The Used of Solar Cooling System in Healthcare Field

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Abstract:

Cold production is crucial in the healthcare field, ensuring the preservation of temperature sensitive products and the proper functioning of certain medical equipment. Cold is used for the preservation of medications and vaccines; the cold chain is vital for their transport and storage, from production to patient administration. It is used for Surgery and biological products: Blood, organs, tissues, and laboratory samples. It is important for Surgery and treatments: Cryosurgy and Cryotherapy. Many promising technologies have been developed to harness the sun's energy. One of these important technologies is the solar cooling systems [1,2]. A numerical modeling of an adsorption solar cooling system using different adsorbent/adsorbate pairs are undertaken in this study. The modeling of the adsorption cooling system requires the resolution of the equation describing the energy and mass transfer in the adsorber that is the most important component of the system that is heated by solar energy. Effect of key parameters on the adsorbed quantity and on the thermal and solar performances are analysed and discussed. For the considered data measured for clear type day in Algeria, the performances of the system depends on the incident global irradiance during a whole day, the condenser temperature, the generating temperature and the evaporator temperature. An adsorbent/adsorbate pair in terms of thermal and solar performances has been selected.