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反应堆工程

斜微肋扁管单相对流换热实验研究

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摘要 以单相水为介质，对肋高或结构尺寸不同的4种斜微肋扁管的换热与阻力特性进行了实验研究，并根据工程实际需要，选用适当的方法对斜微肋扁管在实验范围内的强化换热效率指标进行评价，确定了斜微肋扁管的最佳工作区域。结果表明：斜微肋扁管的管内换热系数明显高于光管，换热系数最高可达光管的5.9倍，在换热面积和泵功率相同的情况下，斜微肋扁管最佳工作区域的平均换热量均可达光管的3倍以上。

关键词 斜微肋扁管 单相对流 强化换热

分类号

Experimental Research of Inclined-Micro-fin Flat Tube on Single Phase Convection Heat Transfer

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Abstract The experimental research of heat transfer and flow resistance characteristics of single phase water in four inclined-micro-fin flat tubes with different physical dimensions was conducted. At the same time, suitable criteria were selected to evaluate the efficiency of inclined-micro-fin flat tubes within the experimental scope and the optimal working region was determined. The results indicate that inclined-micro-fin flat tubes can greatly enhance the single-phase heat transfer in turbulent flow and the maximum heat transfer coefficient attains to 5.9 times of that in smooth tube. The quantities of heat transfer for inclined-micro-fin flat tubes are three times higher than that of smooth tube with the same of heat exchange area and pump power.

Key words inclined-micro-fin flat tube single-phase convection heat transfer enhancement

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