

## Objectives

:: In addition to illustrating a potential energy source that the students may not have thought about, this activity is intended:

- (1) To demonstrate the energy transformations that take place in converting wave motion and force into useful work (Figure 3).
- (2) To have high school students develop an engineering solution for obtaining one-way rotation of a pneumatic turbine in a reversing airflow.
- (3) To suggest extended activities that the students can pursue on their own.

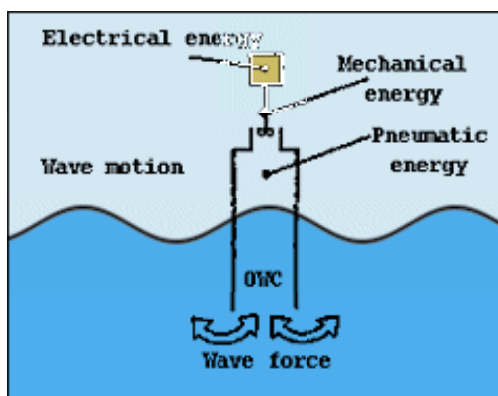


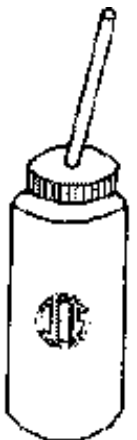
Figure 3

## Materials

The following materials are needed:

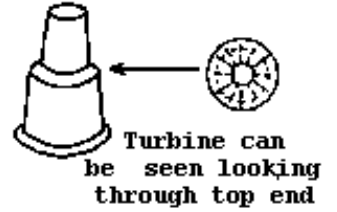
- (1) A five-gallon bucket (or sink that can be filled to a depth of at least 8 inches)
- (2) A source of water near the demonstration site

A plastic water bottle with screw cap and large drinking straw.. These are about the size and shape of a tennis ball can, and are frequently seen in the hands of car drivers, joggers and kids. They can be bought at sports shops or supermarkets and are often handed out as promotional items—you may already have one lying around the house.



- A "turbine wheel" whistle of the type that might be used by a bad stand-up comedian or handed out as party favours. They can be bought at novelty stores or party supply shops.

**Top  
end**



- (5) A small, sharp-bladed utility knife.
- (6) Six strips of opaque adhesive tape (plastic, electrical, or duct tape all work), 1.5 inches long by 3/4-inch wide

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