

The transition towards a low-carbon energy system is driving increased research and development in renewable energy technologies, including heat pumps and thermal energy storage (TES) systems [1]. These technologies are essential for reducing greenhouse gas emissions and increasing energy efficiency, particularly in the heating and cooling sectors [2, 3].

The heat pump is capable of space cooling, space heating, water heating, and chilled water production, and can store thermal energy from air exiting the condenser. Particularly, this IHP will be combined with an innovative two-stream liquid desiccant (LD) system for dehumidification and latent energy storage.

The heat from solar energy can be stored by sensible energy storage materials (i.e., thermal oil) [87] and thermochemical energy storage materials (i.e.,  $\text{CO}_3\text{O}_4/\text{CoO}$ ) [88] for heating the inlet air of turbines during the discharging cycle of LAES, while the heat from solar energy was directly utilized for heating air in the work of [89].

2. The heat supply system coupling a passive phase change energy storage sunlight room and an air source heat pump according to claim 1, wherein each phase change heat storage module (1) is made of stainless steel by welding, with a heat absorption coating on its outer surface, and phase change materials being filled therein; and the phase change materials are prepared ...

According to the Energy Saving Trust, an air source heat pump in a three-bedroom semi-detached house could save households £240 a year compared to an old inefficient gas boiler ... Old electric storage heaters: £1,000: £1,700: New electric storage heaters: £600: £1,100: Old (G-rated) oil boiler: £410: £800: New (A-rated) oil boiler: £65 ...

In recent years, heat pump technology has become more and more popular in HVAC systems all over the world with the advantages of high efficiency and environmental protection [3]. The heat pump is capable of using low-grade energy and is easy to combine with renewable energy, which has the potential to become an ideal solution for building energy ...

Energy Model to Evaluate Thermal Energy Storage Integrated with Air Source Heat Pumps . Preprint . Conrado Ermel, 1. Marcus V.A. Bianchi, 1. and Paulo S. Schneider. 2. 1 National Renewable Energy Laboratory 2 Federal University of Rio Grande do Sul . Presented at the 2022 Buildings XV International Conference Clearwater Beach, Florida December ...

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## Air energy heat pump heat storage

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