

单片机控制磁粉制动器模拟加载系统的研究(第 I 报)——磁粉制动器性能试验及控制系统设计与分析

Research on Simulation Loading System With Magnetic Particle Brake Controlled by Single Chip Microcomputer (1st half)—— Performance Test of Magnetic Particle Brake and Control System Design and Analysis

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英文关键词: Magnetic particle brake Control system Transfer function Response function

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作者	单位
王卫星	沈阳农业大学
鲁楠	沈阳农业大学
傅立思	沈阳农业大学
周启龙	沈阳农业大学

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中文摘要:

进行了磁粉制动器动态性能研究,求出了传递函数和制动扭矩过渡过程的响应函数。设计了单片机控制系统,对单片机作为比例调节器进行了改进,求出了控制系统的传递函数和响应函数。通过改进控制系统和完善反馈程序,从外部改善了磁粉制动器的使用性能,提高了系统的加载精度和响应速度。

英文摘要:

The dynamic performance tests of CZ-20 magnetic particle brake(MPB) were conducted. The transfer function of MPB and response functions of its brake torque transient behaviour were extracted. A single chip microcomputer(SCM) based control system with SCM acting as a proportional controller was developed. The transfer functions of both controller and control system and the response function of the latter were obtained. With improvement of the control system and feedback program, the properties of MPB were promoted and the loading precision as well as response speed of the system were enhanced.

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服务热线: 010-65929451 传真: 010-65929451 邮编: 100026 Email: tcsae@tcsae.org

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