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设备与系统

直动电磁阀电流变化对电磁场特性的敏感性分析

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摘要

控制棒水压驱动机构是由清华大学核能与新能源技术研究院发明的一项新型专利。直动电磁阀是该项技术的关键部件，它直接影响控制棒水压驱动机构的运行性能。本工作从电流和气隙两个方面，运用ANSYS电磁场分析软件，对直动电磁阀进行了电磁场特性分析，并进行了实验验证。分析结果表明：在电流增大或铁芯间气隙减少情况下，电磁力增大。并确定了电磁阀的工作电流大小。

关键词 控制棒水压驱动机构 电磁阀 电磁场 电流 气隙

分类号

Analysis of Electromagnetic Field of Direct Action Solenoid Valve With Current Changing

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Abstract Control rod hydraulic drive mechanism (CRHDM) is a newly invented patent of Institute of Nuclear and New Energy Technology of Tsinghua University. The direct action solenoid valve is the key part of this technology, so the performance of the solenoid valve directly affects the function of the CRHDM. With the current and the air gap changing, the electromagnetic field of the direct action solenoid valve was analyzed using the ANSYS software, which was validated by the experiment. The result shows that the electromagnetic force of the solenoid valve increases with the current increasing or the gap between the two armatures decreasing. Further more, the working current was confirmed.

Key words control rod hydraulic drive mechanism _ solenoid valve _ electromagnetic field _ current _ air gap

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