SRI RAMAKRISHNA INSTITUTE OF TECHNOLOGY

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VIRTUAL ANALYSIS AND FAULT DIAGNOSIS OF THREE PHASE INDUCTION MOTOR USING LABVIEW

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SYNOPSIS

Electrical Engineering concepts are better understood by practical sessions than by mere theory. Fault diagnosis of electrical machine in real time would be a challenging task and risk. Graphical programming feature of LabVIEW software can support for the interactive learning of engineering concepts. In order to analyse the performance of the electrical machines, Virtual module of the three phase Induction motor is created using LabVIEW and the performance characteristics of the machine parameters such as speed, slip, torque, output power and efficiency are analysed from the characteristic curves.

Further, the Virtual environment is developed to control the speed of the three phase induction motor using LabVIEW. By applying the control voltage from LabVIEW interfaced with National Instruments Data Acquisition (NI-DAQ) and Variable frequency Drive (VFD), the speed of the Induction motor has been controlled. The speed is measured through Hall Effect sensor and displayed in the LabVIEW using graphical meters. The performance of any rotating machine will be affected because of mechanical imbalance and electrical faults such as single phasing, short circuit fault etc. In order to diagnose the mechanical imbalance, an attempt has been made to analyse the machine vibration for various load conditions. Since the fault present in the electrical machines can be found in prior through vibration analysis, it will be helpful to go for maintenance before the problem becomes complicated. The concept proposed in this project can be employed in industries and power plants in order to provide the protection against accidents.