

Electrolytic aluminum builds energy storage power station





Overview

As the largest integrated “source-grid-load-storage” project in China’s electrolytic aluminum sector, the project has delivered multiple breakthrough achievements and set several industry records at home and abroad, marking a significant step forward in the industry’s green and low-carbon transition. How to design aluminum-based solid-state electrolytes?

When designing aluminum-based solid-state electrolytes, several key aspects need to be considered: (1) Ion transport behavior, the high charge density of aluminum ion results in relatively poor ion transport rate within solid-state electrolytes, which can limit the power density of AIBs.

Are aluminum-ion batteries suitable for grid-scale energy storage?

Currently, aluminum-ion batteries (AIBs) have been highlighted for grid-scale energy storage because of high specific capacity (2980 mAh g⁻³ and 8040 mAh cm⁻³), light weight, low cost, good safety, and abundant reserves of Al [1, 2].

How to change absorbed power of electrolytic aluminum load?

According to Fig. 1, adjusting the busbar voltage at the high voltage side, adjusting the tap of the on-load voltage regulating transformer and adjusting the voltage drop of the saturated reactor can all change the absorbed power of electrolytic aluminum load.

What is the load controllable characteristic model of electrolytic aluminum?

Load controllable characteristic model of electrolytic aluminum Electrolytic aluminum load is thermal storage load, short time adjustment has little influence on production, the power can be adjusted in the range of $\pm 25\%$, and the continuous operation for 4 h will not lead to electrolytic cell coagulation.



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