



Technical Turbine Specifications & Scope of Work
Francis Turbine Shaft seal
For
Nathpa Jhakri Hydroelectric Power Station (6x250 mw)

1.0 Scope of Work

1.1 This specification covers the scope of supply for manufacture & supply /testing of Francis turbine shaft seal (GEE, Norway Design) for Nathpa Jhakri HE Power Plant, Jhakri, HP as detailed below:-

| Sr. No. | Item/Description | Qty. | Material composition |
|---------|---|--------|-------------------------------------|
| 1. | Complete Turbine shaft seal assembly without Turbine support ring for Francis Turbines of NJHPS as per Assembly Drg. No. 314517. | 2 sets | Strictly as per referred Part Drgs. |
| 2. | Shaft seal machined as per drawing no. 314 518 Rev B | 4 sets | |
| | Complete scope of Supply as per Annexure -I List of drg. attached as per annexure -II | | |

1.2 The scope of work under this contract as briefly outlined above shall also include all services which are not specifically mentioned in the bid documents but required to complete the items as well as for the successful efficient, safe and reliable operation of the items under this contract. The contractor is also required to depute his representative to site to ensure smooth fitting of the supplied turbine shaft seal assemblies in the generating units with in 24 months from date of supply, after which only CPG(10% of the contract value)shall be released.

2.0 Completion Schedule

2.1 The completion of entire work of under the scope is to be performed in such a manner that the complete material under the scope of contract is delivered at Jhakri site within a maximum period of 90 days from the date of issue of LOI/LOA as per the following :-

- **1st lot consisting of following within 60days**
 - Complete shaft seal assembly - 1 set
 - Shaft seal Machined - 1 set



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- 2nd lot consisting of following within 90 days
 - Complete shaft seal assembly - 1 set
 - Shaft seal Machined - 3 set

3.0 Material & Inspection Procedure

- 3.1 The shaft seal components shall be casting/Plate fabrication/forged manufactured of required chemical & physical properties as detailed in respective part drawings. **(The list of part drawings attached)**. Bidder may submit detailed procedure & testing method for manufacture & acceptance of casting/ forging/Plate fabrication.
- 3.2 The raw material shall be traceable to manufacturer certificate / or samples shall be drawn by SJVNL / third party for testing for physical & chemical properties as per referred standard at NABL approved lab. The testing as shall be required for acceptance of material shall be in the scope bidder.
- 3.3 In case casting/forging/Plate fabrication is offered from outsourced agencies, the bidder shall submit along with the technical bid details of such agencies and their technical & financial credentials for scrutiny of SJVNL. The outsourced agencies if any should be preferably approved by any of the agencies like NTPC, NHPC, EIL, UHDE, PDIL, BV & LLYODS ETC.
- 3.4 The proposed Quality Assurance Plan to be followed is enclosed at Annexure-I. However, the contractor shall submit final Quality Plan for approval of SJVNL.
- 3.5 Contractor shall arrange all Test reports at all stages of manufacturing for material, chemical composition, mechanical properties, non-destructive testing and dimension test as required through inspection by SJVNL or approved 3rd party Inspection agencies as per instructions of Engineer-I/C.
- 3.6 The contractors shall intimate AGM (Mtc.), Jhakri on readiness of material with at least one week's notice for carrying out inspection as per approved quality plan.
- 3.7 Material Dispatch Clearance from Jhakri or from his authorized representative shall be obtained prior to dispatch.



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In case of Third party inspection of material, test reports shall be submitted to SJVNL for review and based on these test reports dispatch clearance will be issued by AGM (Mtc.) SJVNL.

- 3.8 The NDT (i.e. UT & DPT) shall be carried out and material accepted as per the relevant standard.
- 3.9 Third party if deputed by SJVNL, in lieu of authorized representative of SJVNL, shall be at the cost of SJVNL.
- 3.10 The manufacturer will ensure that fitment of shaft seal assembly on the support ring available with NJHPS,SJVNL for which they may take actual measurement or may prepare replica(at their own cost) of the available support ring to match actual dimension while machining at their works. The Support ring (available with SJVNL)can be spared for 20 days ,however the transportation to & fro from Jhakri shall be in contractor's scope.
- 3.11 The correct fitment of the shaft seal assembly with support ring shall be demonstrated by the contractor at his works/at site.