

科学基金

带长管道的阀控马达无磁转台控制策略研究

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摘要:

针对带长管道的阀控马达系统用常规PID策略控制效果不理想的缺点,提出了一种新的PID控制策略对系统进行控制。以考虑管道效应的系统数学模型为基础,引入对凸轮转子叶片马达所受扰动力矩的分析,并结合时滞系统的特点,导出了PID控制策略。实验和仿真结果基本一致,表明该控制策略能显著提高系统的速率精度并有效地减少抖动,达到很好的控制效果。

关键词:

无磁转台;长管道;控制策略;速率精度

Study on Control Strategy for Non-magnetic Turntable of Hydraulic Servo Motor with Long Pipeline

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Abstract:

Because the traditional PID control strategy did not perform well in a valve-controlled motor system with long pipeline,a new PID control strategy was proposed herein.Based on the pipeline-included system's mathematical model,the PID control strategy was derived, where the force analysis of cam motor and the time delay properties were taken into consideration. The simulation results are basically in accordance with the experimental data,which indicates that this control strategy can improve the speed precision of the turntable largely and reduce the jitter effectively.

Keywords:

non-magnetic turntable;long pipe;control strategy;speed precision

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