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(57) Abstract :

Solar air coolers are innovative and environmentally friendly cooling devices that utilize solar energy to provide efficient and cost-effective cooling solutions. These coolers operate on the principle of evaporative cooling, where water is evaporated to lower the temperature of the air. By harnessing the power of the sun through solar panels, solar air coolers reduce reliance on conventional electricity sources, making them energy-efficient and sustainable. This abstract explores the working principles, components, and benefits of solar air coolers. The cooler consists of a solar panel that converts sunlight into electricity to power the fan and water pump. Ambient air is drawn into the cooler by the fan and passed through cooling pads that are saturated with water from a reservoir. As the air flows through the wet pads, the water evaporates, resulting in a reduction in air temperature. The cooled air is then expelled from the cooler, providing a refreshing breeze. Solar air coolers offer several advantages. Firstly, they contribute to energy conservation and reduce electricity costs by utilizing renewable solar energy. They are environmentally friendly, emitting minimal greenhouse gases and avoiding the use of harmful refrigerants. Solar air coolers are easy to install, requiring minimal infrastructure modifications and making them suitable for various applications, including temporary or remote locations.

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