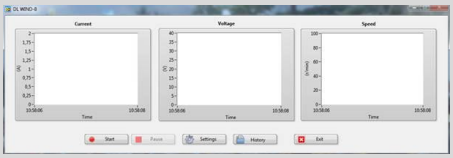
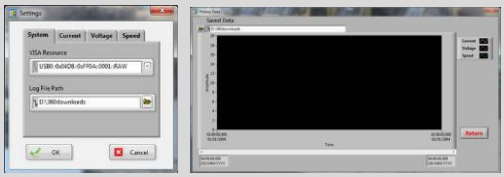
RENEWABLE ENERGIES

WIND POWER TRAINER WITH WIND TUNNEL

DL WIND-B

Trainer for the theoretical and practical study of the generation of electricity by means of wind power.
With this trainer it is possible to change the flow of the air that reaches the wind turbine and to experiment its operation at no load and load conditions.





Complete with connecting cables, experiment manual and **software for data acquisition and processing**.

TRAINING OBJECTIVES

- Identification of the construction parts
- Starting the training device
- Wind speed with external anemometer
- Wind speed with internal anemometer
- Wind tunnel voltage and current
- Relationship of the wind tunnel with the wind front
- Practical tests in open environment

Dimensions: 1780 x 610 x 1360 mm.
Net weight: 51 kg.

TECHNICAL SPECIFICATIONS

- A wind tunnel in which the following components are installed:
  - A single-phase industrial fan with electronic speed regulator.
  - A 12 V, 40 W wind turbine, with a mechanism for changing its orientation with respect to the source of the wind.
- An anemometer mounted on a stand.
- A voltmeter.
- An ammeter.
- A power supply, 0÷230 V, 4 A, with instruments for reading wind speed, voltage and current, a potentiometer for controlling the fan simulating the wind and a lamp representing a resistive load. Analogue output from each instrument: 0-10 V.
- A variable resistive load.

MORE AVAILABLE TRAINERS:

DL WIND-A

Trainer with real wind turbine isolated from mains.

DL WIND-A1S

Trainer with motor drive for indoor use isolated from mains.

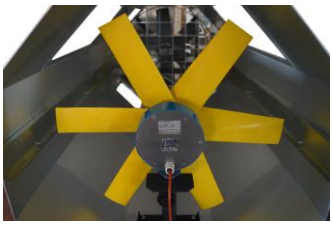
DL WIND-A1G

Trainer with real wind turbine with connection to mains.

NOTE

The blades of the wind turbine can be removed for efficiency tests with variable number of blades or to allow their replacement with blades designed by the student and made with a 3D printer.

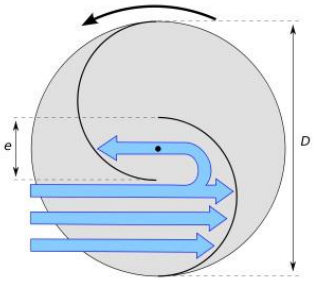




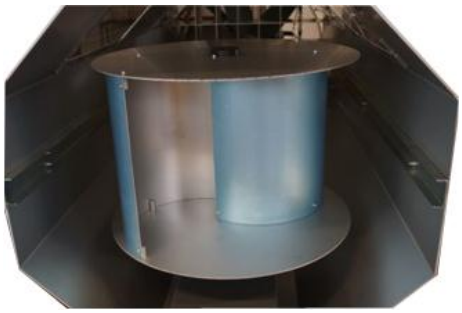

OPTIONS: VERTICAL AXIS TURBINES

SAVONIUS TURBINE

This turbine belongs to the category of resistance turbines, where the resistance to the force of the wind causes the rotation of the axis.



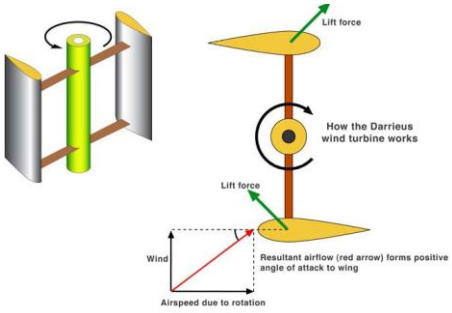
The greatest handicap of vertical axis turbines, which limits their performance, consists in the fact that a part of them will rotate in the opposite direction to the wind and a part in favor. The Savonius turbine, to avoid this problem, is made of two half-shells (in the simplest version) which are not joined to the rotor of the turbine, but arranged so that a part of the half-shells lets the thrust air flow also through the upwind part.



DL VAWT

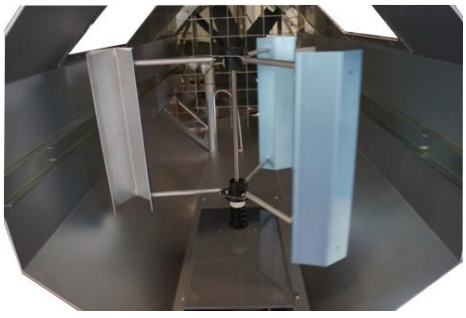
GIROMILL TURBINE (Savonius – Darreius)

This turbine belongs to the category of lift turbines. The lift is the force that acts on a wing profile because of a pressure difference, given by the different speeds which takes the fluid when "lapping" the surfaces of the profile.



With the increase of the speed of rotation, the upwind blade acts as a brake and limits and stabilizes the speed of rotation.

Another important aspect to be monitored is related to the resistances that oppose the start of the movement. It may happen, in fact, that these are greater than the forces of rotation impressed by the wind to the machine. This is why some wind turbines of this type can be started only with strong winds or through auxiliary starting motors.



DL GMLL