Improvement of Direct Torque and Flux Control of Dual Stator Induction Motor Drive Using Intelligent Techniques

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Abstract : This paper proposes a Direct Torque Control (DTC) algorithm of dual Stator Induction Motor (DSIM) drive using two approach intelligent techniques: Artificial Neural Network (ANN) approach replaces the switching table selector block of conventional DTC and Mamdani Fuzzy Logic controller (FLC) is used for stator resistance estimation. The fuzzy estimation method is based on an online stator resistance correction through the variations of stator current estimation error and its variation. The fuzzy logic controller gives the future stator resistance increment at the output. The main advantage of suggested algorithm control is to reduce the hardware complexity of conventional selectors, to avoid the drive instability that may occur in certain situation and ensure the tracking of the actual of the stator resistance. The effectiveness of the technique and the improvement of the whole system performance are proved by results.