



Date: 23.10.2023

**Expression of Interest**  
**For**  
**Manufacturing and Supply of Stud heating and**  
**measuring device for**  
**Steam Turbine Application**

**EOI No.: BHEL / HERP / E&M / EOI / 23.10.2023**

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### Description

A stud heating and measuring device is used during heat-tightening of stud of steam turbine to a pre-determined joint pressure. Heating process is carried out by sending hot oxy-acetylene gas mixed with compressed air into the holes provided in the stud. This heating causes elongation of stud and then cap nut is screwed down by a specified amount in the hot condition to provide a calculated joint pressure in the cold condition.

### Scope of work:

Scope of work will include the design, manufacturing and supply of following items in line with BHEL standard ST38007-

- Heating device with proper accessories.
- Measuring unit with proper accessories.
- Compressed air piping including a fine regulating valve, pressure gauge and pipe fittings.
- Oxy-acetylene cylinder **will not be** in the scope of supply.

### Function of Stud heating and measuring device:

- This device is a portable unit. Heating should be possible in any of the stud in assembled condition. Heating source is oxy-acetylene gas.
- Oxy-acetylene torch is ignited outside and then it is inserted in the hole meant for it in the inlet chamber.
- A compressed air piping of suitable size is fixed into the inlet chamber. Compressed air inscribes the oxy-acetylene flame at the exit from inlet chamber and led to a mixing chamber. From mixing chamber, hot gas mixture is lead to heating tube.
- Heating tube is held co-axially in the stud hole. End of heating tube kept at reasonable distance from the end of hole in the stud.
- After imparting the heat to stud, This gas mixture traverse back through the passage between outer tube and heating tube and release to the atmosphere through vent hole in the outer tube.
- A fine regulating valve on the compressed air pipe line is provided to regulate the compressed air pressure. A proper air pressure ensure that gas mixture reaches the hole bottom with a reasonable velocity.
- Elongation measuring device includes a simple measuring rod, a sleeve and a depth gauge. Reading on the depth gauge showing length of stud are recorded in cold condition before



the start of heating process and then after the heat-tightening again in cold condition. The differences of these reading gives the elongation achieved.

### Qualification Criteria

The parties meeting the below mentioned technical criteria shall be considered for further development of vendor for Stud heating and measuring device for Steam Turbine sets as per the BHEL specification / Drawings / Technical delivery conditions.

### Technical Criteria:

1. The Vendor should be a regular Supplier of Stud heating and measuring device (in final condition) to Power plant equipment manufacturer(OEM) and Vendor should have supplied at least Five (5) nos. of Stud heating and measuring device to OEM (Original Equipment Manufacturer) of Steam Turbine during the last 3 years with following technical details –

SL. No.	Product features	Details
1.	Item Description	Stud heating and measuring device
2.	Raw Material	Raw material will be on the discretion of supplier. While selecting the material for different parts of heating and measuring device , due consideration to its operation at elevated temperature, high temperature gradient and thermal cycling to be taken into account. Vendor will suggest suitable material and get the approval of BHEL prior to manufacturing.  Measuring rod, depth gauge and sleeve material should be hardened and tempered.
3.	Design	The sole responsibility of mechanical design rests with supplier. Supplier will take the prior approval of following-  1)Drawing with item number, with its nomenclature, material TCs etc.  2)Valve supplier TCs, Pressure gauge calibration record etc .  3)Operation manual.





## EOI for Manufacturing & Supply of Stud heating and measuring device

In support of above supply experience, supplier has to furnish the following:

- A. At least 1 no. copy of Un-Priced Purchase Orders executed with details as per Table-1. However, if total quantity is less than 5 nos. in one PO then vendor to submit multiple POs to justify the supply of 5 nos. of quantity.

Table-1

Sl. No	Name of Customer	Detailed Address	Name, Phone no. and email - Id of contact person	Purchase order No.	Date of Supply	Details of items (Technical detail)	Qty.

- B. Test certificate (as given below) for Stud heating and measuring device for any one of the submitted PO. The submitted test certificate should have co-relation with the PO.


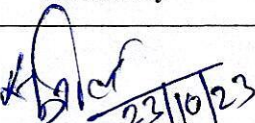

- Material Test certificate
- Dimensional reports

- 2) Acceptance certificate/dispatch document from customer for any one of the submitted PO.

### Selection of Supplier/ Manufacturer / Company:

Based on the information provided under this EOI, the prospective Supplier/ Manufacturer / Company shall be technically shortlisted. The short listed Supplier/ Manufacturer / Company will further be evaluated on the basis of terms and conditions defined in the enquiry.

Pre-bid clarification meeting can be held with the short listed parties regarding scope, confidentiality requirements and deliverables, physical checking of facilities at vendor works.

Prepared by	Checked by	Approved by
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