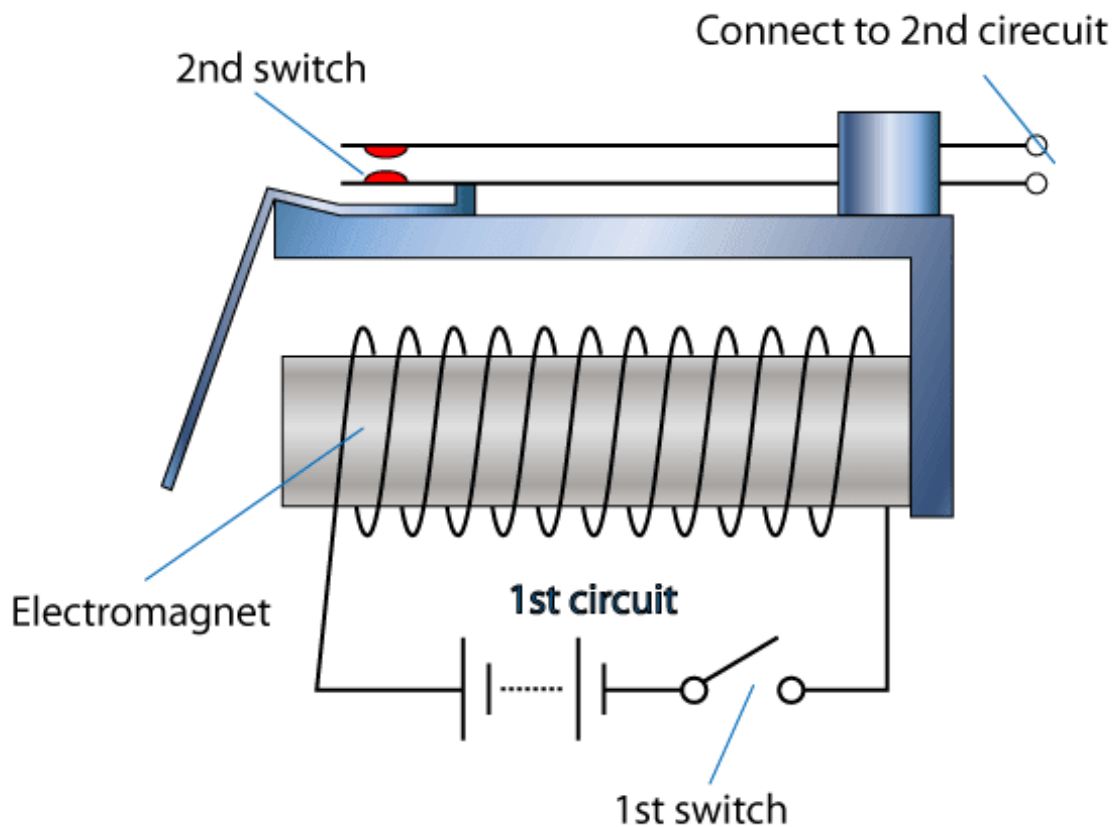


# Engineering Technology

## Electricity / Electronics

### Electromagnets

An **electromagnet** is a type of **magnet** in which the **magnetic field** is produced by an **electric current**. The magnetic field disappears when the current is turned off. Electromagnets usually consist of insulated wire wound into a **coil**. A current through the wire creates a magnetic field, which is concentrated in the hole in the center of the coil. The wire turns are often wound around a magnetic core made from a **ferromagnetic** material such as **iron**; the magnetic core concentrates the magnetic flux and makes a more powerful magnet.



The main advantage of an electromagnet over a **permanent magnet** is that controlling the amount of electric current in the winding can quickly change the magnetic field. However, unlike a permanent magnet that needs no power, an electromagnet requires a continuous supply of current to maintain the magnetic field.

Electromagnets are widely used as components of other electrical devices, such as motors, generators, relays, loudspeakers, hard disks, MRI machines, scientific instruments, and [magnetic separation](#) equipment. Electromagnets are also employed in industry for picking up and moving heavy iron objects such as scrap iron and steel.<sup>[2]</sup>

