(Pt24) A Cogging Torque Suppression Algorithm Based on Model Predictive Control

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(Pt9)Abstract—**Cogging torque is a unique issue in the servo systems of permanent magnet synchronous motor (PMSM) and a key problem that must be addressed in the design and manufacturing of high-performance permanent magnet motors. Due to their inherent structural characteristics, PMSMs inevitably produce cogging torque, which leads to disturbances and noise, particularly detrimental to motor control systems operating at low speeds. Additionally, the presence of cogging torque affects the positioning accuracy of the rotor at any given moment. This paper presents a high-quality control method for suppressing cogging torque. The proposed cogging torque suppression strategy is studied through simulations and compared with traditional cogging torque suppression strategies. The simulation results indicate that the proposed high-precision positioning servo control method is effective in suppressing cogging torque.**

(Pt9)Keyword—**PMSM; Cogging torque; Model predictive control; Low-speed ripple suppression; Position accuracy.**

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