

EXECUTIVE SUMMARY

Induction motor is critical component in many power plants, process plants & utilities and is frequently integrated in commercially available equipment. Safety, reliability, efficiency and performance are some of the major concerns of induction motor applications. With issues such as aging of motors, high reliability requirements, and cost competitiveness, the issue on faults detection of induction motors and diagnosis is of increasing importance. For these reasons, there has been a continually increasing interest and investigations into the fault detection and diagnosis of induction motors.

There are number of methods for diagnosis of induction motors such as Search Coil Induced voltage, Torque Harmonic detection and Induced voltage in stator etc. All these methods are offline methods which require shut down of the machine and installation of the sophisticated instruments prior to the experiments.

There is a need for reliable on-line monitoring technique for detection of various faults without dismantling of motor. This thesis describes the technique and utility of online monitoring technique for detection of various faults that can be applied to existing motors without dismantling or shut down.

The technique developed here is based on the monitoring of the current at running speed of the machine and analyzing same for detection of the fault. The technique can detect online the presence of different faults of induction

motor by monitoring and analyzing the line current and can be used as a diagnostic tool for condition monitoring of motors. The technique can diagnose the problems like rotor faults, eccentricity faults, stator interturn faults, bearing damage, misalignment.

This thesis also describes the development of instrumentation and software based on the motor current signature analysis.

It is hoped that the technology developed in will be useful to power plants and utility as an online condition monitoring tool for induction motors