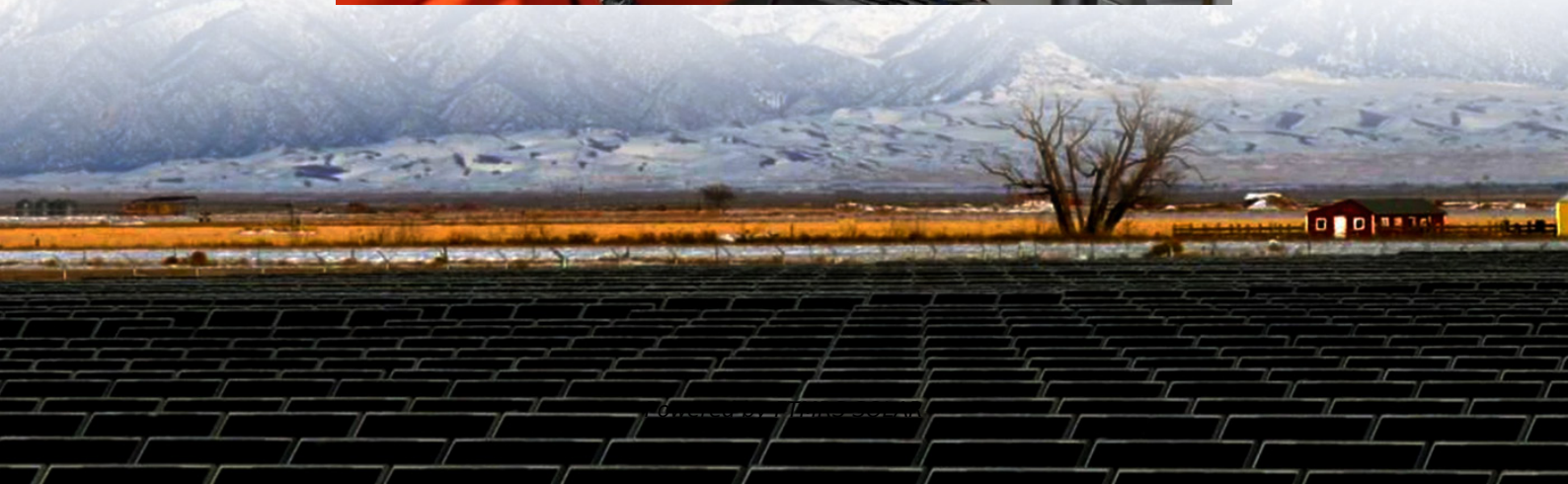
FTMRS SOLAR

Design of the second generation liquid cooling energy storage solution



Overview

What is a 5MWh liquid-cooling energy storage system?

The 5MWh liquid-cooling energy storage system comprises cells, BMS, a 20’GP container, thermal management system, firefighting system, bus unit, power distribution unit, wiring harness, and more. And, the container offers a protective capability and serves as a transportable workspace for equipment operation.

Where is the liquid cooling unit located?

The liquid cooling unit, firefighting system, confluence chamber, and power distribution room are located at one end of the cabin, with the liquid cooling unit taking up the majority of the space. The liquid cooling piping runs along the bottom of the cabin, while the firefighting piping and wiring are laid out at the top.

How to solve conjugate flow and heat transfer problem?

Control equation reconstruction The TO problem of conjugate flow and heat transfer is solved using density-based method. The basic principle behind this approach is to convert structural configuration into material permeability. In general, design variable γ is employed to differentiate the nonlinear distribution of solid and liquid domains.

Is a to-based design suitable for large-capacity energy storage battery pack?

For this purpose, there is a lack of investigation on the TO-based design for large-capacity energy storage battery pack. Furthermore, achieving optimization is associated with multi-objective functions, such as battery temperature uniformity, coolant heat transfer rate, and pump consumption.

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