

反应堆工程

超临界水冷堆主容器出口管的设计

杨林民¹, 陆道纲¹, 冯预恒²

1.华北电力大学 电站设备状态监测与控制教育部重点实验室, 北京 102206

2.中国原子能科学研究院 中国实验快堆工程部, 北京 102413

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摘要 采用计算流体力学软件CFX对超临界水冷堆主容器出口管的温度分布进行数值分析。研究提出在出口管与主容器之间设计一隔热套管, 以避免出口管与主容器直接连接, 从而降低主容器与出口管相连接处的温度梯度, 提高反应堆的安全性。研究表明: 隔热套管的几何参数, 如直径和长度, 对隔热套管与出口管相连接处的温度梯度有一定影响。

关键词 [超临界水冷堆](#) [主容器](#) [出口管](#) [隔热套管](#)

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Designing Outlet Nozzle in Main Vessel of Supercritical Water Reactor

YANG Lin-min¹, LU Dao-gang¹, FENG Yu-heng²

1.Key Laboratory of Condition Monitoring and Control for Power Plant Equipment of Ministry of Education, North China Electric Power University, Beijing 102206, China; 2.China Institute of Atomic Energy, P.O.Box 275-95, Beijing 102413, China

Abstract The numerical analysis was performed on temperature distribution of the outlet nozzle in main vessel of SCWR (supercritical water reactor) by using computational fluid dynamics software CFX. The thermal sleeve between the outlet nozzle and the main vessel was designed to avoid direct connection between them. Thus the temperature gradient of the main vessel closed to the outlet nozzle was decreased, and the safety of the reactor was enhanced. The result shows that the geometrical parameters, such as the diameter and the length of the thermal sleeve, have a definite influence on the temperature gradient of the thermal sleeve connected with the outlet nozzle.

Key words [supercritical](#) [water](#) [reactor](#) [main](#) [vessel](#) [outlet](#) [nozzle](#) [thermal](#) [sleeve](#)

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