

Lab 1

Air Turbine

Tools :

- 1- Air Fan.
- 2- Two Turbines.
- 3- Connecting Wires.
- 4 - Voltmeter.
- 5 - Ammeter.
- 4- An instrument for measuring wind speed (anemometer).

Theory:

When a magnetic field passes near a metal wire, a potential difference will be generated, thus generating electrical energy, as the principle of electric turbine work depends on the movement of the coil around a magnetic field and that movement comes from fans affected by external air flow.

(The generation efficiency depends on the type and size of the turbine, as well as on the wind speed)

Method or Procedure:

1. The air turbine of small size is placed at a certain distance from the air fan.
2. Connect the turbine to the voltmeter and ammeter.
3. Run the fan on the first speed and then measure the air speed reading with anemometer device.
4. Measurements of voltage and current are taken and recorded in the table.
5. Calculate the electric power by $P=V \cdot I$.
6. Increase the speed to (2) and (3) and repeat the above steps for each speed.

7- After completion, the turbine is replaced with a larger one and all previous steps are repeated.

8- Draw a graphic relationship between the generated electric power and wind speed.

Wind speed (m/s)	Voltage (V)	Current (A)	Power (W)