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Are lithium iron phosphate batteries the Stanley tumbler of grid storage applications?

By Shawn Wasim

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Utilities and battery storage project developers around the globe are switching from the widely used chemistry of nickel manganese cobalt (NMC) to lithium iron phosphate (LFP).

New on-demand webinar: Understanding the switch from nickel manganese cobalt to iron phosphate for grid storage applications

In this webinar, we dive into the implications of the switch regarding costs, system safety, lifetime, and more. We also explore the key applications that LFP would perform better than NMC for grid-scale applications.

Watch now

LFP isn't exactly the new kid in town, but it seems to be trending in a similar fashion to a certain stainless steel water vessel that took the internet by storm in 2023. Like the Stanley tumbler, LFP has been around for some time now, so why has it only now started to replace NMC? Let's explore some of the reasons behind the switch.

It's a more ethical and sustainable choice for the pending battery surge

One of the most important advantages of LFP lies in its positive environmental and humanitarian impact. In a switch to LFP batteries, the need for cobalt (a material often associated with hazardous mining conditions and, therefore, human rights issues) is greatly reduced. Cobalt is rare and difficult to source, and traditionally it has been mined by human workers. On the contrary, iron is readily available and doesn't require risking workers' lives to access it.

The demand for batteries is expected to surge in the coming years, and relying on a rare material that's unethical to obtain would pose a severe ethical and environmental challenge. The use of LFP helps with these concerns, offering a more humane and sustainable approach to battery production.

Higher heat tolerance means a lower risk of harmful incidents

Batteries using LFP offer great safety benefits compared to those using NMC. LFP batteries can withstand much higher temperatures, with a thermal runaway point of 518° Fahrenheit (F) compared to NMC's 410°F. This difference of 108° may not seem significant, but it greatly reduces the risk of overheating and causing harmful incidents like fire and explosions.

The higher tolerance to heat also means that LFP batteries are more resistant to thermal runaway when overcharged. Overall, the superior thermal stability of LFP batteries makes them a safer choice for various applications, including EVs and energy storage systems.

Lithium iron phosphate is a real money-saver

LFP batteries have become more cost-effective compared to NMC batteries primarily due to advancements in production scale and efficiency. Just a few years ago, NMC batteries were cheaper, but the cost dynamics have shifted with LFPs now being more affordable. This is partly due to increased production volume and improved supply chain management.

> **The enhanced longevity of LFP is another reason why manufacturers are increasingly turning to LFP batteries.**

This cost reduction has been facilitated by manufacturers recognizing the safety advantages of LFP batteries and shifting production accordingly, leading to a positive cycle of increased production, reduced costs, and higher demand.

The enhanced longevity of LFP is another reason why manufacturers are increasingly turning to LFP batteries, as they offer improved safety and longer-lasting performance, making them a more sustainable choice for various applications.

If you're interested in hearing even more about the differences between LFP and NMC batteries in a stationary storage application, watch our recent webinar The power within: Understanding the switch from nickel manganese cobalt to iron phosphate for grid storage applications.