

PDEOZE PowerContainer

HVAC equipment for large-scale energy storage projects



Overview

Why do buildings need a storage system for heating & cooling?

Throughout the United States, more than 100 million buildings tap into electrical energy to keep heating, ventilation, air conditioning and refrigeration units functioning. HVAC systems cause most of the peak load demand on the electric grid; one way to alleviate the grid burden is to develop new storage options for heating and cooling.

What is thermal energy storage?

Thermal energy storage (TES) is one of several approaches to support the electrification and decarbonization of buildings. To electrify buildings efficiently, electrically powered heating, ventilation, and air conditioning (HVAC) equipment such as a heat pump can be integrated with TES systems.

What are the different types of HVAC storage systems?

The storage medium determines how large the storage tank will be and the size and configuration of the HVAC system and components. Storage technologies: These include chilled water tanks, ice systems, and phase-change materials. Overall, ice systems offer the densest storage capacity but the most complex charge and discharge equipment.

Is space heating and cooling a viable energy storage solution?

Space heating and cooling account for up to 40% of the energy used in commercial buildings.¹ Aligning this energy consumption with renewable energy generation through practical and viable energy storage solutions will be critical to achieving 100% clean energy by 2050.

What is a cool storage system?

Cool storage systems are inherently more complicated than non-storage systems and extra time will be required to determine the optimum system for a given application. In conventional air conditioning system design, cooling

loads are measured in terms of "Tons of Refrigeration" (or kW's) required, or more simply "Tons".

How many types of thermal energy storage systems are there?

The STES systems are typically categorized in four types (as shown in Fig. 4): hot water thermal energy storage (HTES), gravel-water thermal energy storage (GWTES), borehole thermal energy storage (BTES) and aquifer thermal energy storage (ATES). Fig. 4. Type map of USTES.

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