

反应堆工程

# 摇摆对非能动余热排出系统自然循环能力影响的试验研究

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收稿日期 修回日期 网络版发布日期:

**摘要** 在摇摆台架上对摇摆条件下的非能动余热排出系统的自然循环能力及其相关特性进行了试验研究。分析了附加压降和重位压降对流动特性的影响, 以及摇摆条件下的重位压降和流动阻力对流速的影响。结果表明: 摇摆条件下, 非能动余热排出系统自然循环能力下降。摇摆振幅越大, 平均凝水流量越小, 波动幅度越大; 凝水流量最小值随摇摆振幅的增大而下降很多, 但凝水流量最大值变化较小。系统参数变化与摇摆周期关系不大。附加压降不会对平均流速产生影响, 重位压降对平均流速的影响与周期无关。重位压降对流速的影响比流动阻力的影响小得多。随着摇摆振幅的增加, 流动阻力对平均流速的影响略有降低。

**关键词** [摇摆](#) [非能动余热排出系统](#) [重位压降](#)

分类号

## Experimental Research of Effect of Rolling Motion on Natural Circulation Capacity for Passive Residual Heat Removal System

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**Abstract** The natural circulation capacity and related characteristics of passive residual heat removal system under rolling motion were investigated experimentally on the rolling apparatus. The effect of additional and gravity pressure drop on flowing characteristic was studied. And the influence of gravity pressure drop and flow resistance upon flow velocity was also analyzed. It is shown that the natural circulation capacity of passive residual heat removal system reduces in rolling motion. As the rolling amplitude becomes larger, the average condensate flow rate becomes smaller, and its oscillation amplitude becomes larger. Moreover, the minimum condensate flow rate decreases quickly. But the change of maximum condensate flow rate is limited. The variation of main parameters with rolling period is not very obvious. The effect of additional pressure drop on average flow velocity is not noticeable. The influence of gravity pressure drop on average flow velocity has nothing to do with rolling period. The effect of gravity pressure drop on flow velocity is much more less than that of flow resistance. As the rolling amplitude becomes larger, the effect of flow resistance on average flow velocity diminishes.

**Key words** [rolling](#) [passive](#) [residual](#) [heat](#) [removal](#) [system](#) [gravity](#) [pressure](#) [drop](#)

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