

反应堆工程

虚拟现实技术在核电厂仿真中的应用

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摘要 通过对虚拟现实系统构成和关键技术的分析, 对虚拟现实技术在核电厂仿真中的应用进行研究。针对核电厂仿真需求, 结合核电厂运行和事故分析器, 对核电厂棒控系统运动过程、安全壳内部漫游及虚拟主控室进行了实例仿真。仿真结果表明, 虚拟现实技术可很好地应用在放射性较强的安全壳内仿真及与人因工程联系密切的主控室仿真上, 也可应用在核电厂虚拟教学与培训系统中。

关键词 [虚拟现实](#) [核电厂](#) [安全壳](#) [主控室](#) [仿真](#)

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Application of Virtual Reality to Simulation in Nuclear Power Plant

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Abstract Based on detailed analysis of the structure and key techniques of a virtual reality system, the applications of virtual reality to simulation in nuclear power plant (NPP) were developed. In order to meet the requirement of simulation in NPP, motion simulation of control rod drive system, walking system inside the containment and virtual main control room were presented. A simulator of NPP was connected to interchange dynamic data between virtual main control room and the simulator. The simulating results show that the technique of virtual reality can be applied well to the simulation inside containment, which is filled with activity material, and the simulation of virtual main control room, where human factors must be considered. It also can be used well to design virtual education and training system of NPP.

Key words [virtual reality](#) [nuclear power plant](#) [containment](#) [main control room](#) [simulation](#)

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