

Comparative assessment of model predictive current control strategies applied to six-phase induction machines

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Abstract

Nowadays, model predictive current control strategy has become a viable alternative because of its fast response for high-reliability systems, such as multiphase machines. In that regard, this paper proposes a comparative assessment of four current controllers based on the model using different approaches as virtual vectors, modulation techniques and further, combining these strategies in order to deal at the same time with the regulation of the main and secondary currents components, known as (α - β) and (x-y), respectively, applied to six-phase induction machines. Simulation results are presented so as to show the effectiveness of the four model predictive current controllers, taking into account the mean squared error and the total harmonic distortion of the stator currents in both steady and dynamic conditions.