



(1)

V/F control of Three Phase Induction Motor Drive with Different PWM Techniques

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Abstract:

This paper presents a v/f control of induction motor with different pulse width modulation (PWM) techniques as sine triangle pulse width modulation (SPWM), Third-harmonic pulse width modulation (THPWM) and Space vector pulse width modulation(SVPWM) using MATLAB SIMULINK. Induction motor modeled in the synchronous q-d reference frame. The performance of IM with full load torque is compared using these techniques for THD, harmonics spectra, utilization of dc supply voltage, fundamental peak of the output voltage and motor speed. The dynamic performance of IM using SVPWM under reference speed and load torque variations is studied also. The results show that the SVPWM is the efficient one because it's superior performance characteristics. The operation of IM with v/f method for closed loop system is enhancement when SVPWM technique is applied.

Keywords:

Space vector modulation, SPWM, V/f control, Harmonic injection.

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(2)

An Improved V/F Control for High Performance Three Phase Induction Motor Drive

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Abstract:

The constant v/f control method is one of the most common speed control methods for Induction motors (IMs). In this paper the performance of constant v/f control method is improved by full compensation of the stator resistance voltage drop by the injection of low frequency boost voltage to achieve the rated torque speed characteristic at any speed below rated speed. Also simple frequency compensation based on estimation of air-gap power and a linear motor torque speed approximation is introduced. The dynamic performance of IM for proposed system is studied by MATLAB/SIMULINK under different load and speed variations. Further the proposed system is compared with the previous work. The simulation results show that the speed accuracy of the proposed method is improved effectively, even at low speed.

Keywords:

v/f control, constant flux, slip frequency compensation, torque and speed.

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