# B2 BATTERIES

## HISTORY OF BATTERIES

CHEMICAL INDUSTRIES
RESOURCE PACK

Born: 18 February 1745
Birthplace: Como, Italy (then Lombardy)
Died: 5 March 1827
Best known as: The Italian who built the first battery

***Source: Wikimedia Commons***

***Picture of a painting by Giuseppe Bertini of Alessandro Volta demonstrating his battery to Napoleon in 1801***

***Source: Wikimedia Commons***

## Alessandro Volta

Count Alessandro Giuseppe Antonio Anastasio Volta was the Italian physicist who built the first electrochemical battery. He first gained fame across Europe in 1775 with his electrophorus, a charge-generating machine he built while teaching physics in his hometown of Como. He was appointed to the University of Pavia in 1779, where he continued his work with static electricity and built a number of gadgets. Volta's debate with anatomist Luigi Galvani about the nature of electricity in organic tissue (what Galvani called "animal electricity") caused him to experiment with metal plates, and in 1800 he succeeded in creating a sustained flow of electricity with his "voltaic pile," a stack of metal plates in a salt solution. The invention made Volta even more famous and he was called to France by Napoleon in 1801 to receive the first of many honours and decorations. The unit of measurement of electromotive force is called the volt in his honour and was adopted internationally in 1881.

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***Volta called his battery the Voltaic Pile. He stacked alternating layers of zinc, cardboard soaked in salt water, and silver. If you attach a wire to the top and bottom of the pile, you create an electric current because of the flow of electrons. Adding another unit will increase the voltage produced by the pile.***

***Source: Wikimedia Commons***

# The Leclanché cell

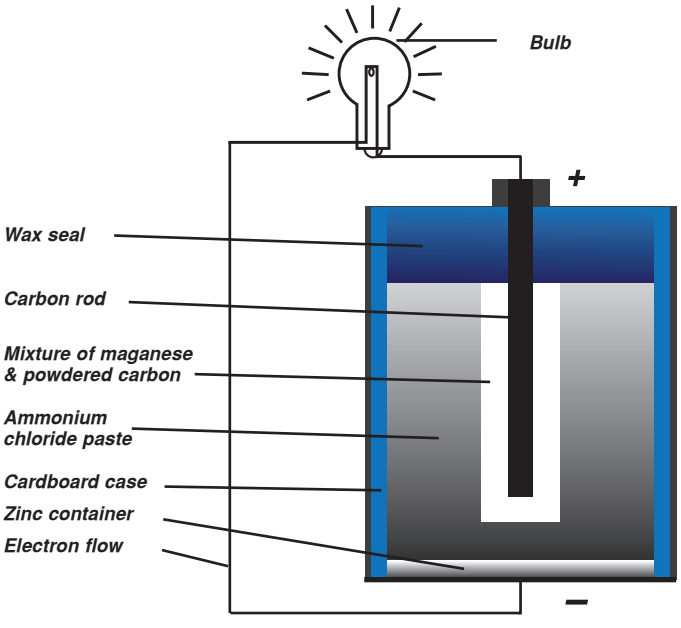
Batteries are items we use day in and day out. They make the seemingly impossible possible; they make appliances run without being connected to a power socket. It is like carrying electricity around in your pocket. The only catch here is that the device you want to use needs to be adaptable for battery usage. A battery is basically an electric cell that converts chemical energy into electricity. Some of the types of battery that we can't do without today include laptop batteries, cell phone batteries and automotive batteries.

The earliest documentation regarding electrochemical batteries dates back to 1800. Telegraph systems were using batteries in the 1830s and by the 1870s batteries had found widespread usage. The 1900s saw the usage of flashlights. The use of domestic radio receivers caught on in the 1920s.

The most common form of primary cell used is the Leclanché cell. The French chemist Georges Leclanché invented this type of cell in the 1860s. The popular name for this type of cell is a dry cell. The Leclanché cell used nowadays is surprisingly similar to its original version. The electrolyte in this cell is a mixture of ammonium chloride and zinc chloride in a paste-like form.

The negative electrode and the outside shell of the cell are made of zinc. The positive electrode is in the form of a carbon rod and is surrounded by a mixture of carbon and manganese dioxide. The voltage produced by a Leclanché cell is about 1,5 V.

## The Leclanché cell




*Source: Wisedude.com*



## The inside of a Leclanché cell.

*Photograph: René Toerien*

# The Baghdad Battery

The Baghdad Battery is believed to be about 2000 years old (from the Parthian period, roughly 250 BCE to CE 250). The jar was found in Khujut Rabu just outside Baghdad and is composed of a clay jar with a stopper made of asphalt. Sticking through the asphalt is an iron rod surrounded by a copper cylinder. When filled with vinegar – or any other electrolytic solution - the jar produces about 1,1 volts.

There is no written record as to the exact function of the jar, but the best guess is that it was a type of battery. Scientists believe the batteries (if that is their correct function) were used to electroplate items such as putting a layer of one metal (gold) onto the surface of another (silver), a method still practised in Iraq today.