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TWO PHASE FLOW ANALYSIS DURING THE EVAPORATION OF THE ECOLOGICAL REFRIGERANT R 134a

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Abstract

This paper is performing an analysis of the two-phase flow related to the evaporation of R134a, working in air conditioning systems, by using equations written for the separated flow model. For a mass flux within 1400-1800 kg/ m^{2}s, a heat flux of 80 kW/m^2, a length of the channel within 1-3 m and for vertical and inclined tube positions are obtained data referring to the pressure drop, velocity or void fraction. Entropy generation is closely connected to the thermodynamic irreversibility-phenomena encountered in evaporation processes, the second law of thermodynamic analysis based on entropy generation being a tool used for engineering design and optimization. In this study the irreversibility is connected to the heat transfer surface.

Key words: evaporation, irreversibility, two-phase flow