

Article Abstract

Title:	Influencing parameters on performance of a mantle heat exchanger for a solar water heater - a simulation study
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Abstract:	Thermal performance of a solar water heater mainly depends on the thermal stratification. Thermal stratification in solar water tanks is essential for a better performance of energy storage systems where these tanks are integrated. In this research work, the performance of a solar water heater with a mantle heat exchanger is investigated experimentally. The heat exchanger is assessed for a range of operating conditions to quantify both the mantle side and the tank side heat transfer coefficients and the effect of thermal stratification in the tank. The experiments are simulated and validated by using CFD tool ANSYS-CFX and a good agreement is obtained between experiments and simulations. The objective of this paper is to investigate the influence of location of hot fluid inlet, mass flow rate of mantle fluid and type of hot fluid on the performance of the mantle heat exchanger.
Keywords:	Performance of mantle heat exchanger, mantle side heat transfer coefficient, tank side heat transfer coefficient, operating conditions, ANSYS-CFX, hot fluid inlet, mass flow rate, type of hot fluid