

Call for Expressions of Interest for Induction Motor Stethoscope

- An ultimate tool for Condition Monitoring of Induction Motors

The MSCOPE diagnoses and detects the presence of faults by monitoring the current, vibration and temperature signals from the motor. 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.

CSIR-CSIO desires to shortlist manufacturers in different regions of the country for fabrication, installation, and deployment of this device within the country as well as globally. Expression of Interest (EOI) is invited from the parties willing to manufacture, implement and install/deploy the device under the license of CSIR-CSIO. The MSCOPE device is to be fabricated as per the design provided to the selected party after signing Non-Disclosure Agreement (NDA). The selected parties will be required to undergo quality checks and production capability certification by CSIR-CSIO.

Scope of work:

- ✚ Fabrication of the device as per the design provided by CSIR-CSIO.
- ✚ Value addition in the developed system if any.
- ✚ The evaluation/test report as per the approved Acceptance Test Plan.
- ✚ Operation and instruction manual with drawings and test certificates.
- ✚ Integration, Installation and performance test of the device at site.
- ✚ After-sale services for the device.

Features & Specifications:

- ✚ As per attached brochure.

Interested parties may provide the following information in response to this EOI:

- Audited balance sheet of three immediate past preceding years', including profit and loss account and the Annual Report.
- Reference list of similar engineering supplies of fabrication and services during the past two /three years.
- Details of the fabrication facilities available including area and tooling list along with a short video or photographs.
- List of quality certifications / accreditations that are currently valid, with copies of such certificates.

- A notarized Affidavit confirming that the party has not been banned or blacklisted at any time for supplies to government agencies.

Interested parties are requested to apply with all the required documents through email to eoic.sio@csio.res.in latest by **October 28, 2021**

इंडक्शन मोटर स्टेथोस्कोप डिवाइस की रूचि की अभिव्यक्ति के लिए आमंत्रण

- इंडक्शन मोटर्स की स्थिति वीक्षण के लिए एक विशेष उपकरण

मोटर से धारा, कंपन और तापमान संकेतों का वीक्षण करके एमएससीओपीई (MSCOPE) दोषों की उपस्थिति का पहचान और पता लगाता है। मौजूदा ढांचे से मोटर को हटाए बिना तृटियों और उनकी तीव्रता के स्तर को एमएससीओपीई (MSCOPE) पहचान करती है। तृटियों के निदान और पहचानने दोनों कार्यों के लिए यह प्रणाली संकर एल्गोरिथम का उपयोग करता है।

सीएसआईआर-सीएसआईओ देश के साथ-साथ विश्व स्तर पर इस उपकरण के निर्माण , स्थापना और तैनाती के लिए देश के विभिन्न क्षेत्रों में निर्माताओं को शॉर्टलिस्ट करना चाहता है सीएसआईआर-सीएसआईओ के लाइसेंस के तहत डिवाइस के निर्माण, कार्यन्वयन और स्थापना करने के इच्छुक पक्षों से रूचि की अभिव्यक्ति (ईओआई) आमंत्रित की जाती है। चयनित पार्टी को नॉन डिस्क्लोजर एग्रीमेंट (एनडीए) पर हस्ताक्षर करने के बाद एमएससीओपीई डिवाइस को प्रदान किये गए डिजाइन के अनुसार तैयार किया जाना है। चयनित पार्टियों को सीएसआईआर-सीएसआईओ द्वारा गुणवत्ता जांच और उत्पादन क्षमता प्रमाणन से गुजरना होगा।

काम की दायरा:

- ✦ सीएसआईआर-सीएसआईओ द्वारा प्रदान किये गए डिजाइन के अनुसार सम्पूर्ण उपकरण का निर्माण ।
- ✦ विकसित प्रणाली में मूल्यवर्धन यदि कोई हो।
- ✦ अनुमोदित स्वीकृत परीक्षण योजना के अनुसार मूल्यांकन /परीक्षण रिपोर्ट।
- ✦ चित्र और परीक्षण प्रमाण पत्र के साथ संचालि और निर्देश पुस्तिका।
- ✦ साइट पर डिवाइस का एकीकरण, स्थापना और प्रदर्शन परीक्षण।
- ✦ डिवाइस के लिए बिक्री के बाद की सेवाएं ।

विशेषताएँ और विनिर्देश:

- ✦ संलग्न विवरणिका के अनुसार ।

इच्छुक पार्टियों इस ईओआई के जवाब में निम्नलिखित जानकारी प्रदान कर सकती हैं:

- लाभ और हानि खाते और वार्षिक रिपोर्ट सहित पिछले तीन वर्षों की लेखा परीक्षित बैलेंस शीट।
- पछले दो/तीन वर्षों के दौरान निर्माण और सेवाओं की समान इंजीनियरिंग आपूर्ती की सन्दर्भ सूची।
- एक लघु विडिओ या तस्वीरोंके साथ क्षेत्र और टूलींग सूची सहित उपलब्ध निर्माण सुविधायें का विवरण।
- ऐसे प्रमाण पत्रों की प्रतिये के साथ गुणवत्ता प्रमाणपत्रों/मान्यताओं की सूची जो वर्तमान में मान्य हैं।
- एक नोटरी हलफनामा यह पुष्टि करता है यह की पार्टी को सरकारी एजेंसी को
- आपूर्ति करने के लिए किसी भी समय प्रतिबंधित या काली सूची में नहीं डाला गया है ।

इच्छुक पार्टियों से अनुरोध है की सभी आवश्यक दस्तावेजों के साथ ईमेल के माध्यम से eoi.csio@csio.res. पर 28 अक्टूबर, 2021 तक आवेदन करें।

INDUCTION MOTOR STETHOSCOPE (MSCOPE)

INTRODUCTION

MSCOPE is an instrument used to diagnose the health of Induction Motors. This technology is developed by CSIR-Central Scientific Instruments Organisation (CSIR-CSIO), Chennai Centre under the funding support of DDP-Department of Science & Technology (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.



MSCOPE is a stand-alone system, capable of diagnosing the health of induction motors. It is a portable instrument, which can perform continuous analysis on a test motor. It is best suitable for continuous, on-line monitoring of induction motors for detection of faults, if any. The system is also IoT enabled (Wired & Wireless) for remote control and monitoring. Key-in as well as touch-based options are provided to configure the motor and run the analysis. MSCOPE is capable of detecting 17 different faults present in an induction motor based on MOBIUS and ISO standards. The system highlights the faults detected and also displays the severity of the faults detected. This system uses hybrid techniques such as Vibration Analysis, Motor Current Signature Analysis (MCSA) & Thermal Analysis and hybrid decision making algorithms to detect the motor faults on-line, on-site and in-situ.

MSCOPE employs user-friendly interface, which facilitates to display motor configuration details, configure the system, on-line trend graph of the selected analysis technique, analyse the motor for the presence of faults and display the severity level of the identified faults. The analysis is done in three stages. The analysis is split as B- Basic, I- Intermediate and A- Advanced. Basic analysis provides the overall condition of the motor, whether it is healthy or unhealthy as well as the overall severity of faults, if present. Intermediate analysis shows the location or the type of the identified fault. Advanced analysis allows the user to view the spectrum with peaks identified in it. It also provides the severity of individual faults with a detailed view of the analysis technique that detected the fault. The system can also generate auto report, alarm & annunciation in the event of any unacceptable condition in the performance of the motor.

FEATURES

- ✚ Capable of detecting 17 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
- ✚ IoT Enabled feature to facilitate data collection & transfer for further analysis
- ✚ Larger sized TFT display (7") with Touch
- ✚ Wireless keyboard and mouse connectivity

MERITS

- ✚ Early fault detection with 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
- ✚ Helps in predictive maintenance based on condition monitoring
- ✚ Used for the Life Cycle Assessment (LCA) of motors being used
- ✚ Helps in energy-efficient usage of the motor



Designed & Developed by
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Sponsored by
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