Briefcase Sized Low Temperature Solar Thermal Desalination System

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Facing a global challenge of freshwater scarcity, this project presents a novel approach thus a portable, low-temperature solar thermal desalination system. Despite covering over 71% of the Earth's surface, only 2.5% of water is readily available freshwater thus the need to address this imbalance, desalination offers a promising solution to utilize abundant seawater. However, conventional desalination methods often struggle with high energy requirements and lack portability, hindering their widespread application. This research tackles these limitations by focusing on improving the efficiency of thermal desalination therefore by employing low-temperature operation and a vacuum pump, the system significantly reduces energy consumption compared to traditional methods. Additionally, the project aims to create a portable system suitable for emergency situations, catering to communities facing limited access to clean water hence portability is crucial, as individuals in disaster-stricken areas might wait days for assistance, and readily available clean water is often the most critical need. This project contributes to sustainable water solutions by addressing two key aspects: energy efficiency and portability. By minimizing energy consumption and providing a readily deployable solution in emergencies, this research strives to make a significant impact in the fight against water scarcity. The development of this low-temperature thermal desalination system holds the potential to provide communities with a reliable source of clean water, even in the most challenging circumstances.

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