

New energy battery cabinet internal short circuit





Overview

Are internal short circuits a risk to lithium-ion batteries?

Internal short circuits constitute a significant risk to the safety and performance of lithium-ion batteries (LiBs). Internal short circuits are among the most problematic failure mechanisms in LiBs because of their ability to cause thermal runaway and catastrophic failure and inherent difficulty of detection.

What is an internal short circuit in a lithium ion battery?

Internal short circuits represent a crucial intermediate stage in the process leading from abuse to thermal runaway in lithium-ion batteries. The occurrence of an internal short circuit, or the cooling of the short circuit during the rapid heat production stage, determines whether thermal runaway will be triggered.

Does internal shorting cause thermal runaway in lithium-ion batteries?

Liu X, Zhou Z, Wu W et al (2022) Three-dimensional modeling for the internal shorting caused thermal runaway process in 20AH lithium-ion battery. *Energies* 15(19):6868-15. Wang C, Zhu Y, Zhang T et al (2024) Competition between discharge reaction and side reaction for anode's lithium during internal short circuit in lithium-ion batteries.

What happens if a battery has an internal short-circuit?

As a complex electrochemical system, the occurrence of an internal short-circuit in a battery leads to irreversible changes in the characteristics of its materials, potentially developing into thermal runaway. Figure 3 shows the evolution of an internal short-circuit and the stages of this process under typical abuse scenarios.



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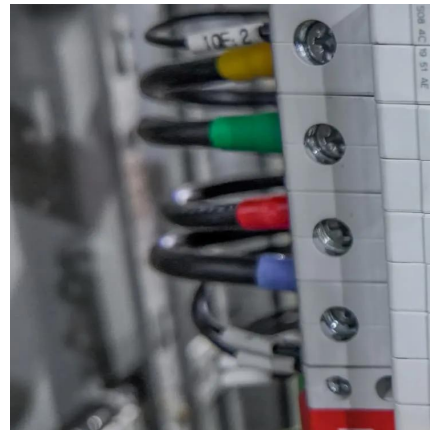
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Internal short circuit

An internal short circuit inside a battery occurs whenever there is direct electrical contact between the two electrodes (anode and cathode) within the battery that is not caused by the provided ...

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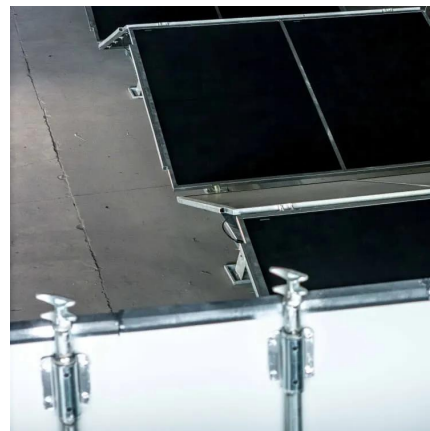


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