

Lithium titanate battery disadvantages

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For high-end application scenarios, when cost is not considered as the main factor, of course, lithium titanate battery(LTO battery) are selected. Whether it is cycle life or charge and discharge, low temperature resistance is completely no problem. However, due to the relatively high price of raw material titanium, the price of LTObattery on the market is almost four times that of lithium iron phosphate batteries, which means that this battery will not be widely used in the market, but will only be used by a few high-precision batteries. sharp field applications.

Lithium titanate battery is a kind of negative electrode material for lithium ion battery – lithium titanate, which can form 2.4V or 1.9V lithium ion secondary battery with positive electrode materials such as lithium manganate, ternary material or lithium iron phosphate. In addition, it can also be used as a positive electrode to form a 1.5V lithium secondary battery with a metal lithium or lithium alloy negative electrode.

The test data shows that under the conditions of 6C charging, 6C discharging, and 100% DOD, the cycle life of the lithium titanate cell (LTO battery cell) exceeds 25 000 times, and the remaining capacity exceeds 80%. Its life; after the lithium ion titanate battery is grouped, the electrical performance is also quite excellent.

The potential of lithium ion titanate battery is higher than that of pure metal lithium, it is not easy to generate lithium dendrites, the discharge voltage is stable, and, therefore, the safety performance of lithium batteries is improved. Lithium titanate batteries have been tested and found that under severe tests such as acupuncture, extrusion, and short circuit, there is no smoke, no fire, and no explosion, and the safety is much higher than other lithium batteries.

Compared with carbon anode materials, lithium titanate batteries have a higher lithium ion diffusion coefficient and can be charged and discharged at high rates. While greatly shortening the charging time, the impact on the cycle life is small, and the thermal stability is also strong. The lithium titanate battery can be fully charged in about ten minutes.

Generally, electric vehicles will have problems when charging and discharging at minus 10 ?. lithium ion titanate battery has good wide temperature resistance and strong durability. It can be charged and discharged normally at minus 50 ? to minus 60 ?. In the north country, or in the hot south, the vehicle will not be affected by the "shock" of the battery, which eliminates the user's worries.

The price of lithium ion titanate battery is high (high production cost and high humidity control requirements), about \$1.6USD per watt-hour, and the gap between lithium iron phosphate battery and LTO battery is about \$0.4 USD per watt-hour.

Its characteristics are that it does not contain precious elements such as cobalt, the price of raw materials is



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low, and the resources of phosphorus and iron in the earth are abundant, so there will be no problem of supply. It has moderate operating voltage (3.2V), large capacity per unit weight (170mAh/g), high discharge power, fast charging and long cycle life, and high stability in high temperature and high thermal environments.

The charging and discharging electric energy conversion efficiency of lithium battery packs can be greater than 97%, and the charging and discharging electric energy conversion efficiency of lead-acid batteries is about 80%.

lithium iron phosphate material does not contain any heavy metals and rare metals, non-toxic, no pollution in production and use, in line with European RoHS regulations, is a green battery lithium battery. In experiments such as puncture, extrusion, overcharge, and short circuit, there is no explosion or fire.

The tap density and compaction density of lithium iron phosphate batteries are very low, resulting in low energy density of lithium ion batteries; the preparation cost of materials and the manufacturing cost of batteries are high, and the yield of batteries is low.

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