Title:	Fuzzy-Logic Based Speed Control of Induction Motor Considering Core Loss into Account
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Abstract:

Rotor flux and torque of an induction motor (IM) are decoupled to obtain performance of DC motor. The decoupling strategy has been developed in terms of stator current components where the core loss is neglected. Many different controllers including fuzzy logic controller (FLC) with neglecting core loss have been designed to control the speed of induction motor. The outcome of investigation about the effect of core loss on indirect field oriented control (IFOC) has been concluded that the actual flux and torque are not reached to the reference flux and torque if core loss is neglected. Thus, the purpose of this paper is to propose a fuzzy logic speed controller of induction motor where flux and torque decoupling strategy is decoupled in terms of magnetizing current instead of stator current to alleviate the effects of core loss. The performances of proposed fuzzy-logic-based controller have been verified by computer simulation. The simulation of speed control of IM using PI and FLC are performed. The simulation study for high-performance control of IM drive shows the superiority of the proposed fuzzy logic controller over the conventional PI controller.

Keywords: Indirect-Field-Oriented Control; PI Controller; Fuzzy Logic Controller; Induction Motor; Speed Control