

PRE-QUALIFYING CRITERIA FOR PROCUREMENT OF ST ROTOR FORGING THROUGH OPEN TENDER

Scope: Supply of rotor forging as per HY19473, Revision-04

Cross referred standard: AA0850150, AA0850155, AA0850106, AA0850152, ASTM E837, IS 1608, IS 1757, HY0800099.

Following are the mandatory requirements (1, 2 & 3). Offers of vendors not meeting these requirements will not be considered.

1. Minimum experience requirement:

The vendor must have successfully manufactured and supplied minimum 3 rotor shafts for steam turbine application in last 5 years in the material grade 30 Cr Mo Ni V 511 with the following minimum dimension and weight on tender issue date:

- Rotor barrel diameter: $\geq 900\text{mm}$
- Rotor length: $\geq 5000\text{mm}$
- Weight of rotor shaft (as delivered): $\geq 25\text{ T}$

In support of above, the vendor has to furnish details of 3 supplies preferably in the format given below:

IP Rotor shaft, steel: 30 Cr Mo Ni V 511				
Sl.NO	Purchase order number /customer details	Dimension: diameter (max) & length	Delivered weight	Year of supply
1				
2				
3				

Vendor has to submit documentary evidence in support of their experience for past supplies listed above. Vendor has to submit the test certificates of all three rotors of the claimed experience listed above.

Test results should cover following test results:

- a) Chemical analysis
- b) Details of the heat treatment cycles followed (in vertical furnaces having rotating mechanisms and using vertical quenching facilities)
- c) Mechanical properties including FATT reports
- d) Microstructures at the surface and at the core with photographs
- e) Detailed ultrasonic test report
- f) Magnetic particle examination report
- g) RSM (residual stress measurement)
- h) Thermal stability test results
- i) Dimension report

2. Technical qualification:

Vendor must have following in-house manufacturing and testing facilities for manufacturing and testing of rotor shaft as per enquiry drawing and specification (including cross-referred standards)

- Steel melting including refining,
- Forging,
- Vertical heat treatment facility for rotor,
- Thermal stability facility at temperature $\geq 660^{\circ}\text{C}$
- Axial core trepanning facility
- Machining as per enquiry drawing and specification.

Vendor has to submit filled annexure 1 for in house manufacturing and testing facilities.

3. Vendor to confirm supply shall be as per BHEL enquiry drawing and specification and all cross-referred documents referred there in. Deviation from enquiry drawing and specification is not acceptable.

Annexure 1

Vendor to submit details of manufacturing and testing facilities as per format below:

STEEL MELTING FACILITIES:

Melting furnaces details (type, capacity etc.)	
Refining facility details (vacuum degassing, ESR, etc)	
Maximum ingot size • Diameter [mm] • Length [mm] • Weight [mm]	
Size of ESR facilities max weight in kg	
Maximum ESR ingot size • Diameter [mm] • Length [mm] • Weight [mm]	

FORGING FACILITY:

Press capacity in KN	
Max. forging weight in MT	
Manipulator Capacity	
Remarks:	

Heat treatment facilities

1. Availability of vertical heat treatment facility for heat treatment of rotor	
2. Maximum diameter, length and weight of shaft which can be vertically heat treated	

3. Quenching type & medium	
----------------------------	--

Testing facilities:

1. Chemical analysis , tensile testing, impact, micro-examination etc.	
2. NDT facilities- UT,MPI, boroscopic, residual stress measurement etc	

Machining facilities:

Facility for axial core trepanning 1. minimum & maximum diameter of the core which can be trepanned 2. maximum length of axial core that can be trepanned	
Surface finish of axial bore (Specify achievable value)	
Concentricity, cylindricity and parallelity to achieve drawing requirements.	

Heat stability testing facilities

Max. diameter of forging Max. length of forging Max. weight of forging Max. testing temperature	
--	--

Note: The manufacturer shall submit the above information in English with relevant evidences, duly signed and company stamped.