



## How Does a Transformer Work?

A transformer is an electrical device that takes electricity of one voltage and changes it into another voltage

A Transformer changes electricity from high to low voltage using two properties of electricity. In an electric circuit, there is magnetism around it. Second, whenever a magnetic field changes (by moving or by changing strength) a voltage is made. Voltage is the measure of the strength or amount of electrons flowing through a wire.

If there's another wire close to an electric current that is changing strength, the current of electricity will also flow into that other wire as the magnetism changes.

A transformer takes in electricity at a higher voltage and lets it run through lots of coils wound around an iron core. Because the current is alternating, the magnetism in the core is also alternating. Also around the core is an output wire with fewer coils. The magnetism changing back and forth makes a current in the wire. Having fewer coils means less voltage. So the voltage is "stepped-down"

The ratio of the number of turns in the primary coil to the number of turns in the secondary coil—the turns ratio—determines the ratio of the voltages in the two coils. For example, if there is one turn in the primary and ten turns in the secondary coil, the voltage in the secondary coil will be 10 times that in the primary. Such a transformer is called a step-up transformer

Transformers only work on AC, which is one of the great advantages of AC. Transformers allow 240V to be stepped down to convenient levels for digital electronics (only a few volts) or for other low power applications (typically 12V).

Without transformers, the waste of electric power in distribution networks, already high, would be enormous

