ELECTRICAL ENGINEERING

Electrical engineering is an engineering discipline concerned with the study, design and application of equipment, devices and systems which use electricity, electronics, and electromagnetism. It emerged as an identifiable occupation in the latter half of the 19th century after commercialization of the electric telegraph, the telephone, and electrical power generation, distribution and use.

Electrical engineering is now divided into a wide range of fields, including computer engineering, systems engineering, power engineering, telecommunications, radio-frequency engineering, signal processing, instrumentation, electronics, and optics and photonics. Many of these disciplines overlap with other engineering branches, spanning a huge number of specializations including hardware engineering, power electronics, electromagnetics and waves, microwave engineering, nanotechnology, electrochemistry, renewable energies, mechatronics, and electrical materials science.[a]

Electrical engineers typically hold a degree in electrical engineering or electronic engineering. Practising engineers may have professional certification and be members of a professional body or an international standards organization. These include the International Electrotechnical Commission (IEC), the Institute of Electrical and Electronics Engineers (IEEE) and the Institution of Engineering and Technology (IET) *(formerly the IEE)*.

Electrical engineers work in a very wide range of industries and the skills required are likewise variable. These range from circuit theory to the management skills of a project manager. The tools and equipment that an individual engineer may need are similarly variable, ranging from a simple voltmeter to sophisticated design and manufacturing software.

Electricity has been a subject of scientific interest since at least the early 17th century. William Gilbert was a prominent early electrical scientist, and was the first to draw a clear distinction between magnetism and static electricity. He is credited with establishing the term "electricity".[1] He also designed the versorium: a device that detects the presence of statically charged objects. In 1762 Swedish professor Johan Wilcke invented a device later named electrophorus that produced a static electric charge. By 1800 Alessandro Volta had developed the voltaic pile, a forerunner of the electric battery.