Aqueous battery wikipedia

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The lead-acid battery was invented by Gaston Plant? in 1859, although the commercialization of the diluted sulphuric acid electrolyte design took twenty years of work by multiple inventors. After an additional half a century the modern valve-regulated ("sealed") batteries appeared in 1930s.[1]

Alkaline batteries first appeared at the turn of the 20th century with nickel-cadmium battery replaced by nickel-metal hydride one in the 1980s (the nickel-hydrogen battery was developed in the 1970s and is still used in the satellites).[1]

When compared to the lithium-ion batteries, the aqueous ones have the following advantages:[2][4][5]

In comparison to the lithium-ion batteries have the following drawbacks:[6][4]

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Aqueous Li-ion batteries have been of great interest for military use due to their safety and durability. Unlike the high voltage yet volatile non-aqueous Li-ion batteries, aqueous Li-ion batteries have the potential to serve as a more reliable energy source on the battlefield, because external damage to the battery would not diminish performance or cause it to explode. In addition, they are less heavy than traditional batteries and can be manufactured in different shapes, allowing for lighter gear and more efficient placement.[6]

The lower risk of danger that come with aqueous Li-ion batteries make them appealing for industries that manufacture vehicles that prioritize safety over energy density, such as airplanes and submarines.[8]

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