Name of the Technology/Product

Laboratory Name	CSIR-Central Scientific Instruments Organisation, CSIO (Chennai Centre)
Brief Profile of Technology/Product	**Induction Motor Efficiency Monitoring System (IMEMS):** CSIR-CSIO Chennai Centre has developed the Induction Motor Efficiency Monitoring System (IMEMS) under the funding support of DST. The IMEMS displays the operating efficiency of motor by monitoring the electrical power input (like voltage, current & power) and shaft speed of the motor. The IMEMS determine the operating efficiency of motors without removing the motors from the field and without the need for measuring the output power or torque. The system uses few sets of data coupled with the special algorithm for evaluating the motor parameters instead of using the no-load and blocked rotor test results. CSIO has developed two versions of IMEMS; namely Standalone IMEMS (SIMEMS) and Networked IMEMS (NIMEMS). **SIMEMS** is stand-alone system, capable of monitoring the motor performance called as Standalone IMEMS (SIMEMS) or Motor Performance Analyzer (MPA). It is a portable instrument, with which one can perform Spot analysis or continuous analysis on the test motor. This version is best suitable for conducting on-site energy audits. **NIMEMS**, is a networked & Web enabled system for monitoring multiple motor performances in the industries. The components of NIMEMS are IMEMS nodes & iLON Server. The IMEMS nodes are designed & configured in the network mode for multi-motors performance analysis using RS485 network.
Returns/Benefits	• The IMEMS can be used to operate the motor at its Best Operating Point (BOP). • The system could be suitable for conducting on-site energy audits of existing motors which provides

	scientific data to replace or refurbish the existing motor. • IMEMS can be used to check the performance of the motor after rewinding. • The system could also be used for Life Cycle Assessment (LCA) of motors being used. • This helps in replacing the existing energy-inefficient motor with new motor.
Validation Level	Field Trialed &Technology Ready for Commercialization
IPR Status [also indicating the status of the patent (if any) in 2015]	NIL
End product price (if not available, estimated price)	Standalone IMEMS: approx. Rs. 1.5 to 2.0 Lakhs IMEMS Node Cost: approx. Rs. 50,000/-
Technology/Product Collaborator	• Grant-in Aid support from Instrument Development Program – DST, New Delhi • M/s. BETA Technologies India (P) Ltd. has actively participated as manufacturing agency
Relevance of Technology in present times	Induction motors are considered to be the major users of electrical energy. 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. As per the AFF Estimates, IEEMA Statistics and Primary Survey report source, the total number of motors currently in use is around 10.64 Million Units; out of which LT squirrel cage induction motor are 1.31 Million units with an annual consumption of 37230 Million Units/year. The energy consumption of motors is around 50 to 60% of the total plant consumption. There is a scope for 10% energy conservation as majority of the motors are not operating at their best operating points. Hence it is necessary to operate the motors very efficiently in order to conserve energy.
Similar technology/product developed	Internationally some instruments are available, which are expensive (costing 10 to 15 lakhs) and not suitable for in-situ application.

Picture of the technology/product (if any, with good resolution)	**(i) Standalone IMEMS:**  **(ii) NIMEMS Node:**