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Article

Torque ripple reduction in Brushless DC motor by using SPWM and SVPWM techniques

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Abstract

Brushless DC motors have the large applications because of its easiest control system and the highest efficiency. Industrial BLDC motor drives suffers from the ripples in the torque, due to which motor has more noise, vibrations and less efficient. To reduce the ripple, the Space Vector PWM (SVPWM) and Sinusoidal PWM are implemented in BLDC drive. The Pulse Width Modulation (PWM) controls the converter output voltage and frequency. Space Vector PWM (SVPWM) and Sinusoidal PWM are the best techniques used in industries because its easy design. Space Vector PWM control method is implemented and it overcomes the disadvantages in PWM such as losses in switching of the converter, output harmonic content & provides better DC-bus voltages. The torque ripples are also reduced in SVPWM method compared to SPWM method. In this paper BLDC motor with a fuzzy controller is presented and the comparison in performance of SVPWM & SPWM methods presented. The SVPWM makes the drive has less ripple in torque & noiseless operation. The Matlab/Simulink models of SVPWM and SPWM method with fuzzy controlled BLDC motor also presented.

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● Manjesh cp · ● Nilima Dabhade

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