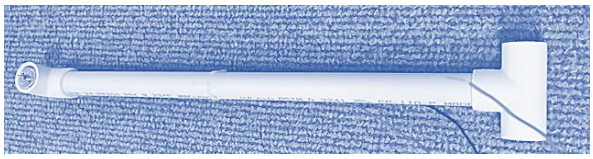
ASSEMBLING YOUR WIND TURBINE KIT



PARTS LIST:

Quantity	Description
1	**18” PVC pipe with motor assembly/wires attached**
3	**“T” connectors**
4	**90˚ connectors**
6	**6” PVC pipe pieces**

1. Attach a “T” connector to the bottom of the 18” pipe/motor assembly.



2. Attach two 6” pipes to the “T” connector.

3. Attach “T” connectors to the end of both 6” pipes.

4. Attach two 6” pipes to the “T” connector to create the turbine’s “legs”.
5. Attach four 90˚ connecters to all the 6” pipes to create “feet” for the turbine.