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Vector Control Technique for Permanent Magnet Synchronous Motor (PMSM) Drives

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Abstract: *The importance of permanent magnet synchronous motors (PMSM) is that they have high performance and efficiency for motor drives. The control characteristic of the high-performance motor is that it runs smoothly on the entire speed range, torque can be controlled even at zero speed, and acceleration and deceleration are fast. Optimization of the performance of speed control under various constraints and uncertainties is one of the biggest concerns in PMSMs. In this sense, various speed-control mechanisms have been proposed to identify better ways to control PMSM drives with high-speed characteristics and desired torque response. However, it is necessary to have a suitable control mechanism where better adjustment of performance can be achieved for a different operating condition. However, due to the complexity of the PMSM system, it is quite difficult to differentiate the system characteristics and dynamic control parameters when running in real-time. This paper intends to present a vector control method for PMSM drive called field oriented control (FOC) and results is studied using MATLAB/SIMULINK.*

Keywords: Permanent Magnet Synchronous Motors, Vector Control, Field Oriented Control etc

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