Ref No. EPI/WRO/GEN/EOI-SS  Date: 14.12.2016

Subject: EXPRESSION OF INTEREST (EOI) FOR SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF ONLINE TRANSFORMER CONDITION BASED MONITORING SYSTEM FOR HV AND EHV POWER TRANSFORMERS, REACTORS AND OTHER SUBSTATION EQUIPMENT.

Engineering Projects (India) Limited (EPI), under the aegis of Ministry of Heavy Industries & Public Enterprises, Govt. of India, is one of the Premier Engineering Service Organisation in the country engaged in large scale turnkey execution of Multi Disciplinary Projects.

EPI has executed projects of diversify nature as electrical infrastructure development projects, industrial projects, civil & structural construction works. EPI has also implemented electrical substation including civil work at steel plant and thermal/Power plants, Urban and Rural Electrification works including HT Substation and HT Transmission Lines.

EPI intends to participate and execute Development projects taken up by Central and various State Electricity Boards, Power Generating and Transmission Authorities to improve the performance and Monitoring of HV/EHV Transformers and other Substation Equipment. Expression of Interest is invited from the Original Manufacturer in India or the Authorised agency company / channel partner in India of the original equipment manufacturer of condition based monitoring system for on-line Transformer, Reactor and other substation equipments.

1.0 The interested party should have supplied Module System / Diagnostic Tools in Indian State or abroad or Central Electricity Utility or OEM of Power Transformer and Reactors for each of the online monitoring parameters covered in this EOI for On-line condition monitoring, and the related software for the prognosis and diagnosis of the condition of the HV and EHV Transformer and Reactors.
2.0 The party that has installed on-line monitoring systems modules and the monitoring software covered in this EOI in one single Transformer or Reactor of the rating 220 kV class and above shall be preferred.

3.0 The Interested party should have adequate infrastructure and manpower in India or should give an undertaking to create such infrastructure in India for providing after sale services. The organization chart should be submitted to demonstrate the manpower strength. In case the party is the authorized agent, then in addition to above, he should have the certificate from the Principle manufacturer that they are capable of providing after sales services in India.

4.0 ONLINE MONITORING PARAMETERS COVERED IN THIS EOI.
   The Transformer and Reactor Online Condition Based Monitoring System must Monitor and control the following parameters:
   a. Condenser Bushing tan delta, capacitance and leakage currents etc.
   b. Transformer oil, windings, ambient temperatures and auto cooling control.
   c. Water content and relative saturation in oil.
   d. Continuous Monitoring of Dissolved Key Gas H2 (Hydrogen).
   e. Condition of the Conservator bag / Air cell COPS bag.

5.0 SCOPE OF WORK AND SYSTEM DESIGN SPECIFICATIONS & ARCHITECTURE
5.1 The scope of work includes detailed design of all the new system and their integration with equipments, all cabling, wiring, and interconnection to the equipment.

5.2 The online condition based monitoring system should be based on smart sensors and IEDs (Intelligent Electronic Devices) technology and should be compatible with Smart Grid Concept.

5.3 The system shall be of modular type design including the software and data capturing equipments, should deploy a modular sub-systems based architecture allowing user to choose the modules that apply to meet their needs and shall provide the facility to user to enhance the functionality of system depending on the requirements of the sub-station transformer/reactor.

5.4 The system should provide local and remote access of health parameters of the transformer.
5.5 The system should have facility to show the alarms and trips status in remote control room through the alarm & trip contacts of the transformer protection devices like PRV, Buchholz Relay, OLTC surge relay, MOG etc.

5.6 Each modules/IEDs shall have its own power supply, shall be capable of working on universal wide range of input power supply.

5.7 Each module/IED shall have its own micro-controller to do the necessary calculations in order to provide the inputs to remote control room monitoring software should operate in an autonomous manner and free to make local decisions depending upon the circumstances.

5.8 The modules and IEDs should be independent of each other and in case of failure of any module, it should not degrade the performance of other functions of the system, and other functions of the system must keep on working except the functions related to faulty module.

5.9 A local monitoring panel shall be installed near the transformer for local monitoring purpose and all modules, IEDs and media converter shall be installed in the same local monitoring panel.

5.10 The remote communication should be based on RS485 communication standard and Modbus RTU communication protocol. In addition, and if required, the communication system should also support DNP 3.0 and IEC 61850 protocols.

5.11 The OFC cable and media converters must be used for remote communication between the field local monitoring panel and control room.

5.12 All the IEDs should have user password protected programming menu and should display an error code for internal and external defects, if detected any.

6. SOFTWARE

6.1 The remote monitoring should be done in control room through a high capacity window server computer loaded with monitoring and diagnostic software.

6.2 The software of supplied system shall be able to perform sophisticated computations to provide the information of operating conditions of the substation transformer/reactor and must be able to diagnose the developing problems from the model computation results and early detection of potentially serious problems. The software supplied under this work must include and not limited to following:

- Data acquisition and online monitoring system of Transformer parameters.
- Storage of data for defined time.
• Graphical and tabular representation of all measured parameters of transformer.
• Trend analysis of all critical parameters.
• Online monitoring of the loss of useful life span of insulation. Should be able to provide information of actual percentage useful life span remaining, average rate of loss of insulation life span in % day calculated for the period selected by the user.
• Forecast analysis of future oil and windings temperatures based on actual load calculations and temperatures, transformer alarms and trips. It must issue a warning in case future temperature forecasts point to reaching temperatures above alarm, transformer trip, informing the operator, time remaining before the temperature is reached.
• To allow users to carry out transformer loading simulations for evolution of the temperatures of the oil and windings as well as the associated insulation lifetime loss based on current conditions & hypothetical conditions.
• Monitors the efficiency of natural and forced cooling systems. The system should allow buyer to know precisely the operation time of each fan and pump, average daily operation of fans and pumps and warning for inspection or maintenance of the equipment.
• Online monitoring of current percentage of water saturation in oil, water content in oil (ppm). The system must allow user to do analysis to provide the maximum temperature allowed without the risk of forming bubbles.
• The system shall be able to do online monitoring of dissolved gas (key gas Hydrogen) in oil and shall provide the gas level at any moment of time. The system should generate alarm after detection of increase in concentration.
• Online monitoring of bushing healthiness, tan delta, capacitance, leakage current etc.
• Line current, conductor temperature and dynamic rating.
• Remote access & monitoring of system using internal browser.
• Simulation of loads in transformer.
• Suggestion to improve overall efficiency, performance of the transformer and reactor.
• Suggestion to avoid catastrophic and hazardous failure of the critical equipment.
• Automatic warning through emails and SMSs.
• Time tagging of data.
• The software must allow the user to view, generate and print the all history and present technical data, tables, charts, Graphs.
• The software must have Inbuilt three layer access permission for protection of system from unauthorized user.
7.0 COMMERCIAL TERMS

7.1 The Firm should have valid TIN Number.
7.2 The Firm should have valid PAN Number.
7.3 The Company should have valid import license.
7.4 The firm should have valid registration number and certificates.
7.5 The firm should not be in loss and have valid Audited Balance Sheet.
7.6 In case of foreign companies, they should open office in India for providing all the services as per Indian rules & Regulations with respect to taxes and other statutory requirements.

The interested Organisation fulfilling the above requirements and willing to associate with EPI may submit their expression of Interest with supporting documents for their technical and financial credentials in sealed envelope to the address given below along with confirmation to above scope with other supporting documents latest by 28.12.2016 up to 1700 hrs. The sealed envelope containing EOI should be marked with the above Subject Matter, Ref No. And Date and may be sent by Post/Courier/Hand Delivery.

EPI reserves the right to accept or reject any or all EOIs or annul this process without assigning any reason and liability whatsoever and to re-invite EOI at its sole discretion. The corrigendum, extension, cancellation of this EOI, if any, shall be published on the EPI’s official Website WWW.engineeringprojects.com only.

The Expression Of Interest should be addressed to:

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