

عنوان مقاله:

Thermodynamic analysis of solar chimney power plant to predict power generation

محل انتشار:

اولین کنفرانس پیشرفتهای نوین در حوزه انرژی (سال: 1394)

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خلاصه مقاله:

The paper presents a mathematical thermal model for steady state airflow inside a solar chimney power plant using thermodynamic equations with buoyancy effect and ideal gas equation to obtain power curve which will illustrate power surface in 3-D diameter-height diagram. The study predicts air flow in solar chimneys with different diameter and height. The result shows that using a constant density assumption through the solar chimney can simplify the analytical model however it over predicts the power generation. The results show that the chimney height, the collector radius, and chimney diameter are essential parameters for the design of solar chimneys.

کلمات کلیدی:

Solar chimney, Thermodynamic analysis, power prediction, chimney height, diameter of collector

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