عنوان مقاله:

Direct Torque Control of Brushless DC Motor Drives Using Fuzzy Incremental Control

محل انتشار:

بیست و ششمین کنفرانس بین المللی برق (سال: 1390)

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خلاصه مقاله:

This paper describes a direct torque control technique for Brushless DC motors with nonsinusoidal back electromotive force. Direct torque control has some benefits such as faster torque response and reduced torque ripple for driving the Brushless DC motors. Because of ignoring stator flux linkage in direct torque control in constant torque region, driving of brushless DC motors is not complicated. Mechanical-rotor inertia and friction coefficient are estimated using Recursive Least Square identification technique. Fuzzy Incremental Control is also applied as an adaptive controller, to improve the speed control process, versus the varying in motor parameters. Rising time reduced due to using Fuzzy Incremental, in comparison with PI controller. Particle Swarm Optimization (PSO) has been used to regulate the PI parameter of speed controller. System configuration, operation principle and control methods are presented in detail. The effectiveness of proposed system has been validated by simulation results.

کلمات کلیدی:

brushless DC motor (BLDC); direct torque control (DTC);Fuzzy Incremental Control (FInc); Recursive Least Square ((RLS