Simulation of Stator Current Signal Fault Characteristics of Induction Motor based on ANSYS

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Abstract— The diagnosis of induction motor problems is a crucial operation in industrial settings. Among the different problems that can occur in induction motors (IM), gear system faults account for almost 60 percent of all faults. At this paper, the detection of stator and rotor failures utilizing electrical signals from IM under various structural factors. The evaluation results indicate that both stator and rotor faults enhance the amplitude of the sidebands of the motor current signature in a Maxwell finite element 2D design. The Finite Element Method is used to examine the electromagnetic field of an induction motor with a faulty gear system that is fed by both the mains and a three-phase voltage source (FEM). Analyses are conducted on electromagnetic field parameters such as voltage distribution, load torque distribution, and coil pitch.

Index Terms— Finite Element, Induction Motor, Electromagnetic Field, ANSYS, Load Torque, Coil Pitch, Gear System, Signal Frequency， Fault Diagnosis.

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