EXPERIMENTAL INVESTIGATIONS ON TWO-PHASE FLOW FOR AIR-WATER SYSTEM

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ABSTRACT
Two-phase parameters such as quality, Lockhart-Martinelli (L-M) parameter and two-phase multiplier were determined for air-water system in 1-2 shell and tube heat exchanger with variable configuration for the passage of heating and test fluids with parallel and countercurrent flow. Results showed that the heat transfer coefficient increases with quality for two-phase flow for the range of Reynolds number and quality studied. The L-M parameter is inversely proportional to quality. The two-phase multiplier shows a decreasing trend with increase in L-M parameter as reported in literature, Salcuden et al. (1984). From the correlation $h_{1\phi} = \alpha N_{Re}^m$, the heat transfer coefficient for two-phase flow can be predicted using the Lockhart-Martinelli parameter - Quality correlation with an error of less than 12%.

Keywords: Two-phase flow, air-water system, L-M parameter, Quality and heat transfer coefficient.