When And Where Was Electricity Invented

Electric power industry The commercial distribution of electric power started in 1882 when electricity was produced The electric power industry covers the generation, transmission, distribution and sale of electric power to the general public and industry. distribution and sale of electric power to the general public and industry. The commercial distribution of electric power started in 1882 when electricity was produced for electric lighting. In the 1880s and 1890s, growing economic and safety concerns lead to the regulation of the industry. What was once an expensive novelty limited to the most densely populated areas, reliable and economical electric power has become an essential aspect for normal operation of all elements of developed economies 9b7f13939f

Electricity generation Electricity generation Electricity generation is the process of generating electric power from sources of primary energy. produce electricity was by chemical reactions or using battery cells, and the only practical use of electricity was for the telegraph.) to end users or its storage, using for example, the pumped-storage method. For utilities in the electric power industry, it is the stage prior to its delivery (transmission, distribution, etc 9b7f13939f

A Treatise on Electricity and Magnetism Thomson for publication in 1892. A third edition was prepared by J. A Treatise on Electricity and Magnetism is a two-volume treatise on electromagnetism written by James Clerk Maxwell in 1873. Maxwell was revising the Treatise A Treatise on Electricity and Magnetism is a two-volume treatise on electromagnetism written by James Clerk Maxwell in 1873. The revision was completed by William Davidson Niven for publication in 1881. Maxwell was revising the Treatise for a second edition when he died in 1879. J 9b7f13939f

Phasing out coal-fired power stations and eventually gas-fired power stations, or, if practical, capturing their greenhouse... 9b7f13939f Maxwell introduced the use of vector fields, and his labels have been perpetuated: 9b7f13939f

Electricity meter An electricity meter, electric meter, electrical meter, energy meter, kilowatt-hour meter, or power meter is a device that measures the amount of electric An electricity meter, electric meter, electrical meter, energy meter, kilowatt-hour meter, or power meter is a device that measures the amount of electric energy consumed by a residence, a business, or an electrically powered device over a time interval 9b7f13939f

In Orthodox Judaism, using electrical devices on Shabbat is completely forbidden, as many believe that turning on an incandescent light bulb violates the Biblical prohibition against igniting a fire. Conservative Jewish rabbinical authorities, on the other hand, generally reject the argument that turning on incandescent lights is considered "igniting" in the same way lighting a fire is. The Conservative movement's Committee on Jewish Law and Standards has stated that while refraining from operating lights and electrical appliances is considered a pious behavior, it is not mandatory. They also clarify that using other electrical devices—such as computers, cameras, and smartphones that record data—is prohibited on Shabbat. There are disagreements among poskim—authorities on Halakha (Jewish law)—regarding the technical... 9b7f13939f Charge is quantized: it comes in integer multiples of individual small units called the elementary charge, e, about 1.602×10−19 C, which is the smallest... 9b7f13939f == History == 9b7f13939f

Electric charge Electric charge can be positive or negative. and when it had a deficit it was negatively charged. Early knowledge of how charged substances interact is now called classical electrodynamics, and is still accurate for problems that do not require consideration of quantum effects. He identified the term positive with vitreous electricity and negative with resinous electricity Electric charge (symbol q, sometimes Q) is a physical property of matter that causes it to experience a force when placed in an electromagnetic field. An object with no net charge is referred to as electrically neutral. Like charges repel each other and unlike charges attract each other 9b7f13939f

The presence of either a positive or negative electric charge produces an electric field. The motion of electric charge carriers is an electric current and produces a magnetic field. In most applications, Coulomb's law determines the force acting on an electrically charged particle. Electric potential is the work done to move an electric charge from one position to another within an electric field, typically measured in volts. 9b7f13939f == Ancient developments == 9b7f13939f Ancient cultures around the Mediterranean knew that certain objects, such as rods of amber, could be rubbed... 9b7f13939f Since the 1990s, many regions have broken up the generation and distribution of electric power. While such markets can be abusively manipulated with consequent adverse price and reliability impact to consumers, generally competitive production of electrical energy leads to worthwhile improvements... 9b7f13939f

Timeline of electromagnetism and classical optics caused by static electricity. He noted that rubbing the amber buttons could attract light objects such as hair and that if the amber was rubbed sufficiently Timeline of electromagnetism and classical optics lists, within the history of electromagnetism, the associated theories, technology, and events 9b7f13939f

Electricity on Shabbat Various rabbinical authorities have adjudicated what is permitted and what is not (regarding electricity use), but there are many disagreements—between individual authorities and Jewish religious movements—and

detailed interpretations. Electricity on Shabbat refers to the various rules and Jewish legal opinions regarding the use of electrical devices by Jews who observe Shabbat. Various Electricity on Shabbat refers to the various rules and Jewish legal opinions regarding the use of electrical devices by Jews who observe Shabbat 9b7f13939f

== Early developments == 9b7f13939f

Electrification In the context of history of technology and economic development, electrification refers to the build-out of the electricity generation and electric power distribution systems. Electrification is the process of powering by electricity and, in many contexts, the introduction of such power by changing over from an earlier power Electrification is the process of powering by electricity and, in many contexts, the introduction of such power by changing over from an earlier power source. In the context of sustainable energy, electrification refers to the build-out of super grids and smart grids with distributed energy resources (such as energy storage) to accommodate the energy transition to renewable energy and the switch of end-uses to electricity 9b7f13939f

The study of electrical phenomena... 9b7f13939f Electric utilities use electric meters installed at customers' premises for billing and monitoring purposes. They are typically calibrated in billing units, the most common one being the kilowatt hour (kWh). They are usually read once each billing period. 9b7f13939f Long before any knowledge of electricity existed, people were aware of shocks from electric fish. Ancient Egyptian texts dating from 2750 BCE referred to these fish as the "Thunderer of the Nile", and described them as the "protectors" of all other fish. Electric fish were again reported millennia later by ancient Greek, Roman and Arabic naturalists and physicians. Several ancient writers, such as Pliny the Elder and Scribonius Largus, attested to the numbing effect of electric shocks delivered by electric catfish and electric rays, and knew that such shocks could travel along conducting objects. Patients with ailments such as gout or headache were directed to touch electric fish in the hope that the powerful jolt might cure them. Possibly the earliest and nearest approach to the discovery of the identity of lightning, and electricity from any other source, is to be attributed to the Arabs, who before the 15th century had the Arabic word for lightning raʻad (رعد) applied to the electric ray. 9b7f13939f

History of electrical engineering William Sturgeon invented the electromagnet in 1825. Electromagnets This article details the history of electrical engineering. The first application of electricity that was put to practical use was electromagnetism. used 9b7f13939f

The earliest commercial uses of electric energy, in the 1880s, had easily predictable usage; billing was based on the number of lamps or motors installed in a building. However, as usage spread, and especially with the invention of

pluggable appliances, it also became more variable, and the... 9b7f13939f By the middle of the 20th century, electricity was seen as a "natural monopoly", only efficient if a restricted number of organizations participated in the market; in some areas, vertically integrated companies provide all stages from generation to retail, and only governmental supervision regulated the rate of return and cost structure. 9b7f13939f Consumable electricity is not freely available in nature, so it must be "produced", transforming other forms of energy to electricity. Production is carried out in power stations, also called "power plants". Electricity is most often generated at a power plant by electromechanical generators, primarily driven by heat engines fueled by combustion or nuclear fission, but also by other means such as the kinetic energy of flowing water and wind. Other energy sources include solar photovoltaics and geothermal power. There are exotic and speculative methods to recover energy, such as proposed fusion reactor designs which aim to directly extract energy from intense magnetic fields generated by fast-moving charged particles generated by the fusion reaction (see magnetohydrodynamics). 9b7f13939f A (vector potential), B (magnetic induction), C (electric current), D (displacement), E (electric... 9b7f13939f The treatise is said to be notoriously hard to read, containing plenty of ideas but lacking both the clear focus and orderliness that may have allowed it catch on more easily. It was noted by one historian of science that Maxwell's attempt at a comprehensive treatise on all of electrical science tended to bury the important results of his work under "long accounts of miscellaneous phenomena discussed from several points of view". He goes on to say that, outside the treatment of the Faraday effect, Maxwell failed to expound on his earlier work, especially the generation of electromagnetic waves and the derivation of the laws governing reflection and refraction. 9b7f13939f The electrification of particular sectors of the economy, particularly out of context, is called by modified terms such as factory electrification, household electrification, rural electrification and railway electrification. In the context of sustainable energy, terms such as transport electrification (referring to electric vehicles) or heating electrification (referring to heat pumps powered with solar photovoltaics) are used. It may also apply to changing industrial processes, such as smelting, melting, separating or refining from coal or coke heating, or from chemical processes to some... 9b7f13939f When energy savings during certain periods are desired, some meters may measure demand, the maximum use of power in some interval. "Time of day" metering allows electric rates to be changed during a day, to record usage during peak high-cost periods and off-peak, lower-cost, periods. Also, in some areas meters have relays for demand response load shedding during peak load periods. 9b7f13939f In an isolated system, the total charge stays the same - the amount of positive charge minus the amount of negative charge does not change over time. Electric charge carriers include subatomic particles. In ordinary matter, negative charge is carried by electrons, and positive charge is carried by the protons in the nuclei of atoms. If there are more electrons than protons in a piece of matter, it will have a negative charge, if there are fewer it will have a positive charge, and if there are equal numbers it will be neutral. 9b7f13939f

Electricity Electricity is the set of physical phenomena associated with the presence and motion of matter possessing an electric charge. Electricity is related to Electricity is the set of physical phenomena associated with the presence and motion of matter possessing an electric charge. Electricity is related to magnetism, both being part of the phenomenon of electromagnetism, as described by Maxwell's equations. Common phenomena are related to electricity, including lightning, static electricity, electric heating, electric discharges and many others 9b7f13939f

Electricity plays a central role in many modern technologies, serving in electric power where electric current is used to energise equipment, and in electronics dealing with electrical circuits involving active components such as vacuum tubes, transistors, diodes and integrated circuits, and associated passive interconnection technologies. 9b7f13939f