

What is solar chimney technology for power generation?

Solar chimney technology for power generation is one of the solar energy harvesting techniques where the direct and dispersed solar radiations are absorbed in the solar chimney power plant. The effectiveness of solar chimneys has been proven for power generation, and it is a promising approach to future energy generation plans.

How do solar chimney power plants work?

Solar chimney power plants are simple thermal power plants that can convert solar energy to thermal energy in the collector and transform it to mechanical energy in a turbine. The received radiant energy from the collector is converted into thermal energy where the air flows through the collector and chimney.

Are solar chimney power plants a reliable source of renewable electricity?

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Author to whom correspondence should be addressed. This research presents a comprehensive review of solar chimney power plants (SCPP) as a reliable source of renewable electricity generation.

Can a solar chimney power plant increase the temperature of air?

They indicated to utilize the excess heat from the nuclear power plant and use it in the collector of the solar chimney power plant to increase the temperature of the air within it. They used CFD model and thermal analysis to estimate the overplus heat from the nuclear power plant.

What is the thermal efficiency of solar chimney power plants?

They showed that the total thermal efficiency of the combined nuclear and solar chimney power plants was 8.7%. Li et al. [40] proposed a new model for a collector to combine the solar chimney with the agricultural production. They did this work experimentally and numerically.

How to design a solar chimney power plant?

They demonstrated that the diameter and height of the chimney are the most important factors in the design of solar chimney power plant. Many researchers investigated the size and angle of the chimney and collector. It is better to suggest some algorithm optimization like PSO, MDO and hybrid methods to improve the power plant.

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This research presents a comprehensive review of solar chimney power plants (SCPP) as a reliable source of renewable electricity generation. Solar chimney power plants differ from other renewable energy ...

The concept of solar chimney thermal power generating system (Fig. 1) was firstly designed by Professor J. Schaich in 1978 [1]. The power system includes three familiar ...

These authors have achieved a clear thermal enhancement of a solar air heater (with natural convection airflow) and of a solar chimney, respectively. They have embedded an elastic porous winglet, also known as ...

Solar chimney technology is one of the feasible ways to develop and utilize solar energy technology. Integrating with heat storage technology, chimney technology and air ...

1 Abstract-The present paper presents an overview of the main characteristics of a novel kind of solar thermal application called solar chimney power plant. It is a technology of electric power ...

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