Design and Performance Analysis of Spiral Solar Water Heater Using Iron Plate/Sand Absorber for Domestic Use

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Abstract;

In this study, water was heated using solar energy. This research presents the design and experimental analysis for using Spiral Flow Solar Water Heater (SFSWH) to enhance thermal efficiency of a flat plate solar collector. A solar water heater consisting of a copper tube in the shape of a spiral was fixed on an iron flat plate as an absorber. The experiment also included the selection quality of the paint used to dye the absorbent surface. In May at Fallujah (33.34ºN, 43.8ºE), the thermal performance was calculated. The maximum temperature difference in the storage tank of about 18 ℃ for (SFSWH) during the experimental time was obtained. The obtained efficiency of the collector was about (80.11%). The SFSWH gave an increase of (40 %) in its efficiency compared to published values.