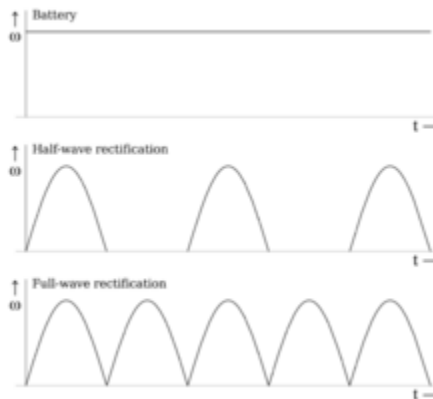


DIRECT CURRENT

Direct current (DC or "continuous current") is the constant flow of electric charge from higher to lower potential.

Explanation

This constant flow of electric charge from high to low electric potential is typically in a conductor such as a wire, but can also be through semiconductors, insulators, or even through a vacuum as in electron or ion beams. In direct current, the electric charges flow in the same direction, distinguishing it from alternating current (AC). A term formerly used for direct current was Galvanic current.



Types of direct current

Development

The first commercial electric power transmission (developed by Thomas Edison in the late nineteenth century) used direct current. Because alternating current has been found to be more convenient than direct current for electric power distribution and transmission, today nearly all electric power transmission uses alternating current.

See War of Currents. However for very high voltage transmission for long-distance and point-to-point, adoption of DC is the present trend.

Various definitions

Within Electrical Engineering, the term DC is a synonym for constant. For example, the voltage across a DC voltage source is constant as is the current through a DC current source. The DC solution of an electric circuit is the solution where all voltages and currents are constant. It can be shown that any voltage or current waveform can be decomposed into a sum of a DC component and a time-varying component. The DC component is defined to be the average value of the voltage or current over all time. The average value of the time-varying component is zero.

Although DC stands for "Direct Current", DC sometimes refers to "constant polarity." With this definition, DC voltages can vary in time, such as the raw output of a rectifier.

Some forms of DC (such as that produced by a voltage regulator) have almost no variations in voltage, but may still have variations in output power and current.

Applications

Direct current installations usually have different types of sockets, switches, and fixtures, mostly due to the low voltages used, from those suitable for alternating current. It is usually important with a direct current appliance to not reverse polarity unless the device has a diode bridge to correct for this. (Most battery-powered devices don't.)

High voltage direct current is used for long-distance point-to-point power transmission and for submarine cables, with voltages from a few kilovolts to approximately one megavolt.

DC is commonly found in many low-voltage applications, especially where these are powered by batteries, which can produce only DC, or solar power systems, since solar cells can produce only DC. Most automotive applications use DC, although the generator is an AC device which uses a rectifier to produce DC. Most electronic circuits require a DC power supply.

Most telephones connect to a twisted pair of wires, and internally separate the AC component of the voltage between the two wires (the audio signal) from the DC component of the voltage between the two wires (used to power the phone).

Source : http://engineering.wikia.com/wiki/Direct_current