

With this aspect ratio, a staggered heat exchanger with an energy storage capacity of 1800 kJ was designed, as shown in Fig. 14. The total PCM volume was 0.01 m<sup>3</sup> for different structures. During energy storage, the heat transfer fluid (HTF) whose temperature was higher than the melting point of paraffin entered the heat exchanger.

Convective heat transfer coefficients on the inside of the TES tank [W/(m<sup>2</sup> · K)] a in. ... Levelised cost of storage for pumped heat energy storage in comparison with other energy storage technologies. Energy Convers. Manag., 152 (2017), pp. 221-228, 10.1016/j.enconman.2017.09.047.

The new LHS heat exchanger can achieve the functions of heat storage, heat release, and simultaneous heat supply and storage, which can better solve the intensity mismatch of renewable energy. The new device has a broad range of applications due to its independent cold and hot fluid channels.

Abstract. Phase change materials (PCMs) are promising for storing thermal energy as latent heat, addressing power shortages. Growing demand for concentrated solar power systems has spurred the development of latent thermal energy storage, offering steady temperature release and compact heat exchanger designs. This study explores melting and ...

Abstract. Performance of a novel ultracompact thermal energy storage (TES) heat exchanger, designed as a microchannel finned-tube exchanger is presented. With water as the heating-cooling fluid in the microchannels, a salt hydrate phase change material (PCM), lithium nitrate trihydrate (LiNO<sub>3</sub> · 3H<sub>2</sub>O), was encased on the fin side. To establish the ...

Table 3 Specifications of the energy storage heat exchanger. Net thermal capacity (latent) per unit Dimensions of one unit (outer) L · W · H [m] PCM weight per unit Number of plates Heat exchange surface area per one plate ...

There are three categories of TES systems: sensible heat energy storage, ... Validation of a CFD model for the simulation of heat transfer in a tubes-in-tank PCM storage unit. Renew. Energy, 89 (2016), pp. 371-379, 10.1016/j.renene.2015.12.038. View PDF View article View in Scopus Google Scholar [8]

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