

Analysis of Different Space Vector Pulse Width Modulation Techniques for a Five-Phase Inverter

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Abstract : Multiphase motor drives are now a day considered for numerous applications due to the advantages that they offer when compared to their three-phase counterparts. Proper modeling of inverters and motors are important in devising an appropriate control algorithm. This paper develops a complete modeling of a five-phase inverter and five-phase space vector modulation schemes which can be used for five-phase motor drives. A novel modified algorithm is introduced which enables the sinusoidal output voltages up to certain voltage value. The waveforms of phase to neutral voltage are compared with the different modulation techniques and also different modulation indexes in terms of Low-order Harmonic (LH) voltage of 3rd and 7th present. A detailed performance evolution of existing and newly modified schemes is done in terms of Total Harmonic Distortion (THD).

Keywords : multi-phase drives, space vector modulation, voltage source inverter, low order harmonic voltages, total harmonic distortion

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