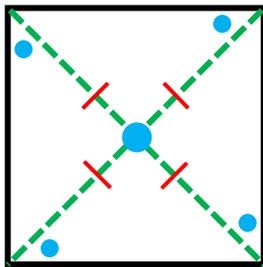


Wind Energy: Make a Pinwheel

The increased efficiency of manufacturing that rose with the Industrial Revolution also required more efficiency in energy sources. Stationary steam engines were widely used in manufacturing, but many industries continued to use wind and water power. As a result of our increased understanding of the effects of carbon emissions as a contributor to climate change, there has been a push to return to the use of renewable energy sources.

Wind energy currently makes up about 5% of the world's power generation. Pinwheels are not only a fun toy, but also a great way to examine the basics of how wind turbines work!

Make a pinwheel!



Cut a sheet of paper so that it is a square (8.5 inches by 8.5 inches is ideal).

Fold the square of paper along the diagonal (marked with the **green** dotted lines), then unfold it back into a square again. Fold it along the other diagonal, and then unfold it once again. Your paper should now look like a square with a big "X" made by the creases.

About two inches out from the center, along each crease, make a small mark with a pen or pencil (marked with the **red** lines).

Carefully make four holes (marked with the **blue** dots) with a skewer to the right of each crease near the square's corners and a hole in the center of the paper.

From each corner of the square, cut down along the crease until you reach the mark you made.

Lastly, pick up each of the holes at the corners and fold them, one at a time, over onto the skewer, so that they are all on top of one another. Attach the pinwheel to a pencil, stick, dowel, or straw using a small piece of a pipe cleaner or a tack. You should now have a functional, homemade pinwheel!

EXPERIMENT with WIND ENERGY

Affix your pinwheel to the end of the dowel and stick the dowel, parallel to the ground, through something stable like an oatmeal canister.

On the end of the dowel opposite the pinwheel, tie a piece of thread. On the other end of the thread, tie a paperclip. See photo below:



Photo credit: sciencebuddies.org

Try using a hair dryer to blow on the pinwheel from different directions and time how long it takes for the string to be wrapped around the dowel all the way to the paperclip.