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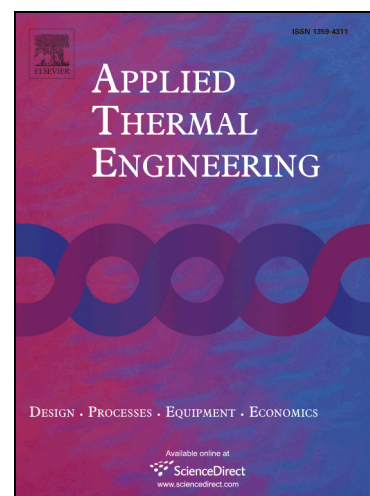
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PERFORMANCE ASSESSMENT IN V-TROUGH SOLAR WATER HEATER FITTED WITH SQUARE AND V-CUT TWISTED TAPE INSERTS.**A.Saravanan¹, J.S.Senthilkumar², S.Jaisankar^{3*}**

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ABSTRACT

The experimental investigation has been carried out in V-trough solar water heater fitted with helix twisted tape (HT), helix twisted tape with square cut (HSC) and helix twisted tape with V-cut (HVC), under two different twist ratios ($Y = 3, 4$ & 5) in same operating condition. Solar concentration has increased while using additional reflection surface on the absorber plate which in turn increased thermal performance in Plain V-Trough (PVT) solar water heater. The experimental result has been verified with fundamental equation and the discrepancy is less than $\pm 14.54\%$ and $\pm 5.5\%$ for Nusselt number and friction factor respectively. The twist tape with lower twist ratio ($Y = 3$) gives higher thermal performance than higher twist ratio ($Y = 5$). The obtained results have shown that the Nusselt number and frictional factor is higher in HVC than HSC. Correlations have been developed for Nusselt number and friction factor to match the experimental results and deviation fall within $\pm 10.17\%$ and $\pm 4.395\%$ respectively.

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