ABSTRACT

This paper presents a simple overmodulation strategy in DTC-hysterisis based structure of induction machine drives. It will be shown that by controlling the shape of stator flux locus, the switching pattern of stator phase voltage can be controlled such that a smooth transition from PWM to six-step is achieved. The locus of the stator flux space vector is controlled by the holding angle which is estimated based on the output of the hysteresis torque controller. A smooth transition of stator voltage from PWM to six-step operation is accomplished by gradually changing this holding angle from 0 to pi/6 rad. The proposed overmodulation strategy is utilized to extend a constant torque region by increasing the stator voltage limit from PWM to six-step mode. The ability of the proposed overmodulation utilizing in DTC-hysterisis based structure to exploit under overmodulation mode is verified through simulation results.