

SVPWM - MRAS SPEED OBSERVER FOR SENSORLESS CONTROL OF INDUCTION MOTOR DRIVE

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Abstract

This paper proposes a novel Space Vector Pulse width modulation (SVPWM) for sensorless control of induction motor using model reference adaptive system (MRAS). The steady state ripples in the torque are present in the conventionally used MRAS sensorless control of induction motor which utilizes normally used voltage source inverters. Also performance of the steady state speed is not as perfect as required having disturbances in steady state region. Hence to improve the performance of MRAS based speed observer a novel method of SVPWM based on reference voltage vector that utilizes the control variables as stator flux components is proposed. By using the proposed SVPWM control of induction motor the speed disturbances which are obtained are minimized and the speed performance is improved. Also the ripples present in the electromagnetic torque are reduced. This is proved by the simulation results for conventional MRAS speed observer and proposed SVPWM based MRAS speed observer.

Keywords: Sensorless Control, Model Reference Adaptive System, Reference voltage Vector, SVPWM