

What are heat storage methods for solar-driven cross-seasonal heating?

Heat storage methods for solar-driven cross-seasonal heating include tank thermal energy storage (TTES), pit thermal energy storage (PTES), borehole thermal energy storage (BTES), and aquifer thermal energy storage (ATES) 14, 15, 16. As heat storage volume increases, hot water preparation costs and heat loss per unit volume decrease.

Can solar thermal energy be used for cross-seasonal heating?

The increase in the tank temperature at the end of the heating period was beneficial for shortening the duration of the heat storage period for the following year. The feasibility of utilizing solar thermal energy and cascaded phase change heat storage for cross-seasonal heating has been demonstrated in this study.

Do seasonal solar thermal energy storage systems have dynamic charging/discharging performance?

The dynamic charging/discharging performance of the seasonal solar thermal energy storage system has been simulated and analyzed by using the real weather data and the practical domestic heating demand. The optimal parameters of the equipment have been identified.

What is seasonal thermal energy storage (STES)?

The applications of seasonal thermal energy storage (STES) facilitate the replacement of fossil fuel-based heat supply by alternative heat sources, such as solar thermal energy, geothermal energy, and waste heat generated from industries.

This study aims to utilize solar energy and phase change thermal storage technology to achieve low carbon cross-seasonal heating. The system is modelled using the open source ...

Plateau cold regions are characterized with harsh climate conditions and challenging transportation. According to the climate characteristics and indoor load demands in such regions, a ...

The mismatch between solar radiation resources and building heating demand on a seasonal scale makes cross-seasonal heat storage a crucial technology, especially for plateau areas. Utilizing ...

The prospects of solar heating in China are promising, but solar energy's intermittency and variability challenge its alignment with winter heating demands. Seasonal thermochemical ...

The needed solar collector areas of the seasonal thermochemical energy storage system decrease by up to 2/3 compared with those of a water storage tank system in the condition of the ...

In the high-cold and high-altitude area in western China, due to the abundant solar energy and hydropower resources, the use of electric auxiliary cross-season solar heat storage ...

A novel solar heating system with seasonal and cascade thermal-energy storage based on zeolite water is

proposed in this study. The system's efficiency is improved through cascade ...

ABSTRACT A novel solar trans-seasonal thermal storage ground source heat pump system is proposed, building upon the tank temperature-controlled solar trans-seasonal thermal ...

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