

Energy storage air cooling duct design scheme





Overview

What is duct cooling?

Duct cooling offers better adaptability to the geometry of cylindrical batteries without requiring complex installation or sealing measures. The duct is typically exposed, making it easy to inspect, maintain, and clean.

How do optimized duct arrangements improve temperature uniformity?

Furthermore, three optimized duct arrangements are proposed based on key design principles, including a combination of downstream and upstream flow, adjustment of inlet and outlet distribution, and a gradual change in pitch. These optimizations significantly enhance temperature uniformity, further reducing the temperature difference by 5.62 °C.

Do duct radius and pitch affect thermal management performance?

Conclusions The thermal management performance of an 18650-type cylindrical battery was studied numerically using direct refrigerant cooling with half-helical ducts. Based on this model, the effects of duct radius and pitch on cooling performance were investigated, and three optimized design schemes were proposed.

Is duct cooling better than cold plate cooling?

In contrast, cold plate cooling may result in nonuniform temperature distribution due to size and shape constraints. Therefore, duct cooling is more advantageous than cold plate cooling in terms of thermal management efficiency, temperature uniformity, cost-effectiveness, and structural design flexibility.



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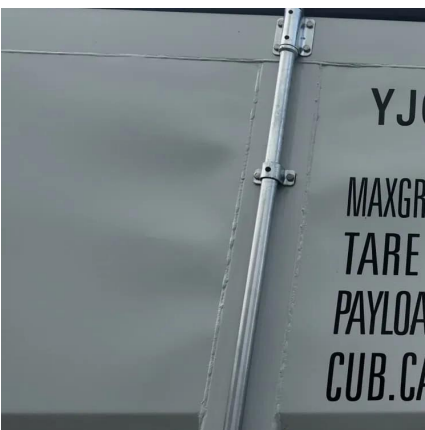
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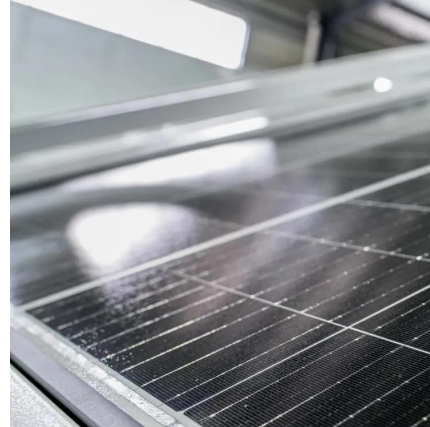


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