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核反应堆功率控制系统的数字化实现

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摘要 功率控制系统是反应堆的一关键控制系统,系统复杂,可靠性要求高。以前的核电站功率控制系统通常采用模拟技术。数字化方案将更有优势,但有相当的难度和待解决的问题。本文介绍一座试验堆的全数字化功率控制系统的设计方案和设计思想,采用了商品级计算机硬件、冗余连锁的软件、严格的质保措施、最终的半实物仿真实验,论证了数字化是可行的、可信的、安全的、经济的。

关键词 [功率控制系统](#) [数字化](#) [控制棒](#) [控制器](#)

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A Digitalized Power Control System for Nuclear Reactor

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Abstract As one of key control systems in the nuclear reactor, the nuclear reactor power control system is complicated, and requires very high level of reliability. Usually the power control systems in old reactors are implemented by analogy technology, but the digitalized one will be more powerful and advantageous, and of course be difficult. The paper presents one solution for the digitalized power control system of an experimental reactor, and its methodologies, including the adoption of commercial computer hardware, redundant and interlocked software, strict quality assurance, final verification via partial practicality simulation experiments, with the intention to prove the digitalized power control system is practical, credible, reliable, and economical.

Key words [power control system](#) [digitalization](#) [control rods](#) [controller](#)

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