

Thermo-economic optimization of an ice thermal energy storage system for air-conditioning applications. *Energy Build*, 60 (2012), pp. 100-109. Google Scholar. Sanaye, Shirazi, 2013. S. Sanaye, A. Shirazi. Four E analysis and multi-objective optimization of an ice thermal energy storage for air-conditioning applications.

Compared with the traditional water storage air-conditioning, the CWS+THIC system can save 64.3% of the cold storage volume. Romanchenko et al. (Romanchenko, Nyholm, Odenberger, & Johnsson, 2021) got the conclusion that applying both the demand-side flexibility and a centralized TES is complementary from the heating system perspective in that ...

The CES system is often called LAES (Liquid Air Energy Storage) system, because air is generally used as the working fluid. However, in this article CES system is used instead, because this system ...

Considering the huge power consumption, rapid response and the short-term heat reserving capacity of the air conditioning load in the building's energy system, the air conditioning load and its system can be equivalent to the virtual energy storage device for the power grid. Therefore, to obtain a high matching building renewable energy system, a virtual ...

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].

@article{Adedeji2022ImprovementOA, title={Improvement of a liquid air energy storage system: Investigation of performance analysis for novel ambient air conditioning}, author={Michael Adedeji and Muhammad Abid and Mustafa Dagbasi and Humphrey Hugh Adun and Victor Olalekan Adebayo}, journal={Journal of Energy Storage}, year={2022}, url={https ...

The virtual energy storage under air conditioning and building coupling can improve operation efficiency and reduce energy consumption, particularly gas consumption, by adjusting the air conditioning cooling and heating load in Scenario 2. The lower energy consumption makes the primary energy saving rate and carbon dioxide emission reduction ...

1. Introduction. Energy-related issues such as global warming and environmental pollution have been a rising concern over the last few decades. The buildings sector contributes a significant portion to such issues due to the use of air-conditioning for generating thermal comfort [1]. Air-conditioning systems are typically designed to meet the peak demand, which is ...

Air energy storage air conditioning

energy consumption for Jaipur weather conditions in peak summer are estimated. An overall saving of 7-17% in energy consumption during peak summer months and shifting of about 5-10% of energy demand from peak hours to off-peak hours is possible with the proposed system. Keywords Air-conditioning · PCM · Cold energy storage · Energy saving

Liquid air energy storage (LAES) is a grid-scale energy storage technology that utilizes an air liquefaction process to store energy with the potential to solve the limitations of pumped-hydro and ...

Thermal-Energy-Storage Air-Conditioning (TES-AC), a sustainable form of Air-Conditioning (AC) operates by storing thermal energy as chilled water when energy demand is low during nighttime. Later it uses the stored thermal energy during the daytime to cool the indoor air of the building the next day. However, the stored thermal energy in the ...

This thermal energy storage air-conditioning system is mainly composed of an air source heat pump (ASHP), an energy storage tank, a circulating water pump, an air handle unit (AHU), and a variable air volume box (VAV box), fan coils and control system. Three air-conditioning systems can be realized based on the experimental platform, including ...

This work presents findings on utilizing the expansion stage of compressed air energy storage systems for air conditioning purposes. The proposed setup is an ancillary installation to an existing ...

Thermal-Energy-Storage Air-Conditioning (TES-AC), a sustainable form of Air-Conditioning (AC) operates by storing thermal energy as chilled water when energy demand is low during night-time.

Solar air conditioning is an important approach to satisfy the high demand for cooling given the global energy situation. The application of phase-change materials (PCMs) in a thermal storage system is a way to address temporary power problems of solar air-conditioning systems.

The use of conventional air conditioning systems contributes to significant fossil fuel energy consumption and CO₂ emissions. Therefore there is a need to produce a new technology that reduces CO₂ emissions and fuel consumption. Liquid N₂ /Air have been acknowledged as energy storage vector with high energy density of 770 kJ/kg. This energy ...

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