

反应堆工程

摇摆对圆管内层流温度分布的影响

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摘要 对摇摆条件下的层流流体进行理论分析。推导出了摇摆条件下圆管内层流流体的速度和温度分布。分析了摇摆运动对流体温度的影响。摇摆条件下, 流体温度呈周期性波动, 波动周期为摇摆周期的1/2。在管壁附近, 温度梯度很大。摇摆运动引起的附加力可改变圆管内的速度分布, 进而改变管壁处的温度梯度增强传热。

关键词 [摇摆](#) [层流](#) [温度](#)

分类号

Effect of Rolling Motion on Laminar Temperature Profile in Tubes

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Abstract The velocity and temperature profile of laminar flow in tubes in rolling motion was developed by analyzing the laminar flow theoretically. The effect of rolling motion on laminar temperature was investigated. In rolling motion, the fluid temperature oscillates periodically. Its oscillation period is half of the rolling period. The temperature gradient next to the wall is very big. The additional force due to rolling motion can alter the velocity profile and enhance heat transfer by increasing the temperature gradient.

Key words [rolling](#) [laminar](#) [flow](#) [temperature](#)

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