

## Induction Motor Stethoscope (MSCOPE)

### Introduction

MSCOPE is an instrument used to diagnose the health of Induction Motors. This technology development is an ongoing project in CSIR-CSIO, Chennai and funded by IDP-DST, New Delhi. This Instrument employs Hybrid techniques like Motor Current Signature Analysis (MCSA), Vibration Analysis (VA) and Temperature Analysis (TA) to detect the Motors faults On-site, On-line and In-situ. The MSCOPE detects the faults and their severity level without removing the motor from the existing setup. The system uses hybrid algorithm for both diagnosis and detection of faults.

### Features

- Capable of detecting 16 different faults present in an induction motor
- Highlights the faults detected and also displays the severity of the faults detected
- **Hybrid Measurement**(Vibration, Voltage, Current, Temperature)
- **Hybrid Analysis**(Vibration Analysis, Motor Current Signature Analysis, Temperature Analysis)
- **Hybrid Decision Making** algorithm for severity & location of fault(Fuzzy Logic, Machine learning and Artificial Neural Network)
- Three levels of diagnosis namely **Basic, Intermediate, Advanced** Diagnosis

### Merits

- Early Fault Detection & Improved Accuracy
- Indication Of Precise Location & Severity of Faults
- Reduced Cost of Maintenance
- Reduced Process Downtime
- Efficient Use Of Energy

### Applications

- Used to detect the faults in an induction motor at an early stage
- Hybrid system improves the accuracy of fault detection
- Helps in predictive maintenance
- Also used for the Life Cycle Assessment (LCA) of motors being used
- Helps in energy-efficient usage of the motor

## MSCOPE - Main Unit



## MSCOPE - Signal Conditioner Unit



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