Hemispherical solar glass

Is hemispherical solar still used?

Hemispherical solar still usedby Adewole et al. (2020). Fig. 20. (a) Variation of (a) water production and basin,water and surface temperatures and (b) hourly water yield against the temperature difference (Adewole et al.,2020).

Can hemispherical solar stills improve thermal performance?

The hemispherical solar still (HSS) is one of the most effective alternatives for meeting the need for freshwater in rural and distant locations However,there are limits to the performance of hemispherical solar stills,and various researchers have examined the ability to enhance (HSS) thermal performance.

What is a hemispherical solar still made of?

Schematic diagrams for the hemispherical and pyramid solar stills used in this study are shown in Fig. 1; the circular-shaped basin was made of mild steel and pained with black paint in order to enhance absorptivity. While the top hemispherical cover was made from an acrylic sheetwith 88% transmittance.

What are the energy efficiencies of hemispherical solar stills?

It was found that the maximum daily energy efficiencies of the single-slope and hemispherical solar stills were 25.81% and 38.61%,respectively. Whereas the maximum daily exergy efficiencies of the single-slope and hemispherical solar stills were 1.8% and 3.1%,respectively.

What is a hemispherical top cover?

The main purpose of using a hemispherical-shaped top cover is to enhance the amount of solar energy that can be collected by the solar still. Enhancing the productivity of solar stills in general and hemispherical solar stills in particular has been a topic of interest for many researchers.

Can glass cover cooling double-slope solar still be used as a source of heat?

The glass cover cooling double-slope solar still (passive solar still) Sharshir et al. carried out a theoretical analysis of a modified wick still and reused warm rejected water of a humidification-dehumidification (HDH) unit as a source of heat.

Jan 1, 2025 · The use of circular fins in basin of the cylindrical solar still with a hemispherical dome increases productivity by 64.7 % compared to the still without fins.

Jan 1, 2024 · Abstract The levelized cost of electricity for concentrated solar thermal systems (CST) depends largely on the optical efficiency of primary and secondary reflectors, the glass ...

Apr 3, 2023 · Solar stills utilization has received great interest in arid isolated regions. In this study, experimental approaches have been investigated to prove the impact of the corrugated ...

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Feb 9, 2021 · The hemispherical distiller characteristics are having a large surface area for receiving and condensing compared to a conventional single-slope distiller. To achieve the ...

Aug 14, 2012 · Humankind has depended for ages on underground water reservoirs for its fresh water needs. But these sources do not always ...

Nov 1, 2022 · Generally, hemispherical solar still has relatively better thermal performance than other types of solar stills. The maximum solar radiation, daily accumulative yield, thermal ...

Jul 22, 2024 · Despite the extensive literature on improved solar stills, determining the most efficient designs for residential and industrial applications remains difficult. This review ...

Jan 1, 2022 · Hemispherical solar still with 8 mm thick wick materials at the bottom of its basin increases freshwater yield. Three 0.1 m2 hemispherical solar devic...

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Dec 23, 2022 · Figure 4 introduces the changes in temperature throughout time of saline water, internal glass, external glass, and ambient of hemispherical solar distiller with truncated ...

Sep 6, 2025 · This review paper systematically analyzes design modifications and performance improvements of solar stills with glass cooling taking care of the most important issue of poor ...

Jan 29, 2022 · Solar desalination through hemispherical distillers gave large condensation surface area with small volume for low cost yield production. Cooling of the condensation glass surface ...

Oct 20, 2025 · The Evolution of Solar Glass Technology in Modern Energy SolutionsThe renewable energy sector has witnessed remarkable advancement in recent years, with solar ...

Jul 1, 2023 · Results concluded that the increase of nano-ZnO concentration improves solar distiller efficiency. Due to the ease of homogeneous distribution on the external surface, ...

Aug 4, 2022 · Glass cover designs including pyramid [7,8], double glass [9], conical [10], tubular [11-13], spherical [14] and hemispherical [15-18] shapes have also been studied. In order to ...

Sep 1, 2024 · The modified solar still design incorporates a hemispherical tube, leading to a higher glass temperature (increased by 5.5 °C) due to enhanced evaporation and ...

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