



The History of Electricity

Anything you plug into the wall or put batteries in uses electricity. Electricity wasn't invented – it occurs naturally, for example, through lightning – but inventions such as light bulbs, motors and batteries have revolutionized society. Below is a timeline of major milestones in the history of electricity.

600 B.C.

Thales of Miletus, a Greek philosopher, records that when he polishes amber with a piece of wool or fur, a static electric charge is created, attracting straw or feathers.

1600

Dr. William Gilbert studies the reaction of amber and magnets, first recording the term "electric" in a report on the theory of magnetism.



1663

German physicist and engineer Otto von Guericke builds the first machine to generate an electric spark. His generator consists of a sulfur globe mounted on an iron shaft. The globe could be turned with one hand and rubbed with the other to produce static electricity.

1745

Pieter van Musschenbroek, a physicist and mathematician in the Netherlands, invents what is later called the Leyden jar – the first device that could store electricity for future use. English physician William Watson improves on the invention, coating the inside and outside of a glass bottle with tinfoil to improve its capacity to store a charge.

1752

Believing lightning is a flow of electricity taking place in nature, Benjamin Franklin tests his theory, fastening an iron spike to a silk kite and holding the end of the kite string by an iron key during a thunderstorm. Lightning flashes, and a tiny spark jumps from the key to Franklin's wrist.



1769

Scotsman James Watt invents the steam condensing engine, which proves crucial to large-scale generation of electricity. The principles of the steam engine developed by Watt are used to turn the generators that produce electricity.

1786

Italian anatomy professor Luigi Galvani fastens the legs of a freshly killed frog to a copper hook and hangs the hook over an iron railing. The frog's legs twitch violently whenever they touch the iron railing. He mistakenly concludes the muscles of the frog must contain electricity.



1790s

Building on Galvani's work, Italian physics professor Alessandro Volta shows that when moisture comes between two different metals, electricity is created. This leads him to develop the first battery – thin sheets of copper and zinc separated by paper soaked in acid. Volta shows electricity can flow steadily—like a current of water—instead of discharging itself in a single lightning bolt or spark. He later invents the electric condenser.

1808



English chemist Sir Humphry Davy discovers the electric arc – a luminous flame of electricity that seems to leap across space without benefit of a conductor. In reality, the gases in the air serve as the conductor.

1819

Hans Christian Oersted of Denmark holds a magnetic compass near a current-carrying wire, discovering electromagnetism.

1831

English physicist Michael Faraday succeeds in building the first electric motor. He discovers when a magnet is moved within a coil of copper wire a small electric current flows through the wire. American Joseph Henry also discovers this principle the same year.

Late 1830s

American painter Samuel Morse and British physicists Charles Wheatstone and William Cooke independently patent electromagnetic telegraphs.



1859

Moses Farmer lights his house in Salem, Massachusetts, by electric lamps that contain a glowing platinum wire. The current is supplied by batteries.

1866

Generators with electromagnets in the field are first constructed.

Mid 1870s

Electric arcs light the streets in Paris, London, New York, Cleveland and other cities.



1876

Alexander Graham Bell patents the telephone, which transmits speech over electric wires.



The History of Electricity

1877

American Thomas Edison invents the phonograph – one of his more than 1,100 inventions.

1879

Edison and English physicist Joseph Swan both apply for patents for carbon-filament incandescent lamps. Litigation between the two men is resolved by formation of a joint company in 1883.

1880s

The earliest battery-powered cars are built in Europe.



1882

Edison establishes a central generating station at Pearl Street in lower Manhattan, serving 85 customers in a one-square-mile area. Edward Weston begins manufacturing electric meters. The first water-powered plant for generating electricity is built in Appleton, Wisconsin.

1884

Frank Sprague demonstrates the first practical electric motor for use in locomotives. In 1887, he inaugurates a small electric railway in St. Joseph, Missouri, and builds the Union Passenger Railway in Richmond, Virginia – the first large electric railway system ever attempted.



1886

Schuyler Wheeler makes the first electric fan, using an electric motor to turn a propeller placed on the end of a shaft.

1888

Nikola Tesla, a Serbian electrical engineer who had immigrated to the United States and was working with Edison, introduces the alternating current generator, allowing electricity to be distributed longer distances than the two miles possible with direct current generators. Everyone but Edison agrees AC is superior to DC. Even Edison's own company – Edison Electric Company, now called General Electric – eventually switches to AC. All electric motors today run on principles set out by Tesla.

1889

Edison invents one of the first successful motion-picture devices.

1895

The era of large-scale power distribution begins when water flowing over Niagara Falls is diverted through a pair of high-speed turbines. American inventor and industrialist George Westinghouse wins the contract to construct the generators after purchasing Tesla's patent for generating alternating current.



1896

Italian engineer Guglielmo Marconi harnesses electric waves in the air to produce the first practical radio signaling system.

1898

The first dry cell flashlight is made in New York City.



1899

John Thurman of St. Louis, Missouri, patents a "pneumatic carpet renovator," otherwise known as a vacuum cleaner.

1904

General Electric completes a second power station at Niagara Falls.

1907



American Lee De Forest invents a vacuum tube that amplifies radio signals, making the development of radio and television communication possible.

1910

Alva Fisher develops an electrically-powered washing machine.

1914



Edison connects the phonograph and George Eastman's camera to make talking pictures.

1920s

Working television models are created.

1930s

Electric ranges and food waste disposers are introduced into U.S. homes and restaurants.

1935

President Franklin D. Roosevelt signs legislation establishing the Rural Electrification Administration and making federal funds available for rural electric service.

1940s

Electronic computers invented. Electric freezers, frying pans, portable mixers and improved air conditioners introduced.



1946

First postwar television sets go on sale.

1951

A nuclear reactor built at Arco, Idaho, powers a generator, producing the first electricity generated by atomic energy.

