Car battery history

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An automotive battery, or car battery, is a rechargeable battery that is used to start a motor vehicle. Its main purpose is to provide an electric current to the electric-powered starting motor, which in turn starts the chemically-powered internal combustion engine that actually propels the vehicle.

From Lead-Acid To Lithium: A History of the Automotive Battery. How electric cars went from 20-mile golf carts to 300-mile road-trippers. And how 600 miles of range might be on the horizon. By...

History of the battery. A voltaic pile, the first chemical battery. Batteries provided the primary source of electricity before the development of electric generators and electrical grids around the end of the 19th century. Successive improvements in battery technology facilitated major electrical advances, from early scientific studies to the ...

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While there were small steps taken in battery progress in the early 1700s, the next major moment in the evolution of the battery came with Alessandro Volta, who in 1800 made several key discoveries that spurred progress on battery development. First, he identified that certain liquids generated a continuous flow of electrical power when used as a conductor. He also figured out that different metals acquire and release electrons at different rates (voltage potential). Finally, he discovered that he could increase total voltage by stacking his cells on top of one another.

These and other discoveries spurred further invention, culminating in the design of the first mass production battery by William Cruickshank in 1802. Cruickshank arranged zinc and copper plates in a sealed wooden box and immersed them in an electrolyte of brine. His and other batteries evolved over the ensuing years, but they all shared a common dilemma: they were all single use batteries, unable to be recharged.

Although significant progress was made in battery design from Plant?"s original designs in 1859 to the turn of the century, lead-acid batteries were not utilized in early vehicle systems. This was because most of those vehicles had no electrical demand while in operation and were started using some form of mechanical process, such as a crank system. As a result, there was no pressing need for the ability to store electrical capacity in those vehicles.

The electric starter was the development that changed the landscape and drove the need for stored electrical capacity in the vehicle. The first vehicle equipped with an electric starter in the US was the 1912 Cadillac. The self-starter was developed by Henry M. Leland and Charles Kettering at Cadillac, later purchased by General

Motors. Leland pushed Kettering to design an alternative to crank starting systems after another Cadillac engineer was hit in the head and killed by a starting crank when its engine backfired.

In the mid-teens, there were many starting mechanisms employed by automobiles, but, by 1920, most new vehicles were equipped with electric starters. This change quickly increased the need for a reliable power supply within the vehicle architecture, making the lead-acid battery an essential component of the automotive industry. In 1918, the Hudson Motor Car Company was the first to utilize a standard battery size as per BCI (Battery Council International) specifications. BCI battery group sizes are still used today (Group 24, Group 27, etc.).

During this period and into the 1950s, vehicle starting batteries and electrical systems were 6V systems. A major shift occurred in the 1950s, as larger cars and larger engines necessitated the greater power provided by 12V batteries and systems. We would suggest that this was last major change to battery/vehicle system design prior to the end of the 20th century.

That said, there were advancements during this period. A major step for vehicle owner convenience was the introduction in 1971 of the Delco-Remy Freedom Battery, the first maintenance-free lead acid battery used in an automotive application. The 1970s also saw the emergence of VRLA AGM batteries, though these were largely confined to specialty applications until recent years.

As can be seen by the parallel evolution of battery technology and vehicle design, developments in one often drive the need for opportunity to change in the other. The modern era is no different. As vehicle electrical demand increased in the 1990s and 2000s, driven by both an increase in in-cabin conveniences and an ever-growing electrical system, it was clear that the traditional lead acid battery was reaching its limit in terms of meeting system needs. This drove the need for new constructions and new chemistries.