

As latent heat energy storage (LHES) represents a solution for many problems of energy, therefore it has become under focus for enhancement. ... météorologiques de la région de Ouagadougou et ...

Chapter One - Effect of thermal storage and heat exchanger on compressed air energy storage systems. Author links open overlay panel Huan Guo a b, Yujie Xu a b, Mengdi Yan d, ... Analysis of an integrated packed bed thermal energy storage system for heat recovery in compressed air energy storage technology. Appl. Energy, 205 (2017), pp. 280-293.

Compressed-air energy storage (CAES), which epitomizes large-scale physical energy storage technologies, is important in addressing contemporary energy and environmental challenges [1].Adiabatic CAES (A-CAES) has clear advantages over other CAES types, including nonadiabatic, adiabatic, and isothermal CAES systems, owing to its superior efficiency, carbon ...

Heat transfer augmentation in single and multiple (cascade) phase change materials based thermal energy storage: Research progress, challenges ... The TES can be classified as sensible thermal energy storage (STES), latent thermal energy storage (LTES), and thermochemical energy storage (TCES).

To overcome this drawback, it is required to speed up the heat transfer process and conductivity of the storage material. Latent Heat Thermal Energy Storage Systems (LHTESS) have been optimized using various techniques, as shown in Fig. 3. These techniques include increasing heat transfer surfaces by redesigning heat exchange surfaces and fins ...

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Interesting results were also obtained by Murray and Groulx, who created an experimental setup to study the heat transfer and phase change behavior of a PCM inside a vertical cylindrical latent heat energy storage system, during consecutive and simultaneous cycles of charging and discharging. They found that the effect of natural convection was ...

In concentrating solar power systems, for instance, molten salt-based thermal storage systems already enable a 24/7 electricity generation. The use of liquid metals as heat transfer fluids in thermal energy storage systems enables high heat transfer rates and a large operating temperature range (100°C to >700°C,

depending on the liquid metal).

The heat transfer coefficient of a heat exchanger is easily affected by the heat flow rate (corresponding to the load rate of compression/power generation) while working on the off-design condition. Therefore, based on the heat transfer equation in, this section establishes an off-design model of heat exchanger in charge and discharge process.

Renewable energy has attracted increasing attentions and developed rapidly [1], and it will need to grow more strongly in the future [2]. However, the intermittently and volatility of the renewable energy such as wind and solar energy brings severe challenges for power generation and grid connection [3, 4] introducing the energy storage system to storage the ...

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