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Stable V/f control system with controlled power factor angle for permanent magnet synchronous motor drives

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Abstract

This study develops a scalar V/f control system for permanent magnet synchronous motor drives with two stabilising feedback corrections: a voltage-vector speed correction using active power variation, operating only in transient states and a voltage amplitude correction based on controlled power-factor regulation loop, employing reactive power. Motor/generator operating mode is allowed using the active-power sign information. Simulation and experimental results, and comparison with a medium complexity sensorless vector control prove good performance for the proposed control structure in steady and transient states, at low and rated speed operation with rated load disturbances.

Keywords

KeyWords Plus: [SENSORLESS PMSM DRIVE](#); [DIRECT TORQUE CONTROL](#); [SIGNAL INJECTION](#); [VECTOR CONTROL](#); [SPEED CONTROL](#); [FAST DYNAMICS](#); [VERY-LOW](#); [POSITION](#); [OBSERVER](#); [OPERATION](#)

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