Performance parameters of solar air conditioner

What is the performance of a solar photovoltaic thermoelectric air conditioner?
The performance of a solar photovoltaic thermoelectric air conditioner was experimentally studied. The COP of the air conditioner is estimated to be 1.14at a PV current of 4.28 A and air flowrate of 14.40 m 3 /h. Random vector functional link approach was employed to model the solar air conditioner.

Can solar PV air-conditioners reduce primary energy consumption?
Solar PV air-conditioners (PVAC) can contribute extensively to the energy self-sufficiency of buildings and thus to the reduction of primary energy consumption. The paper introduces a universal method to evaluate PVAC performance based on the Chinese national standards for climates and building types.

Can a microclimate solar cooling system improve human thermal comfort?
This research introduces a microclimate solar cooling system to enhance human thermal comfortand reduce electrical grid energy-based consumption. A novel solar photovoltaic thermoelectric air conditioner (SPVTEAC) for local air conditioning of a 1.0 m 3 compartment was experimentally examined under several interior cooling loads.

How rvfln-WWO predict solar air conditioner performance?
Random vector functional link approach was employed to model the solar air conditioner. White whale optimizer was utilized to explore the optimal structure of random vector network. RVFLN-WWO had a unique accuracy in predicting the performance of the solar air conditioner.

Does a solar photovoltaic thermoelectric air conditioner provide thermal comfort?
In this work,a solar photovoltaic thermoelectric air conditioner (SPVTEAC) is experimentally established and assessed to provide the simultaneous thermal comfortof local air conditioning of 1.0 m 3 compartment was experimentally examined under several interior cooling loads changing from 65.0 to 260 W.

How efficient is Sol DAC compared to other desiccant air conditioning systems?
Moreover,it is observed that due to the use of M-cycle,the whole Sol-DAC system is around 60-65 % more efficientthan the other desiccant air conditioning system in terms of COPth providing the same inlet conditions and regeneration temperature.

Fig. 1 illustrates the novel solar thermoelectric air conditioner with hot water supply system proposed for space cooling and hot water supply. As shown in Fig. 1, the solar thermoelectric air conditioner with hot water supply (STACHWS) is divided into three parts: (1) the air part, (2) the TEC modules part, and (3) the water part.

Yin et al. [13] conducted an experimental study on the performance of a mini-type solar absorption cooling

system driven by vacuum tube collectors applied to a ceiling radiant air conditioning system with independent control of temperature and humidity. The results show that the introduction of the solar cooling system could reduce electricity ...

In the present paper, a solar-driven air-conditioning system comprising silica gel-coated concentric tube heat exchanger is fabricated and analyzed experimentally. The setup consists of two concentric tube heat exchangers with silica gel coating to achieve continuous dehumidification of the humid air. Parabolic trough-type solar collector is used as air heater to ...

Additionally, a solar combi-system which includes heating and cooling, allows collectors to be used year-round, improving the economic performance of the system. Air conditioning systems driven by solar energy can save primary energy and reduce peak power consumption, which is particularly important for utility providers in the summer months.

V. Vakiloroaya et al [18], [19] proposed and analysed a hybrid solar air-conditioning (HSAC) system having a heat exchanger installed in between the compressor and the condenser of standard vapour compression cycle. In this arrangement the refrigerant coming from the compressor is getting further superheated in the heat exchanger is claimed that this ...

ASHP model (Type 665) embedded in TRNSYS was used to simulate the performance of the air-conditioner system. The COPs of the above-mentioned ASHP in different operating conditions were provided by the manufacturer and were set as the inputs of Type 665. The load power of vapor compression air-conditioners can be expressed: (14) P AC = Q AC COP

Keywords Solar air heater · Inclined ribs · Heat transfer · Performance optimization · Thermal eciency Abbreviations CFD Computational uid dynamics SAH Solar air heater THPP Thermo-hydraulic performance parameter ASHRAE American society of heating, refrigerating and air-conditioning engineers List of symbols H Depth of the conduit (mm)

The average global temperature has increased by approximately 0.7 °C since the last century. If the current trend continues, the temperature may further increase by 1.4 - 4.5 °C until 2100. It is estimated that air-conditioning ...

A solar air conditioner driven by PV panels was developed. An air conditioner using ac power source with 200W rated input power was driven directly by 430Wp solar PV module. ... The influence of most of the parameters which may affect the performance of absorption air conditioning system has been studied under the climatic conditions of Iraq ...

Huang et al. [9] designed the stand-alone solar photovoltaic (PV) air conditioner. They designed the six air conditioners and connected with the solar PV through an inverter. ... The performance parameters of solar

milk refrigerator are calculated for 25 °C, 30 °C, 35 °C, and 40 °C. These temperatures were achieved in environment chamber ...

Decoupling cooling and ventilation tasks with an existing air conditioning methodology are a promising performance-enhancement technology. In this direction, different configurations of a desiccant-integrated independent ventilation element attached to a conventional cooling system are proposed in this study. This work establishes a quantitative ...

Major contribution of this research is to predict system level performance parameters of a Solar Assisted Desiccant Air Conditioning (Sol-DAC) system using Radial Basis Function Neural Network (RBF-NN) under ...

Various performance parameters in accordance with the International Energy Agency IEC 61724 standard were calculated from the measured results, ... the program for the promotion and use of renewable energy. In addition, the discussion of load management activities of solar air conditioners to reduce energy consumption, dependence on the ...

Energy consumption by air conditioners in buildings is 57% around the globe. However, particularly in Thailand percentage of energy consumption is 18.6% by bus stations due to the massive tourism.

The solar fraction and collector efficiency are considered as key performance indicators to evaluate and compare the system"s effectiveness. Then the optimization of system parameters is performed for all four cases (EGTC C1 & C2 and FPC C1 & C2) based on these key performance indicators, all configurations integrated with a fixed synthetic building cooling load.

The photovoltaic system not only supplies the energy needed for air conditioning, it can also effectively alleviate the dependence of air conditioning on the grid and improve the independence of the system. In addition. Liu [4] studied the performance of photovoltaic air conditioning in a hot-summer region. The group found that the power-saving ...

Energy consumption of buildings occupies a large proportion of energy consumption all over the world (Gaglia et al., 2019, Amasyali and El-Gohary, 2018); this is 42-45% of the total energy consumption in countries with more industries (Ma et al., 2017, Allouhi et al., 2015).Among others, the energy consumption of air conditioning (AC) systems is more ...

Allouche et al. [54] devised a dynamic model using the Transient System Simulation program (TRNSYS) to conduct a comprehensive performance evaluation of a solar-driven air conditioning system featuring an integrated PCM type of RT15 as a cold storage component, as shown in Fig. 14. They investigated the ramifications of incorporating cold ...

Performance parameters of solar air conditioner

The performance of the split air-conditioning system can be improved by retrofitting ECS with condensing unit. ... The energy consumption of ECS can be reduced by optimising the performance parameters [166] and adopting various sustainable ... Experimental performance analysis of a solar evaporative cooler with three different types of pads. J ...

Before we start, we need to understand what HVAC is. HVAC (Heating, Ventilation, & Air Conditioning) is a technology system for maintaining the necessary requirements for temperature, humidity and air purity in an indoor space.This definition is applicable for any closed premises in which it is meant the presence of a person, animals, plants.

Performance parameters of solar air conditioner

WhatsApp: 8613816583346