PAVILHÃO DO CONHECIMENTO
CENTRO CIÊNCIA VIVA

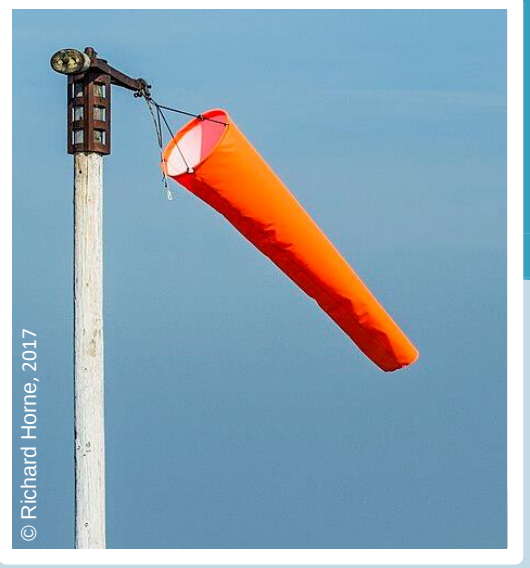
WINDSOCKS

Experimental protocol

Families

Physics

1 hour



Windsocks allow one to show the wind direction in a visual way. They are common in several structures such as: airports, bridges and industries, among other places. These cone-shaped sleeves are essential especially at airports, as they provide important indications for aircraft manoeuvring.

Materials	• Old or used fabric • Scissors • Needle • Sewing thread • Wire • Pliers • Yogurt cup • Metal hook • Cane or stick

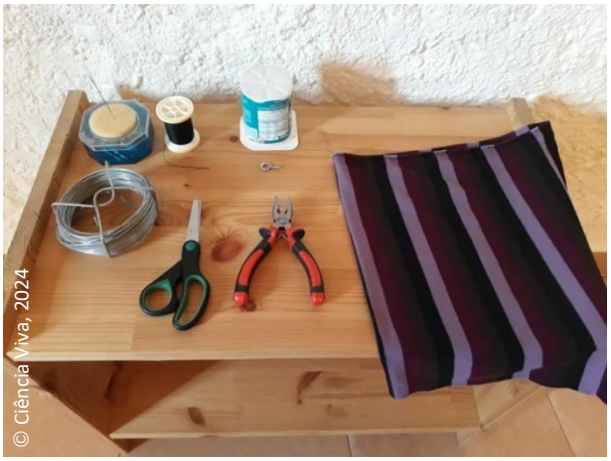
BACKGROUND

In addition to indicating the direction of the wind, it also provides information about wind speed. If the cone is horizontally stretched, it means that the wind is “strong”; if the cone is slightly inclined, it means that the wind is “weak”; if the cone is dropped (vertical position) it means that there is no wind.

QUESTION

- What are windsocks for?
- What is the relationship between the wind speed and the position of the windsock?
- Who is interested in the speed and direction of the wind?

Material:



1. Cut the fabric into an elongated trapezoid shape, maximizing the length;

2. Roll up the fabric and sew, closing in the shape of a sleeve (in the case of the sock it is not necessary because it already has a conical in shape);

3. Using a pair of pliers, make a ring to fit the wider end of the sleeve and leave two rings, which will later be used to attach the cane or stick;

4. Make a hem on the widest part of the sleeve, wrapping the wire;

5. Place the metal hook in the centre of the base of the yogurt cup;

6. Pass a piece of wire around the cane / stick and tighten. Place another piece of wire vertically between this and the metal hook, passing through the rings of the metal ring at the end of the sleeve;

7. Place the cane / stick in an elevated location that allows the wind to pass.

EXPLAIN

The windsocks, also known as Wind Direction Indicator (WDI), resemble giant socks and are visual indicators of wind direction and conditions, however they can also be used only as decoration. This mechanism consists of a cone segment, in fabric, containing two openings, where the largest is attached to a metal ring, connected to a pole. Their dimensions are variable, depending on where that are used.

The wind direction is opposite to the direction in which the sleeve points. These directions are conventionally specified through the cardinal points (of a compass) thus verifying the origin of the wind, as such, a sleeve pointing north indicates that the wind is from the south.

Besides indicating the direction of the wind, windsocks provide qualitative information about wind speed since, the more upright the cone is, the higher the wind speed, and on the other hand, if the cone is down, it means that there is almost or no wind.

It is used in airports and aerodromes to guide pilots during aircraft take-off and landing, which are manoeuvres that are easier to perform in the opposite direction of the wind. This mechanism is also useful for other professionals in

the aeronautical activity, such as meteorologists, aeronautical telecommunications operators and air traffic controllers.

It is used in chemical factories where there is a high risk of gas leakage. And also, we still find them on bridges and places of high altitude, providing instructions mainly to motorcyclists to adapt their behaviour on the road.

Alternating lists (white and red) were initially used to help estimate wind speed. Each strip adds 3 knots to the estimated wind speed. A fully extended sleeve suggests a wind speed of 15 knots (28 km / h) or more.