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Rangasamy Rajavel, Kaliannagounder Saravanan

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HEAT TRANSFER STUDIES ON SPIRAL PLATE HEAT EXCHANGER

ABSTRACT

In this paper, the heat transfer coefficients in a spiral plate heat exchanger are investigated. The test section consists of a plate of width 0.3150 m, thickness 0.001 m and mean hydraulic diameter of 0.01 m. The mass flow rate of hot water (hot fluid) is varying from 0.5 to 0.8 kg/s and the mass flow rate of cold water (cold fluid) varies from 0.4 to 0.7 kg/s. Experiments have been conducted by varying the mass flow rate, temperature, and pressure of cold fluid, keeping the mass flow rate of hot fluid constant. The effects of relevant parameters on spiral plate heat exchanger are investigated. The data obtained from the experimental study are compared with the theoretical data. Besides, a new correlation for the Nusselt number which can be used for practical applications is proposed.

KEYWORDS

spiral plate heat exchanger, Reynolds number, nusselt number, heat transfer coefficient, mass flow rate

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