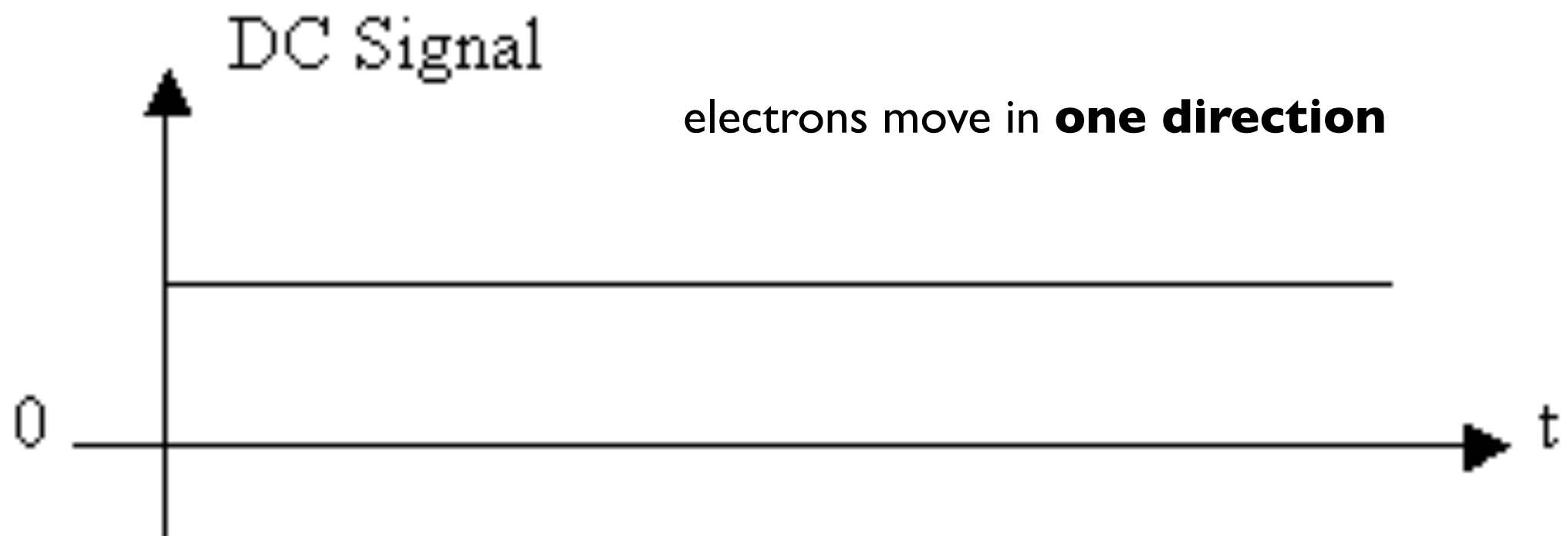
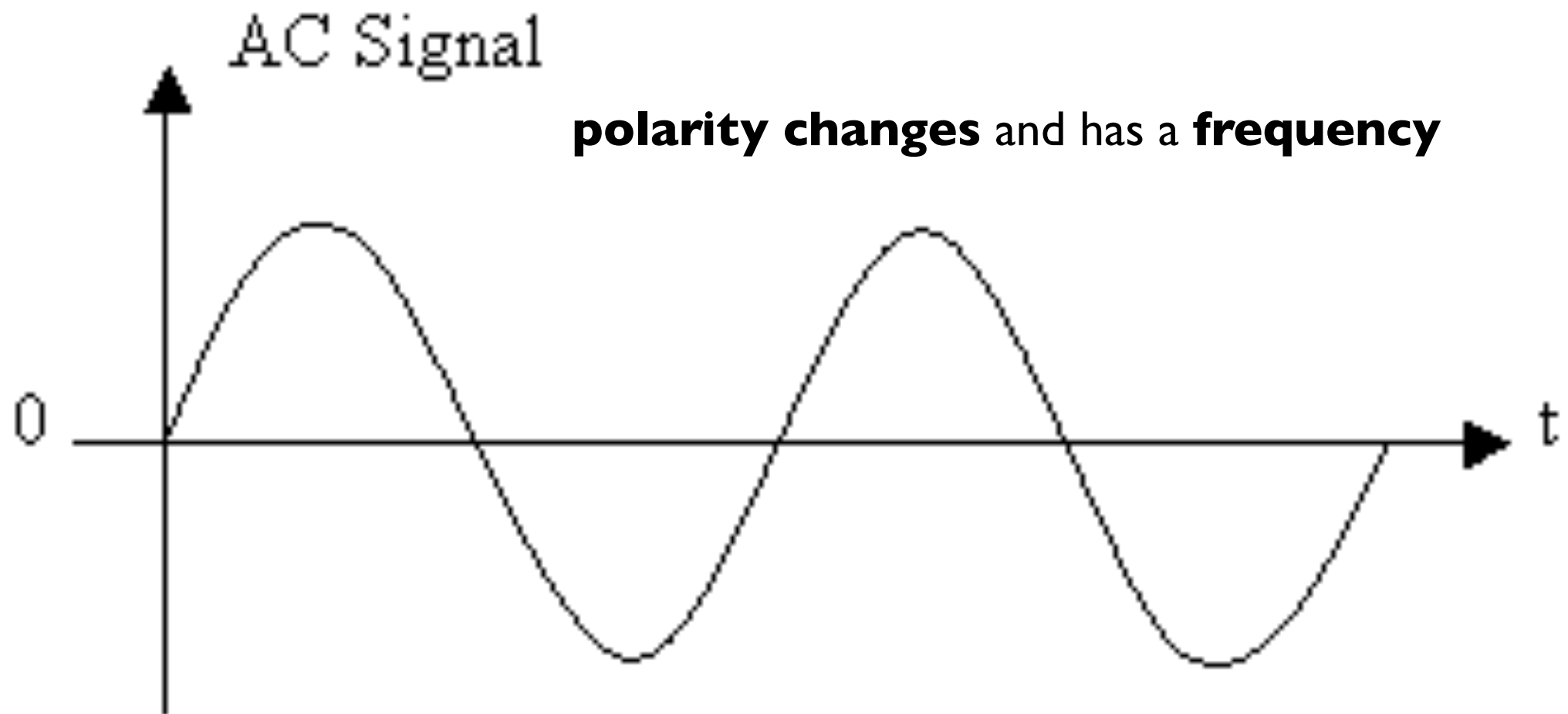


Harvesting Energy Everywhere:
Alternators,
Electro-magnetics,
Induction,
Turbines,
Generators,
Wave Rectification
Piezoelectrics

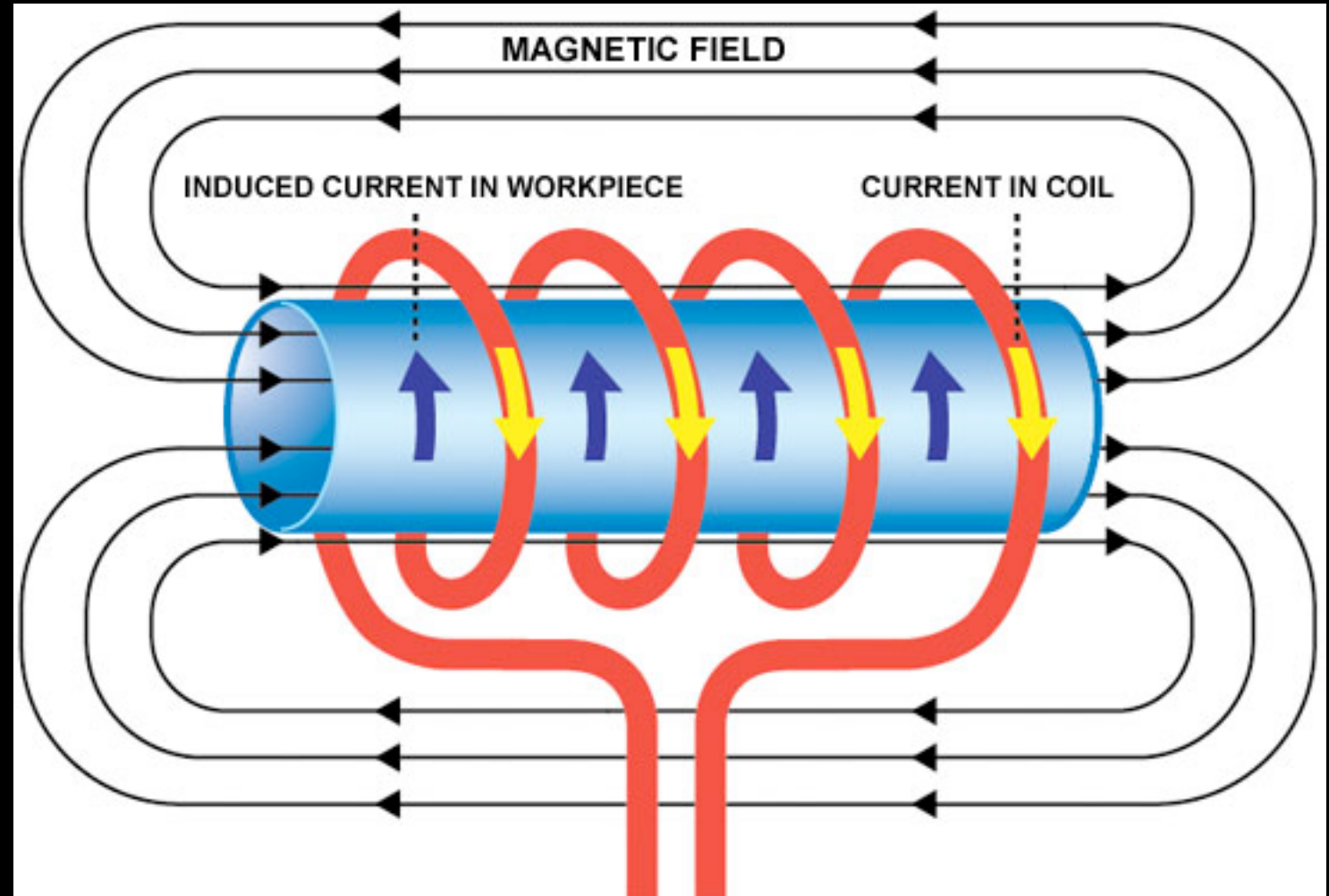


ELECTROMAGNETIC INDUCTION

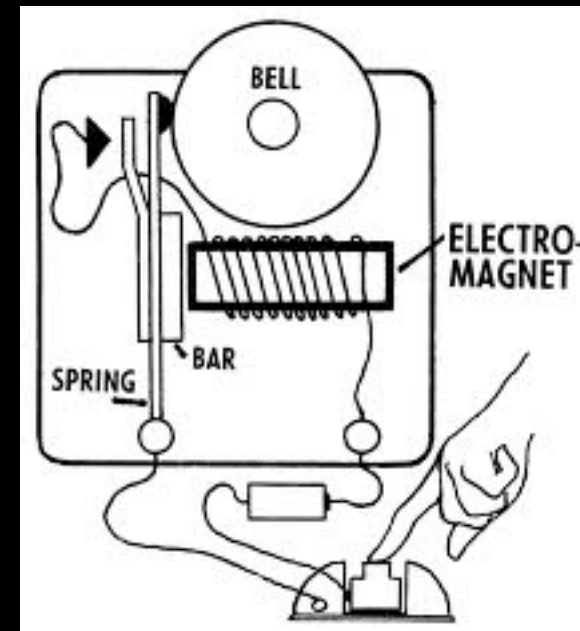
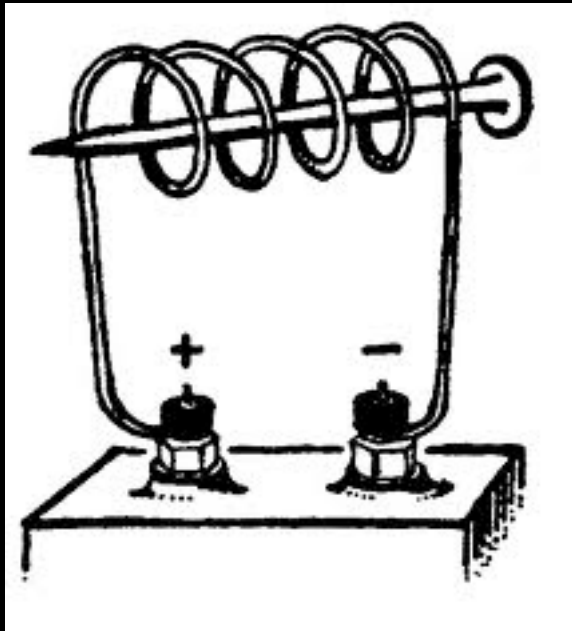
the production of a potential difference (voltage) across a conductor when it is exposed to a varying magnetic field.

If the rate of change of current in a circuit is one ampere per second and the resulting electromotive force is one volt then the **inductance** of the circuit is one henry.

(1 volt * s) / (1 ampere)
= 1 henry



$$H = \frac{\text{m}^2 \cdot \text{kg}}{\text{C}^2} = \frac{\text{m}^2 \cdot \text{kg}}{\text{s}^2 \cdot \text{A}^2} = \frac{\text{J}}{\text{A}^2} = \frac{\text{Wb}}{\text{A}} = \frac{\text{V} \cdot \text{s}}{\text{A}} = \frac{\text{s}^2}{\text{F}} = \Omega \cdot \text{s}$$



An **ELECTROMAGNET** is a type of magnet in which the magnetic field is produced by electric current. The magnetic field disappears when the current is turned off.

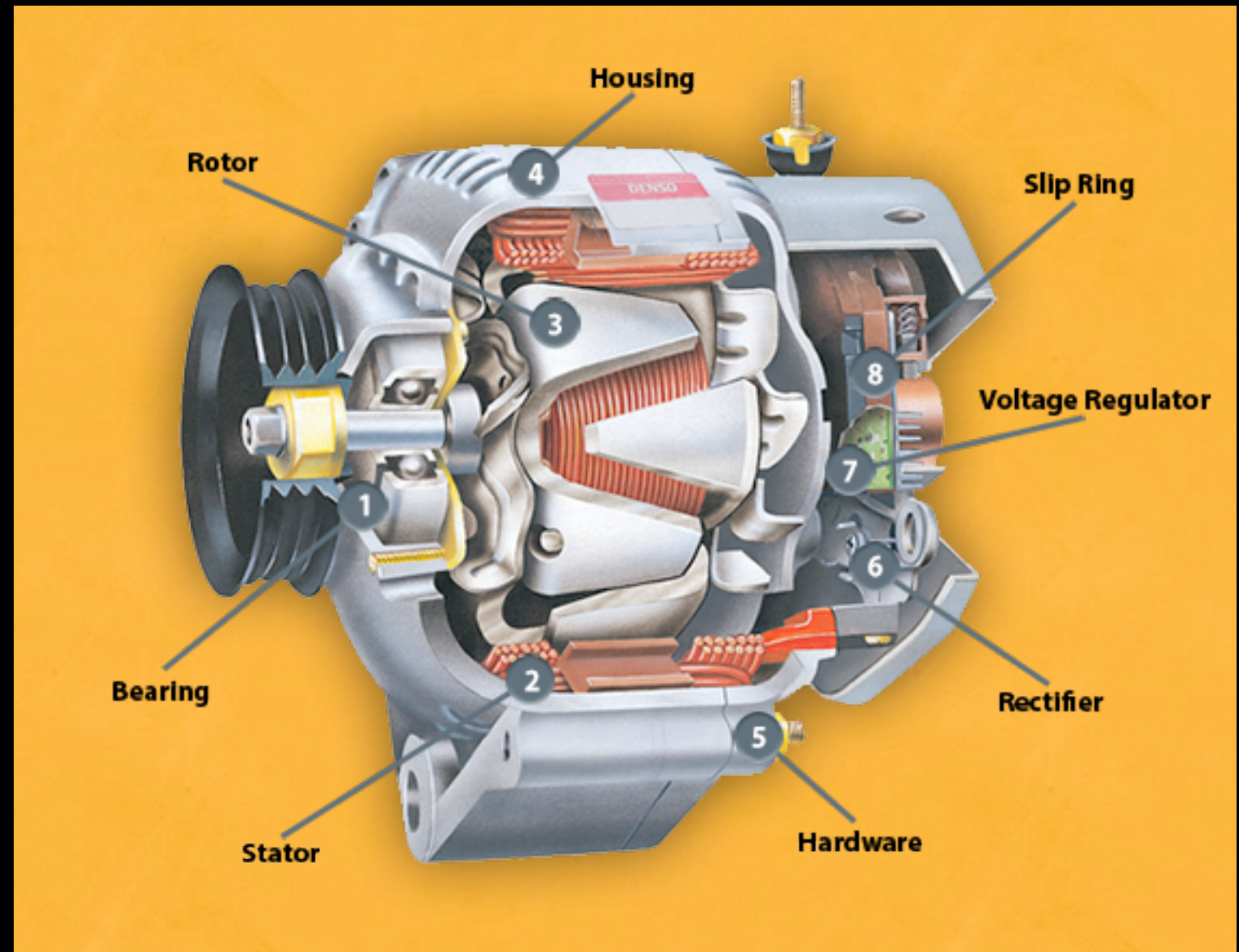
Electromagnets are widely used as components of other electrical devices, such as motors, generators, relays, loudspeakers, hard disks, MRI machines,

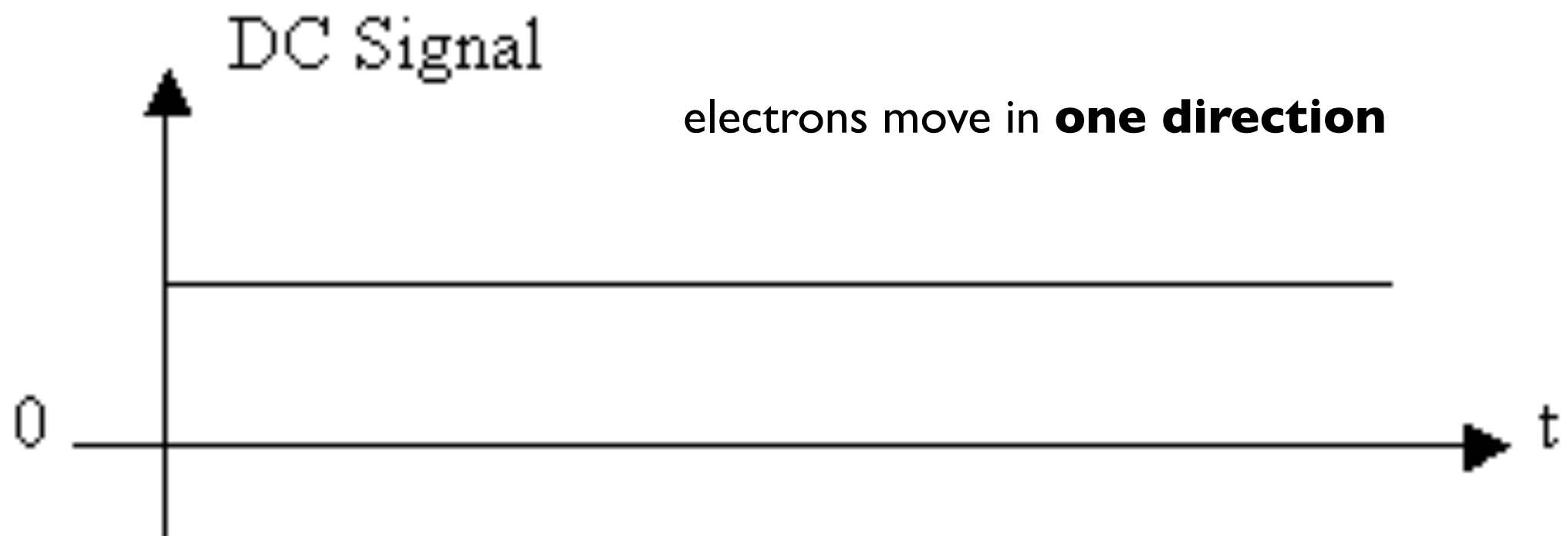
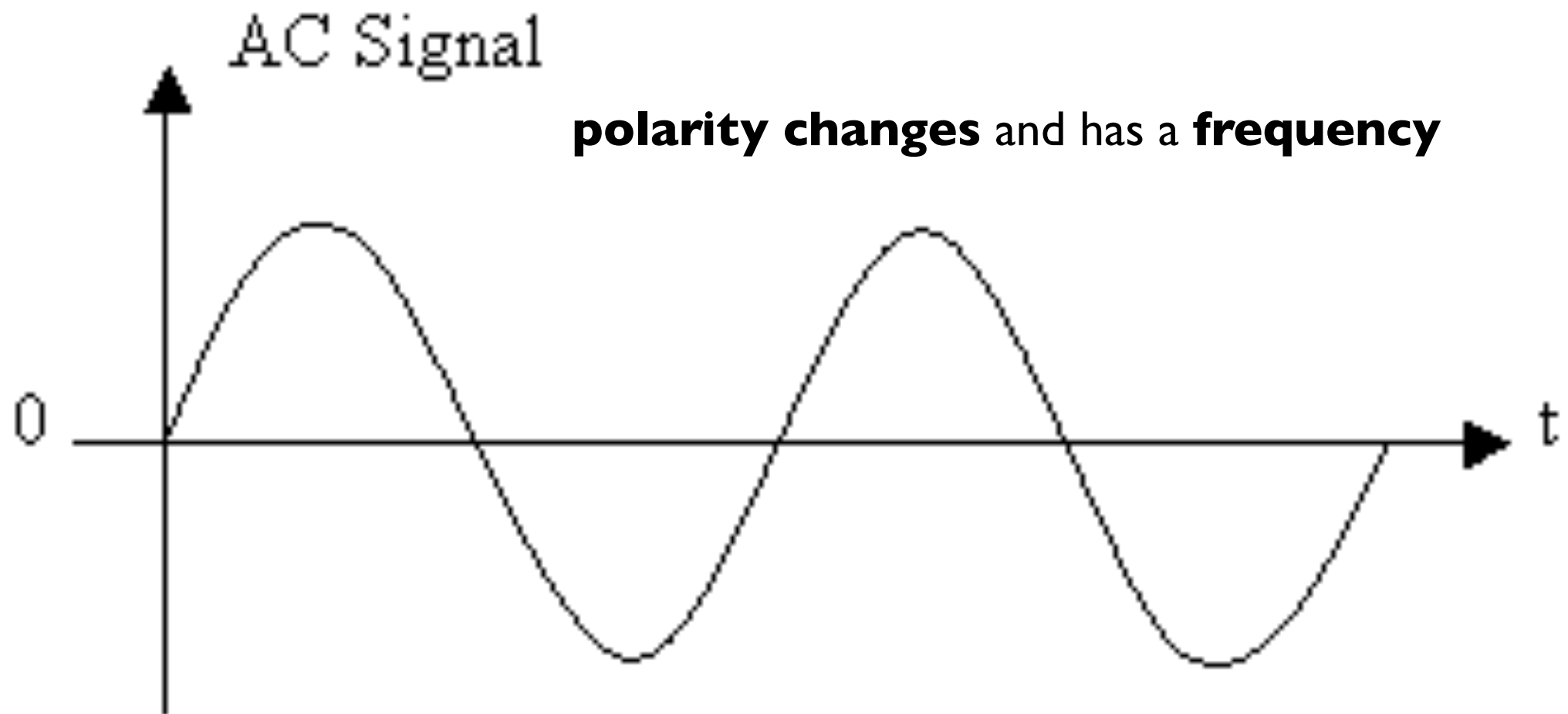
TURBINE

a machine for producing continuous power in which a wheel or rotor, typically fitted with vanes, is made to revolve by a fast-moving flow of water, steam, gas, air, or other **fluid**.

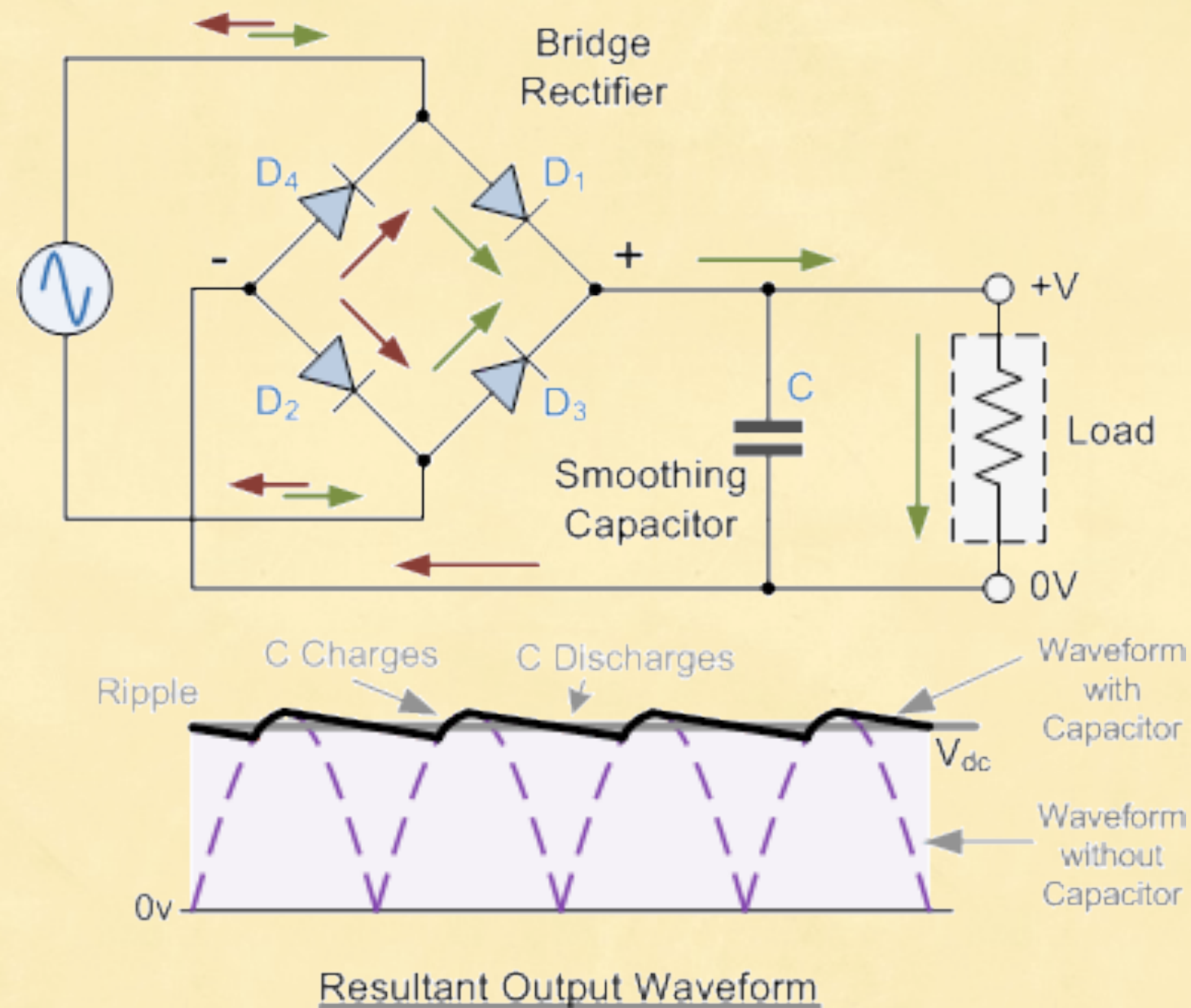


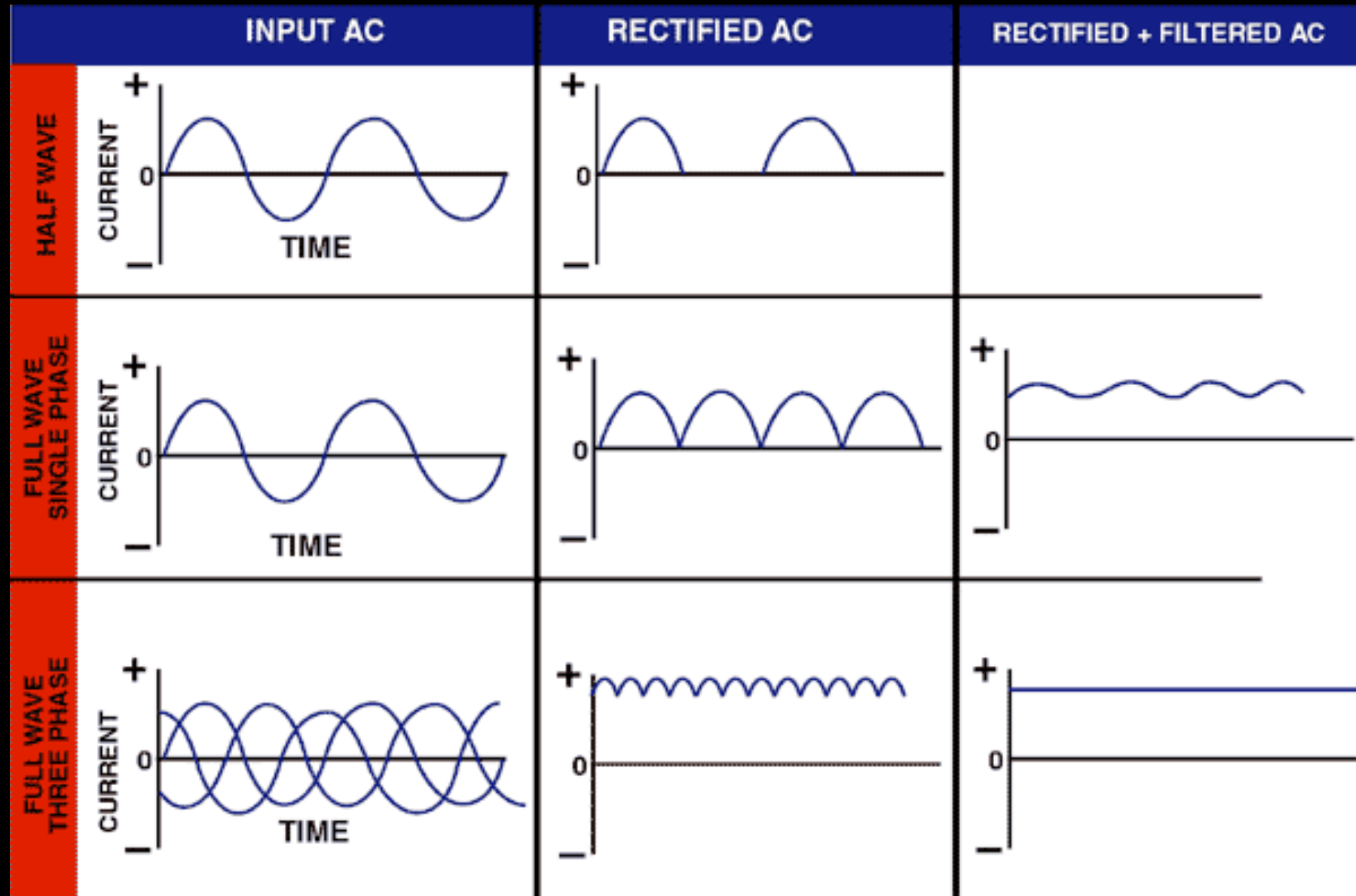
An **ALTERNATOR** is an electromechanical device that converts mechanical energy to electrical energy in the form of alternating current.



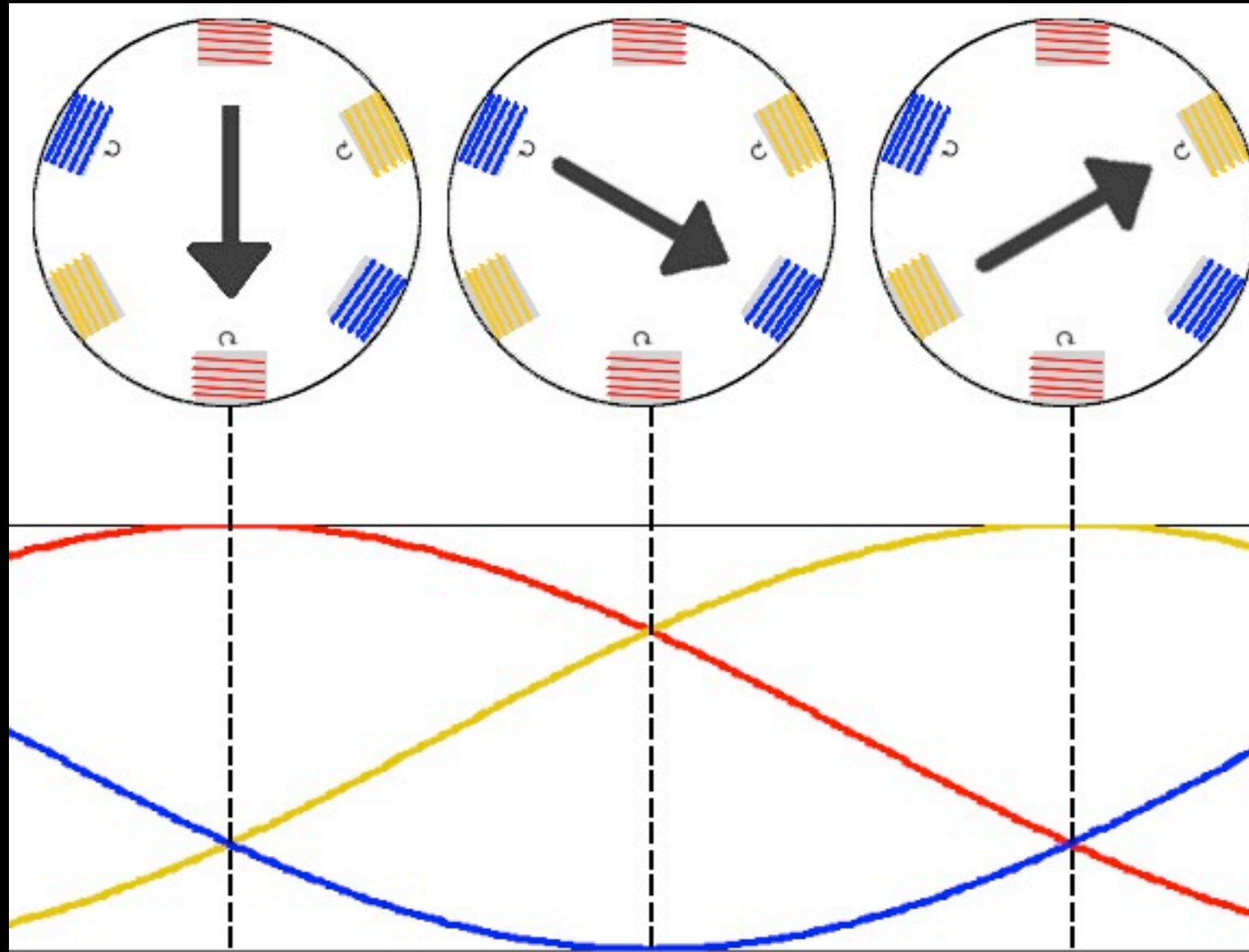


FULL WAVE RECTIFICATION



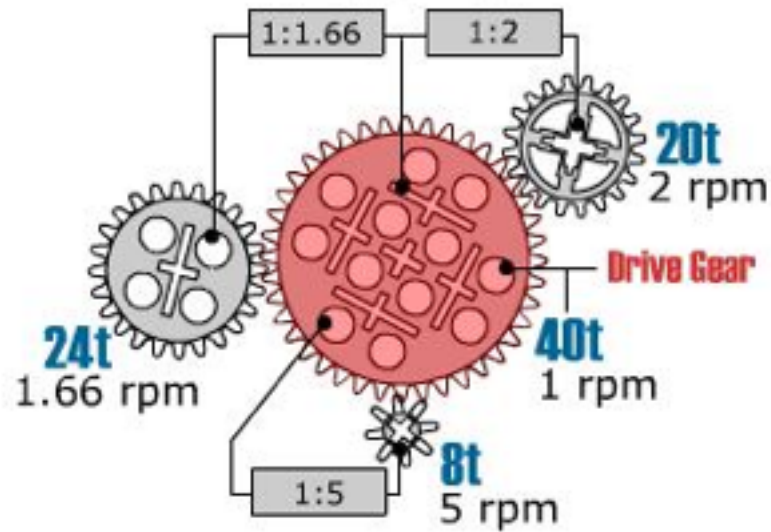


Three phase **ALTERNATOR**



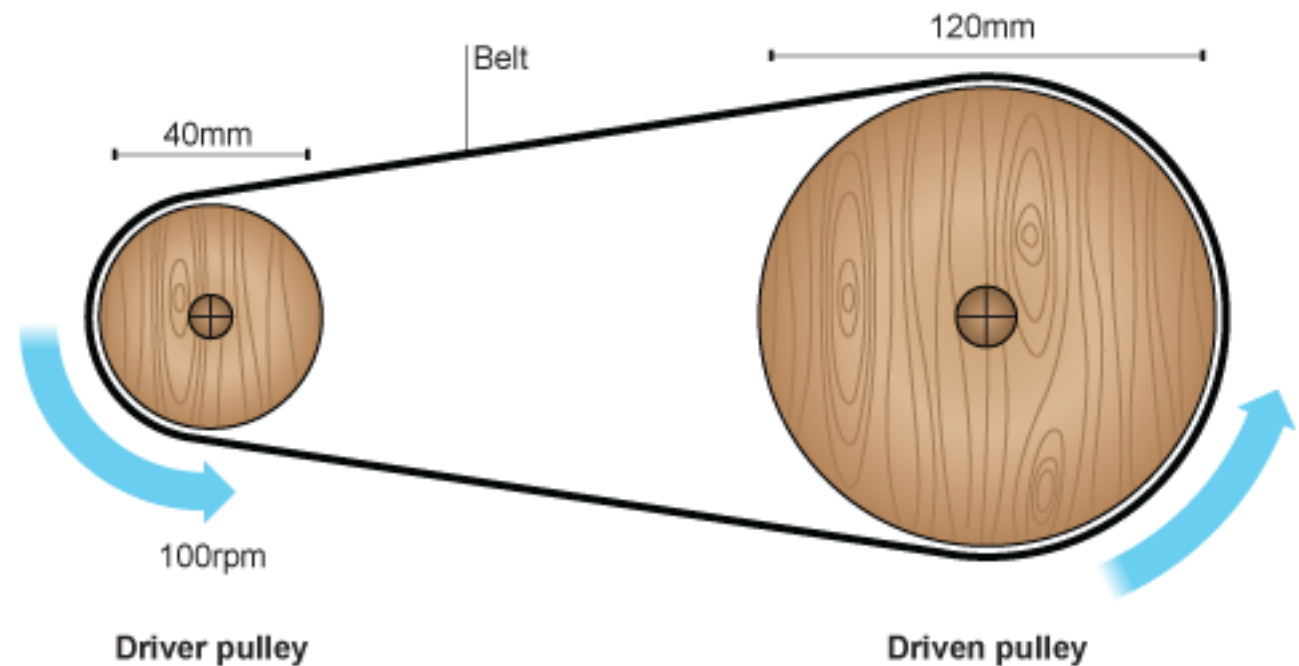
Get more ENERGY with Gears, Belts, Pulleys

Increasing Speed

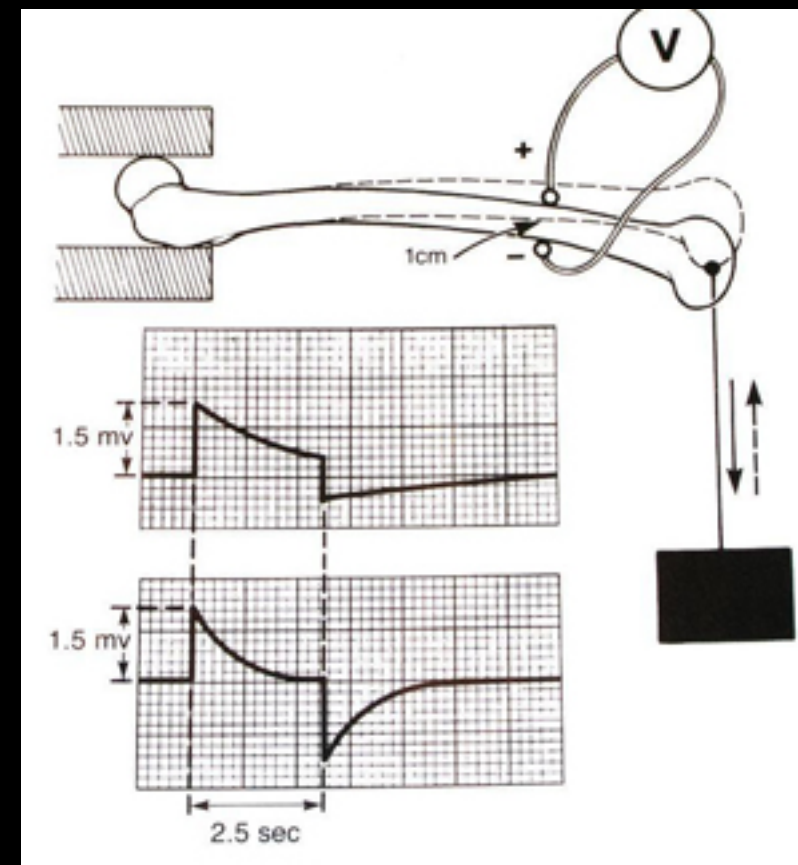
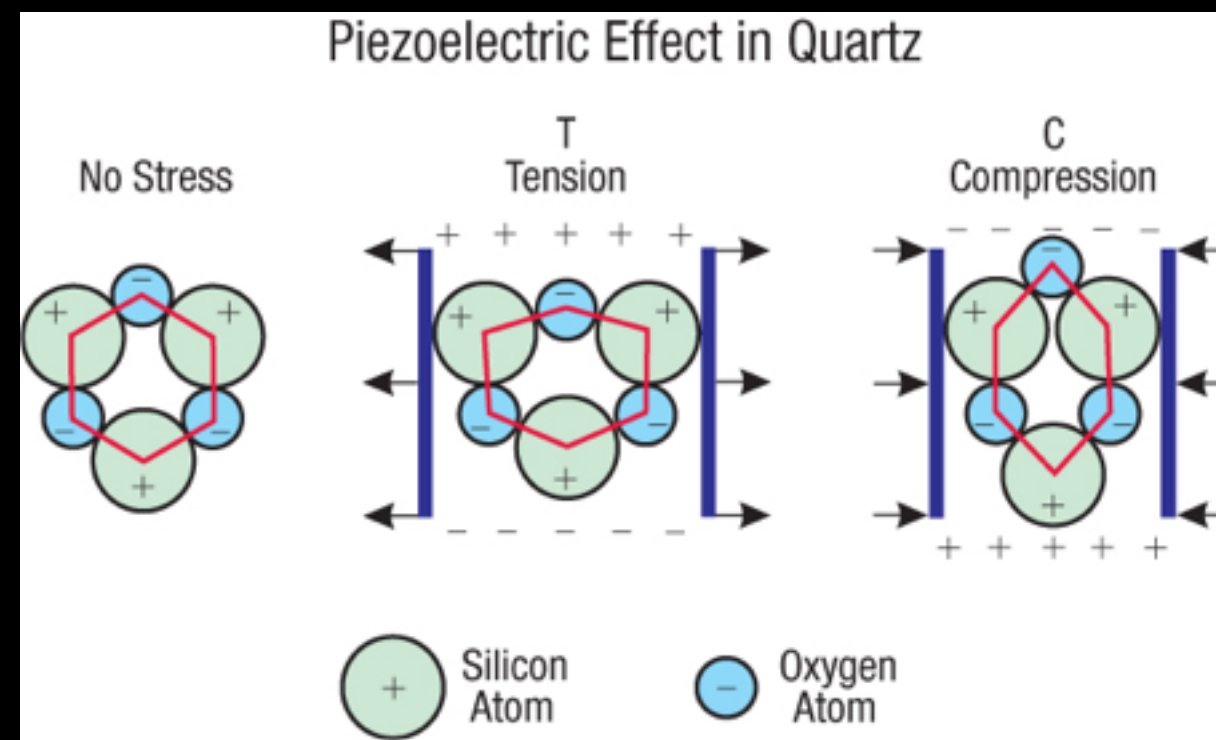


To increase speed and reduce torque use a large drive gear coupled to a smaller driven gear. In this example we use a 40 tooth drive gear to turn smaller gears to get the illustrated gear ratios.

So the 8 tooth gear will turn 5 complete rotations for the every rotation of the 40 tooth gear. The motor has been **geared up**.



Piezoelectricity is the electric charge that accumulates in certain solid materials (such as crystals, certain ceramics, and biological matter such as bone, DNA and various proteins) in response to applied mechanical stress. The word *piezoelectricity* means electricity resulting from pressure.



Ideas:



<http://www.unchartedplay.com/new-products>



