

## Induction Motor Efficiency Monitoring System (IMEMS)

Induction motors are considered to be the largest users of electrical energy among all motors. They are used in a wide range of commercial and industrial applications, including fans, compressors, pumps, conveyors, winders, mills, transports, elevators, home appliances, and office equipment's. The energy consumption of motors is around 50 to 60% of the total plant consumption. Hence it is necessary to operate the motors very efficiently in order to conserve energy. Measuring the efficiency of motor on-line helps in identifying the motors for

-  Refurbishment,
-  Replacement with new motor,
-  Checking the efficiency after rewinding,
-  Preventive maintenance
-  Operating the motor around its Best Efficiency Point etc.

CSIR CSIO has developed Induction Motor Efficiency Monitoring System (IMEMS) using current signature techniques for estimating efficiency of induction motors in the field. The system has been field tested at various industries like RAMCO Cements, BHEL, Metro water etc.

The feedback from the users are

**“We were really thrilled with the instruments whatever CSIO Chennai Centre has developed, which gives an opportunity for the field engineers to access the motor efficiency while in operation.**

**By installing this IMEMS instrument by closely monitoring and analyzing the data and taking corrective actions like timely replacement which makes the motors to run more effectively.**

**We appreciate the IMEMS system is very user friendly, simplicity in connecting the IMEMS unit to the Motor under study, compactness and more importantly the motor under study need not to be detached from the load/ pump.”**

### **Features of IMEMS**

-  The CSIO developed IMEMS system uses sets of data (voltage, current, power and speed) measured from the motor (on-site) as input to the developed algorithm ( Refined form of Equivalent Circuit Method) for evaluating the motor parameters instead of using traditional no-load and blocked rotor tests.
-  The estimated parameter using the developed algorithm is used for determining the onsite efficiency of the motor.
-  The developed system can be used to operate the motor at its Best Operating Point (BOP).