

基于FPGA的电机动态扭矩测量方法研究

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摘要:

介绍了一种基于现场可编程门阵列(FPGA)和多路状态比较的扭矩测量新方法, 利用光电式多码道编码盘的旋转角测量功能进行扭矩测量。着重介绍了多码道码盘输出的多路信号的特征和状态细分的方法, 并分析了扭矩测量的原理。硬件上采用FPGA来实现逻辑控制和数据的计数、锁存, 简化了系统电路。并且把计数和状态信号传输到上位机进行处理显示, 以便实时分析扭矩信号的振动。仿真结果验证了该方案可应用于大型机械的动态扭矩测量系统。

关键词: 光电编码盘; 多码道技术; 相对转角细分; FPGA; VHDL

Research on measurement method of dynamic torque on the Motor based on FPGA

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Abstract:

Introduced a new method for torque measurement based on field programmable gate array (FPGA) and the multi-state comparison, used rotation angle measurement function of multi-code channel photoelectric encoder to measurement torque. Introduced multi-code channel encoder output multi-channel signal characteristics and state of sub-division methods, to analysis of the principle of torque measurement. The hardware used to implement logic control and data count, latch by FPGA, that simplifying the system circuit. The count and status signal transmission to the host computer for processing and display for anglicizing torque vibration signals real-time The simulation results tested the program can be applied to measurement dynamic torque measurement system of large-scale machinery.

Keywords: photoelectric encoder; multiple code-tracks technology; sub-division of the relative rotation angle;FPGA;VHD

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