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EFFECT OF UNBALANCED SUPPLY CONDITIONS ON THE PERFORMANCE OF THREE-PHASE INDUCTION MOTOR

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Abstract

The effect of unbalanced supply conditions on the performance of three-phase induction machine is examined in MATLAB environment. The induction motor experiences several types of electrical/incipient faults such as over/under voltage, phase reversing, unbalanced voltage, over load, single phasing and earth fault. The main fault considered in this paper is unbalanced supply voltage. To analyze the behavior of induction motor during unbalanced supply voltage, the induction motor is modeled using arbitrary reference frame theory in MATLAB/Simulink environment, the faults are created and the variations of the induction motor parameters are observed. Variation in speed, stator losses, rotor losses, core loss, efficiency and power factor are calculated during unbalanced supply voltage and the performance of induction motor is analyzed.

Keywords: unbalanced voltage, MATLAB / Simulink, Induction motor