

عنوان مقاله:

Experimental performance of a heat pipe solar water heating system

محل انتشار:

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خلاصه مقاله:

In this paper, a solar water heating system employing heat pipe solar collector was studied and analyzed experimentally. The proposed system was constructed and experimented under climatic conditions of Sannandaj on the last days of August. In order to reach and the real consumption conditions, a hot water consumption pattern of a small dormitory was used. It was resulted that the maximum collector outlet temperature is 64 °C. Temperature changes of collector inlet and outlet and storage tank are also presented. Some fluctuations were observed which was the result of drawn out hot water of the storage tank, according to water consumption pattern. In the morning, there is essential need to back up system, but, after 14:00 PM, the solar system becomes independant of it. It was also resulted that the most precise equation to present the efficiency as a function of enviromental and performance parameters is $y = -752332x^3 + 93317x^2 - 2687.5x + 51.43$. Finally, it was resulted that the maximum amount of useful energy gain is observed from 12:00 to 14:00. However, the system shows better performance before and after noon rather than noon itself.

کلمات کلیدی:

solar water heating, heat pipe solar collector, Sannandaj

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