

Multi-scale collaborative modeling and deep learning-based thermal prediction for air-cooled data centers: An innovative insight for thermal management

Introducing real-time energy consumption into the automatic control of air-conditioning can effectively improve energy-saving of indoor environments. Existing methods for predicting ...

This review presents the previous works on thermal energy storage used for air conditioning systems and the application of phase change materials (PCMs) in different parts ...

In HVAC systems, "control" refers to the process of monitoring, adjusting, and managing key system parameters to ensure stable operation according to the specified ...

The invention discloses a method for predicting virtual energy storage potential of an air conditioner based on a region-temperature-time model. The method comprises the following ...

A energy-storage tank is widely used as an effective device to solve this problem, and its flexible use can help to improve the operating efficiency of air ...

Thermal energy storage air conditioning (TES-AC) systems are considered to be a promising solution for reducing energy consumption and greenhouse gas emissions in ...

This research study delves into demand prediction of load within the systems of air conditioning, with a specific focus on the air-conditioning system of the thermal electricity...

These buildings can forecast weather, ambient temperature, and sun irradiation and can modify heating, ventilation, and air conditioning (HVAC) operations appropriately, ...

A case study in the field of sustainability energy: transient heat transfer analysis of an ice thermal storage system with boiling heat transfer process for air-conditioning application

The results indicate that, guided by time-of-use electricity pricing, the virtual energy storage effectively reduces the air conditioning load during high and peak tariff periods ...

This paper aims to develop a new HVAC ultra-short-term energy consumption prediction model. To achieve this goal, this paper first conducted potential rule analysis and ...

This review presents the previous works on thermal energy storage used for air conditioning systems and the application of phase change materials (PCMs) in different parts of the air ...

An ENN model is developed for a thermal energy storage air-conditioning system. Both load forecasting and TES prediction is established. A demand response is implemented by field test ...

This paper aims to develop a new HVAC ultra-short-term energy consumption prediction model. To achieve this goal, this paper first conducted ...

Based on historical operational data, we establish both the energy consumption model of the ice storage air-conditioning system (ISACS) and the DOS model. Subsequently, ...

The resultful energy saving of central air-conditioning (CAC) plays a key role in the overall energy saving of large public buildings. And the optimization of air conditioning ...

The results indicate that, compared to existing methods for predicting the cooling load of ice-storage air conditioning, the proposed model achieves a prediction accuracy of ...

The energy efficiency of the ice storage air conditioning system is related to the heat exchange effect on the evaporator side. Excess ice will reduce the cooling efficiency of ...

The purpose of this research is to make facility managers more inclined to use the greener and more sustainable TES-AC to reduce energy consumption and management costs while ...

Abstract Chilled water storage offers a cost-effective and convenient solution for load flexibility of air-conditioning systems. However, its impacts on system flexibility and energy ...

Explore the exciting future of air conditioning: from cutting-edge technologies to eco-friendly innovations, cooling systems are evolving for ...

Predictive Maintenance of Thermal-Energy-Storage Air-Conditioning with Deep Learning Smart Predictive Facility Management and Maintenance for Charging Load Prediction of Thermal ...

As an energy storage system on the user side, active thermal energy storage (ATES) for air-conditioning systems implements DR by reasonably using the fluctuating ...

The invention belongs to the cross field of building energy management and artificial intelligence, and particularly relates to an ice storage air conditioner optimal scheduling method based on ...

After broad applications of MPC in industrial applications for process control, it has been gaining ground in

the field of Heating Ventilation and Air-conditioning (HVAC). ...

The invention relates to the technical field of energy conservation of ice-storage air conditioners, in particular to an energy conservation prediction method and device of an ice-storage air ...

The mass introduction of renewable energy is essential to reduce carbon dioxide emissions. We examined an operation method that combines the surplus energy of photovoltaic power ...

Abstract This research addresses the challenges in Thermal-Energy-Storage-Air-Conditioning (TES-AC) systems by developing a machine learning model for predicting the necessary water ...

In this paper, the air conditioners (ACs) are aggregated into a virtual energy storage system (VESS) by employing an electric model of the ACs. A simple mathematical ...

In the field of AI prediction and optimization research pertaining to PCM energy storage, the most prevalent methods are artificial neural networks (ANN), genetic algorithms ...

Therefore, this study aims to develop an energy consumption prediction model for energy storage air conditioning systems that ensures high accuracy for both single-step and ...

Abstract This research focuses on the development of a machine learning model for predicting the water volume that needs to be chilled in Thermal-Energy-Storage-Air ...

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