反应堆工程

核电厂实时故障诊断专家系统的设计与实现

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摘要　　为进一步减少核电厂中出现故障后的误操作，本文研究设计并实现核电厂实时故障诊断的专家系统。系统用专家系统理论将故障诊断的专家知识转化为存储于数据库的规则，实现了计算机自动异常征兆检测、实时提示、故障实时诊断，以及提出故障操作建议等功能。研究结果表明，开发的实时故障诊断专家系统能够为正确诊断压水堆核电厂多个典型事故提供有效的诊断结果和运行帮助信息。

关键词　核电厂　实时故障诊断　专家系统

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Design and Implementation of Real-Time Diagnostic Expert System in Nuclear Power Plant

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Abstract In order to decrease the probability of malfunctions in nuclear power plant, a real-time expert system to be applied to malfunction diagnosis was designed. Based on the expert system theory the system converts the expert knowledge for diagnosing failures into the rules stored in database, and it can display real-time information of the abnormal symptoms, perform real-time diagnosis of malfunctions and suggest the operation actions related to malfunctions, etc. The results indicate that several typical malfunctions in nuclear power plant are diagnosed automatically and the corresponding operation schedules are given out by present expert system.

Key words nuclear   power   plant _ real-time   malfunction   diagnosis _ expert   system

通讯作者