Lifepo4 battery review

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Lithium-ion batteries are in almost every gadget you own. From smartphones to electric cars, these batteries have changed the world. Yet, lithium-ion batteries have a sizable list of drawbacks that makes lithium iron phosphate (LiFePO4) a better choice.

Strictly speaking, LiFePO4 batteries are also lithium-ion batteries. There are several different variations in lithium battery chemistries, and LiFePO4 batteries use lithium iron phosphate as the cathode material (the negative side) and a graphite carbon electrode as the anode (the positive side).

LiFePO4 batteries have the lowest energy density of current lithium-ion battery types, so they aren"t desirable for space-constrained devices like smartphones. However, this energy density tradeoff comes with a few neat advantages.

One of the main disadvantages of common lithium-ion batteries is that they start wearing out after a few hundred charge cycles. This is why your phone loses its maximum capacity after two or three years.

LiFePO4 batteries typically offer at least 3000 full charge cycles before they begin to lose capacity. Better quality batteries running under ideal conditions can exceed 10,000 cycles. These batteries are also cheaper than lithium-ion polymer batteries, such as those found in phones and laptops.

Compared to a common type of lithium battery, nickel manganese cobalt (NMC) lithium, LiFePO4 batteries have a slightly lower cost. Combined with LiFePO4"s added lifespan, they are significantly cheaper than the alternatives.

Additionally, LiFePO4 batteries don"t have nickel or cobalt in them. Both of these materials are rare and expensive, and there are environmental and ethical issues around mining them. This makes LiFePO4 batteries a greener battery type with less conflict associated with their materials.

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The last big advantage of these batteries is their comparative safety to other lithium battery chemistries. You"ve undoubtedly read about lithium battery fires in devices like smartphones and balance boards.

LiFePO4 batteries are inherently more stable than other lithium battery types. They are harder to ignite, better handle higher temperatures and don"t decompose like other lithium chemistries tend to do.

The idea for LiFePO4 batteries was first published in 1996, but it wasn"t until 2003 that these batteries became truly viable, thanks to the use of carbon nanotubes. Since then, it"s taken some time for mass production to

ramp up, costs to become competitive, and the best use cases for these batteries to become clear.

It"s only been in the late 2010s and early 2020s that commercial products prominently featuring LiFePO4 technology have become available on shelves and on sites like Amazon.

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