

평행류 열교환기 헤더 내 물-공기 및 R134a 분지에 관한 연구

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Distribution of Air-Water and R134a in a Header of a Parallel Flow Heat Exchanger

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Key Words: Flow distribution (유동분배), Air-water(물-공기), R-134a, Parallell flow heat exchanger (평행류 열교환기), Header(헤더)

Abstract : Flow distribution in a 10-channel parallel flow heat exchanger header was experimentally investigated using R-134a and air-water. Both upward and downward configuration were tested. It was observed that, for R-134a, most of the liquid was extracted from the frontal part of the header. For air-water, however, significant portion of water was forced to rear part of the header. Through flow visualization, the reason was attributed to the difference in density ratio of the gas and the liquid phase.

가정용 응축식 의류건조기의 에너지 효율 개선을 위한 모델링

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Modeling for Improving Energy Efficiency of a Domestic Condensing Dryer

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Key Words: Condensing dryer(응축식 의류건조기), RMC(잔류수분량), Water activity(수분활성도)

Abstract : We propose a mathematical model on the characteristics of drying process and heat and mass transfer in a domestic condensing dryer to improve its energy efficiency. Experiments are also carried out to verify numerical results. We estimate temperature of the drum and the clothes separately, and perform thermal analysis of the heat exchanger using heat exchangelet method. The numerical results such as drum inlet temperature, RMC, drying time and SEC are in a good agreement with experimental data. A parameter study is also carried out to investigate the effects of each variable on dryer performance.