

Anemometer with Coke-can cups

Background

An anemometer is a device used for measuring the speed of wind. Thomas Romney Robinson invented the cup-anemometer which was first erected on the roof of Armagh Observatory in 1846 to measure wind speed.

In this demonstration, the cups are made from Coke cans, and attached to a "paint roller" so that it is light and rotates freely. The rotational energy is converted to electric current in the dynamo which then passes through a galvanometer causing a deflection of the needle.



You will need...

- ✓ Two coke cans and a scissors to cut them.
- ✓ A small electric motor (to be used as a dynamo),
- ✓ two wires,
- ✓ a galvanometer,
- ✓ a paint roller,
- ✓ retort stand (or similar support),
- ✓ an elastic band,
- ✓ a wine cork
- ✓ super-Glue
- ✓ Sellotape.

Follow these steps

1. Attach the galvanometer to the dynamo.
2. Cut the Coke cans in half (vertically) as shown and Sellotape them to the paint roller.
3. Glue the wine cork as shown to the free-end of the roller.
4. Secure the handle of the paint roller to the retort stand.
5. Secure the dynamo to the report stand.
6. Attach the spindle of the dynamo to the wine cork by an elastic band around each.

So what happened?

Air was blown at the Coke cans (anemometer cups) and when they rotated the elastic band transferred the energy of rotation to the dynamo which in turn transformed the rotational energy into electrical energy. The wires joining the dynamo to the galvanometer transferred the electrical current, causing the needle of the galvanometer to deflect.

What next?

Explore if the scale of the galvanometer could be calibrated to indicate the speed of the wind.