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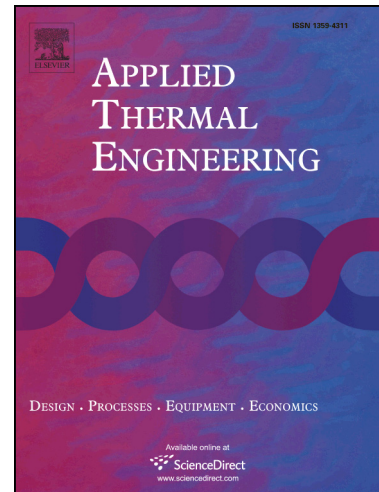
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Effect of Latent Thermal Energy storage and inlet locations on enhancement of stratification in a solar water heater under Discharging Mode

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The paper addresses the experimental performance study of a solar water heater using Latent Thermal Energy storage (LTES) in a stratified tank with two different inlet locations under discharging mode. LTES was placed on the top portion of an insulated tank of a solar water heater. Paraffin was used as Phase Change Material (PCM) and water was used as Heat Transfer Fluid (HTF). Batchwise and continuous discharging experiments were performed by drawing off the hot water from the tank. The experiments were conducted for open bottom inlet attached with diffuser and open side inlet through which fresh water was supplied from the main tank. Inflow from open bottom inlet produces 15 L excess hot water at 45 °C in batchwise discharging and 13 L of excess hot water collection at same the temperature in continuous discharging process even after 12 hours duration. This was due to the effect of better stratification when open bottom inlet was used. Hence it is concluded from the cooling experiments that open bottom inlet with diffuser produces enhanced stratification in both continuous and batch wise discharging. This inlet is appropriate for the applications of intermittent water requirements.

Key words : PCM,LTES , Heating, Cooling, Discharging ,Energy storage

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