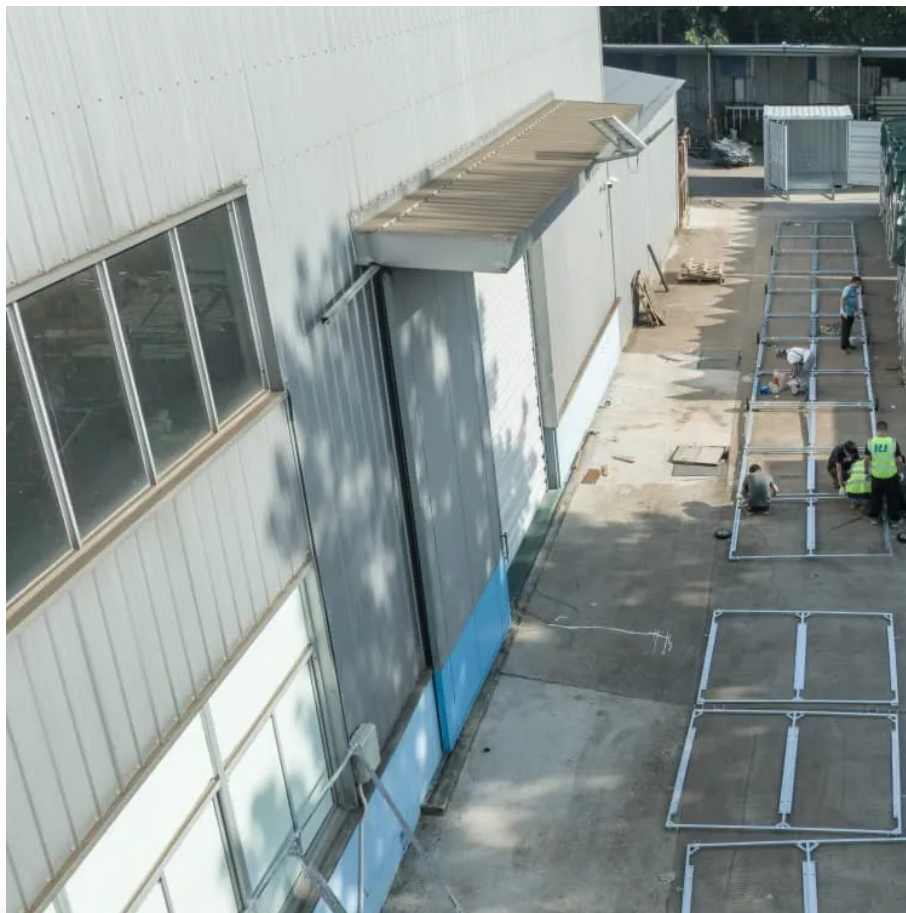


# **Phosphorus demand in energy storage batteries**





## Overview

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How much phosphorus does a lithium ion battery need?

Even at this early stage, the total phosphorus demand for power lithium-ion batteries (835.2 t P) exceeded that of consumer lithium-ion batteries (599.7 t P) driven by the significantly larger capacity and higher phosphorus content of individual power lithium-ion batteries.

Are lithium ion phosphate batteries the future of energy storage?

Amid global carbon neutrality goals, energy storage has become pivotal for the renewable energy transition. Lithium Iron Phosphate ( $\text{LiFePO}_4$ , LFP) batteries, with their triple advantages of enhanced safety, extended cycle life, and lower costs, are displacing traditional ternary lithium batteries as the preferred choice for energy storage.

How much phosphorus is in an electric battery?

This equates to about 25.5 kg phosphorus per electric battery (i.e.,  $(0.72 \text{ Mt lithium per year} / 126 \text{ M batteries per year}) \times 4.46$ ). Most countries are reliant on phosphorus imports to meet their food demands.

How will lithium-ion batteries affect phosphorus flow?

Phosphorus flows are disrupted by the emergence of  $\text{LiFePO}_4$  batteries. Phosphorus demand and loss are projected to continue rising. Recyclable  $\text{FePO}_4$  is estimated to meet 64.2 %–73.7 % of total demand by 2050. The advancement of the lithium-ion battery (LIB) industry poses pressures on resource availability and environmental protection.



## Phosphorus demand in energy storage batteries

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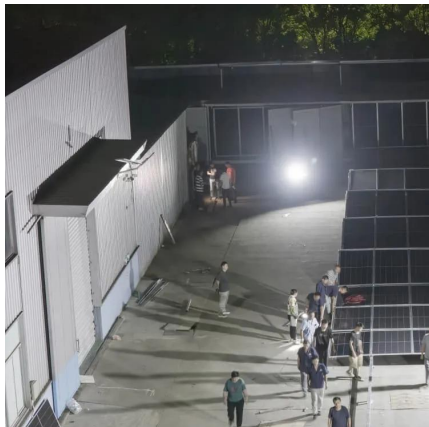
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