Lto vs lifepo4 battery

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Both LTO and LiFePO4 batteries contain lithium, so are they similar, or are there any differences? There are a lot of differences. This article will detail the difference between LTO vs LiFePO4 battery pros and cons, and which one is more worth buying.

LiFePO4 is a kind of lithium-based battery, and its full name is lithium iron phosphate. LiFePO4 battery is famous for its deep cycle, the voltage is 3.2V. LiFePO4 also is characterized by high density, energy density higher than 250Wh/L, specific energy greater than 130Wh/Kg.

The working principle in lithium titanate vs lifepo4 is different. Each battery has two current collectors, an anode and a cathode, as well as a separator, electrolyte, and liquid. Each electrode (anode and cathode) contains lithium ions. The electrolyte acts as a medium via which positively charged lithium ions are transferred from the anode to the cathode by the separator.

Whenever lithium ions migrate, they release electrons in the anode. This generates a voltage at the positive collector. When you put a device into a live power outlet, electricity travels from the positive collector to the charged device and back to the negative collector. Lithium ions migrate back and forth between the positive and negative electrodes during charging and discharging.

LTO battery is a kind of lithium titanate, which is used as the negative electrode material of lithium ion battery, and can be combined with positive electrode materials such as lithium manganate, ternary materials or lithium iron phosphate to form a 2.4V or 1.9V lithium ion secondary battery.

The process of lithium ions from the positive electrode to the lithium titanate spinel structure material of the negative electrode is charging, while discharging is the movement in the opposite direction, back and forth, and completes the charging and discharging of the battery and the power supply to the load.

LTO vs LiFePO4 batteries differ greatly in energy, the latter has a higher energy level. The specific power of LiFePO4 battery is 1400-2400 W/kg, and that of lithium titanate battery is 750 W/kg. As well as the specific energy of LTO vs LiFePO4, lithium iron phosphate battery is better.

When comparing LTO vs LiFePO4 batteries, the LiFePO4 has a far longer lifespan 4000 times cycle life due to its superior lithium iron phosphate chemistry. These batteries are heat-resistant. They last long for applications with embedded systems or extensive runtimes.

Lithium titanate oxide is unstable due to its increased energy density, especially in high-temperature conditions. Life cycle of LTO battery is over 4000 cycles, but its self-discharge rate is 2-10% per month, LiFePO4 battery self-discharge rate is only 1-3.5%.

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So, in LTO vs LiFePO4 batteries, whether you choose lithium iron phosphate or lithium titanium, you’ll be getting a material that can keep your charge for a long time. Lithium iron phosphate has a 350-day shelf life. Lithium titanium lasts 300 days. From the perspective of self-discharge rate, LiFePO4 battery does not need to be recharged frequently.

When we compare the price of LTO vs LiFePO4 batteries, the LiFePO4 is superior. In this, you will find all the features that other batteries have at a reasonable price. Even more, compared to the LTO battery, it is affordable and efficient. Significantly, the LTO battery comes under a higher price tag which puts it on the downside.

If we look at LTO vs LiFePO4 batteries side by side, then it is clear that lithium iron phosphate batteries are more portable and lightweight, because of the energy density of LTO vs LiFePO4, lithium iron phosphate is 220-250Wh/L while LTO battery is only 130Wh/L. It weighs 50% lighter than lithium titanate batteries. So, if you want a portable battery, invest in LiFePO4 since it has a lightweight design.

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