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MODEL IDENTIFICATION TO CORRELATE THE HEAT TRANSFER COEFFICIENT IN POOL BOILING OF ORGANIC LIQUID

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Abstract

A soft computing modeling technique based on fuzzy system is used to determine the heat transfer coefficient in pool boiling of organic liquid. An experimental investigation has been carried out for saturated boiling of pure water from plain copper heating tu be surface at atmospheric and sub-atmospheric pressure. An empirical correlation has been established to predict the boiling heat transfer coefficient. Further, the experimental data has been compared with those determined from the zero-order adaptive fuzzy model with heat flux as input variable. The representation accuracies of pool boiling heat transfer coefficient for fuzzy model is very high as indicated from the performance index. The prediction performance of zero order adaptive fuzzy model has also bee compared with MATLAB based ANFIS function.

Keyword pool boiling; Heat transfer coefficient; model identification; fuzzy system; production.