



**Expression of Interest**  
**For**  
**Manufacturing and Supply of “Stainless steel**  
**plate(Grade:X8CrNiNb16-13)” for**  
**Steam Turbine Application**

**EOI No.: BHEL / HERP / E&M / EOI / 14.09.2023**

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**Description**

Stainless steel plate (Grade X8CrNiNb1613) is used in the manufacturing of different parts of steam strainer that is a very critical component of steam turbine. A steam strainer in a steam turbine system serves the purpose of removing solid particles and debris from the incoming steam before it enters the HP and IP turbine. Hence It has to withstand very high pressure (166 Bar) and high temperature(530°C) of steam entering into the steam turbine.

**Scope of work:**

Scope of work will include the manufacturing and supply of Stainless steel plate (Grade X8CrNiNb1613)/EN10088, material number 1.4961 as per BHEL specification HW10782 in hot rolled and quenched condition.

**Note:** *No construction or repair welding is permitted.*

**Manufacturing:**

The steel shall be made in basic electric furnace. Any other process of melting shall be subjected to mutual agreement between manufacturer and BHEL.

**Heat Treatment:**

Solution annealing shall be done at 1050-1100°C as per EN10088.

**Chemical composition:**

<b>C</b>	0.04-0.1	<b>Si</b>	0.3-0.6	<b>Mn</b>	≤ 1.50
<b>P</b>	≤ 0.035	<b>S</b>	≤ 0.015	<b>Cr</b>	15.0-17.0
<b>Nb</b>	10*%C-1.20	<b>Ni</b>	12.0-14.0		

**Mechanical property :**

Following mechanical properties is required at room temperature:

0.2% Proof stress (N/mm <sup>2</sup> ),Min.	Tensile strength (N/mm <sup>2</sup> )	Elongation(Min.)		Impact value(Min.) Joule	
		L	T	L	T
205	510-690	35	22	65	45

**Surface condition:**

Surface condition of the plate should be as per EN10088 PART-2, Table-6(1D for hot rolled product).



### Qualification Criteria

The parties meeting the below mentioned technical criteria shall be considered for further development of vendor for “Manufacturing and Supply of Stainless steel plate(Grade:X8CrNiNb16-13)” for Steam Strainer as per the BHEL specification **HW10782**.

### Technical Criteria:

1. Manufacturing of stainless steel plates typically involves a series of processes that require various machinery and equipment. The specific machinery and equipment required may vary depending on the plate thickness, dimensions, and finishing processes. However, vendor must have following “Plant and machinery” of suitable capacity for the manufacturing of Stainless steel plate:
  - a) **Electric furnace:** The steel shall be made in basic electric furnace. Hence manufacturer must have electric furnace for the melting purpose.
  - b) **Rolling Mills:** A rolling mill is essential for reducing the thickness of stainless steel slabs to the desired thickness for plates. For the manufacturing of Stainless steel plate for steam strainer, Hot rolling mills will be required. Multiple stands and rolls are used to progressively reduce the thickness.
  - c) **Shearing Machine:** After rolling, stainless steel plates are cut to the desired plate length using shearing machines. These machines provide precise cutting to achieve the required dimensions.
  - d) **Surface Treatment Equipments:** Stainless steel plates will undergo surface treatment processes like pickling and passivation to remove oxides, scales, and contaminants and enhance corrosion resistance.

Equipment for pickling and passivation includes tanks, spray systems, and chemical handling systems.
  - e) **Heat Treatment Furnace:** Stainless steel plates require heat treatment processes, such as annealing or tempering, to improve mechanical properties or relieve stress. Furnaces with the graph plotter are used for controlled heating and cooling processes.
  - f) **Cutting Equipment:** Stainless steel plates may need to be cut into specific shapes or sizes. Plasma cutting, laser cutting, or waterjet cutting machines are commonly used for this purpose.
  - g) **Surface Finishing Equipment:** For achieving specific surface finishes, equipment such as abrasive belt grinders, polishing machines, and buffing machines will be required.



EOI for Manufacturing & Supply of Plate for steam strainer

**Commercial criteria:**

1. The Vendor should be a regular Supplier of Stainless steel plate of same or similar grade and Vendor should have executed at least Five (5) nos. of POs for supply of same or similar grade of Stainless steel plate in last 3 years. In support of supply experience, supplier has to furnish the following:
  - A. At least 3 no. copy of Un-Priced Purchase Orders executed with details as per Table-1.

**Table-1**

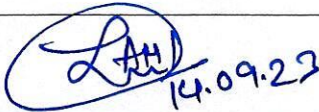
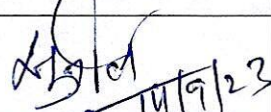

Sl. N	Name of Customer	Detailed Address	Name, Phone no. and email - Id of contact person	Purchase order No.	Date of Supply	Grade of SS plate	Qty.

- B. Test certificate (as given below) for Stainless steel plate for any two of the submitted POs. The submitted test certificate should have co-relation with the POs.
  - i. Chemical composition report
  - ii. Mechanical test report
- 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 has to participate in BHEL tender inquiry and further will 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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