

Enhancing Thermal Conductivity and Performance of Aluminum Busbars for High-Voltage Battery Packs through Cryogenic Treatment

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Abstract: *The thermal conductivity of High Voltage (HV) battery pack bus bars is critical for efficient heat dissipation and overall performance. This study focuses on enhancing the thermal conductivity of aluminum bus bars through cryogenic treatment at ultra-low temperatures. The research investigates the effect of varying soaking periods during the cryogenic process on the thermal properties and microstructure of aluminum. By optimizing the cryogenic treatment process, the study aims to quantify the improvement in thermal conductivity, identify the best heat treatment approach, and determine the optimal soaking period that ensures sufficient thermal properties. The findings will contribute to improving the thermal performance and reliability of HV battery pack bus bars, addressing the growing demand for efficient thermal management in energy storage systems.*

Keywords: Cryogenic treatment, thermal conductivity, HV battery pack, aluminum bus bar, soaking period