Experimental Research on Flow Maldistribution in Plate-Fin Heat Exchangers

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The flow maldistribution and the effect of different inlet configurations on the flow distribution in plate-fin heat exchangers were studied experimentally. It was found that the flow maldistribution is serious because of the defects of inlet configurations, and the inlet configuration and Reynolds number are the main factors affecting the flow distribution. Improved inlet configurations, which use a header with a two-stage distribution configuration, were proposed and tested in this paper. The experimental results show that the improved inlet configurations can effectively improve the performance of flow distribution in heat exchangers. The correlation of the flow maldistribution characteristic with Reynolds number is obtained under different header configurations for the first time. The conclusions in this paper are of great significance on the optimum design of heat exchangers in industry.