



## INVITATION TO TENDER

Ref.: OS/22-23/DE/7926/05/005

Date: 07.06.2022

### Sub: Cold Forming of CS Dished Ends against S.O. no. 7926 at Vendor's works

Dear Sir,

Sealed tenders are invited for the subject work in **two-part bid** system from the vendors who are experienced in execution of similar jobs subject to the following eligibility criteria:

- (1) Bidders must have an experience in execution of similar jobs i.e. Cladded or Non-Cladded Dished Ends in the past 7 Years as on 31.05.2022. Bidders shall enclose Work Order, Work Completion Certificate and other relevant documents in support of successful and satisfactorily completion of the awarded job for at least one project.
- (2) Bidders shall have to enclose the documents of Registration of Firm, Udyog Aadhar Memorandum, PAN & GSTIN Registration.
- (3) The works executed in own name of the individual / firm of the tenderer will only be considered against the eligibility criteria.

#### 1) VENDOR'S SCOPE OF WORK:

a) Details of the Dished Ends to be formed are given in Annexure-II and are briefed below:

<u>S.O. No.</u>	<u>Description of Item</u>	<u>Quantity</u>	<u>Total Wt.</u>
7926	2:1 Ellipsoidal Dished Ends - CS	48 Nos.	39.216 MT
	<b>Total</b>	<b>48 Nos.</b>	<b>39.216 MT</b>

- b) Collection of cut to size blanks from BHEL-HPVP shops, Visakhapatnam, Transportation of (i) cut to size Blanks from BHEL- HPVP to Vendor works and (ii) Formed Dished Ends back to BHEL-HPVP, Visakhapatnam including transit insurance and Delivery at HPVP shops.
- c) Cut to size blanks will be issued to the vendor along with all required Test Certificates.
- d) Cold Forming of the dished ends with Cut to Size blanks as per applicable Drawings, approved QAP / ITP and Specifications. Wherever blanks are made from segments, Cut-to-Size blanks will be issued after joint welding with radiography clearance.
- e) Dished End supplier shall verify & confirm in their offer the blank diameter required to meet overall dimensions and minimum thickness to be achieved.
- f) Dimensions, ID & Thickness of formed Dished Ends shall be strictly within the tolerances given in the drawing, QAP / SQP.
- g) DP check on outside and inside surface of the Knuckle Area & SF as per Appendix-8 of ASME Section-VIII Division-I, 2019.
- h) Free issue items i.e. Cut to Size Blanks cleared by QC (Shops) are to be collected within 5 days from the date of intimation by Outsourcing dept. without any failure. Any delay beyond 5 days shall be considered for levy of LD.
- i) Material identification no. is to be maintained by Dished End manufacturer before, during & after forming operation.
- j) Offering for Stage wise & Final Inspection as per approved QAP / SQP and obtaining inspection clearance.
- k) After placing of order, Vendor shall have to submit applicable procedures for Handling, Forming, NDE etc., for approval by BHEL.
- l) NDE procedure should be in line with BHEL NDE procedure and NDE personnel shall be approved by BHEL NDE / TPIA.

**Contd...2**

- m) Calibration of instruments used for measurement shall be from an NABL approved lab.
- n) Though not mentioned specifically, any activity which is required for completion of the work is deemed to be included in the scope of bidders.

**2) LOCATION OF WORK SPOT:**

- a) Cold Forming of Dished Ends shall be carried out **at Vendor's Works.**

**3) BHEL's SCOPE:**

- a) Issue of Drawings, Approved QAP/ ITP, SQP etc.
- b) Issue of Cut-to-Size Blanks. Wherever blanks are made from segments, Cut-to-Size blanks will be issued after joint welding with radiography clearance.
- c) Loading of Blanks and unloading of finished Dished Ends at BHEL – HPVP, Visakhapatnam
- d) Height & TL Marking, Cutting of extra height and Edge Preparation as per the applicable drawings.
- e) Stress Relieving / Normalizing after formation / pressing of Dished Ends.

**4) INSPECTION:**

- a) Inspection shall be carried out at Vendor's works by M/s. BHEL / M/s. BHEL Authorized Inspection Agency / Customer as per Approved QAP / ITP.
- b) Approved QAP / ITP issued to the vendor after ordering shall only be followed for execution and inspection of the job.
- c) Dished End Vendor shall furnish soft copy as well as hard copy of the Inspection Reports / Test Certificates including (a) Method of Forming (b) Dimensional Report including minimum thickness (c) Results of Template check, (e) NDE Reports etc. to BHEL as per approved QAP / ITP.
- d) Preparation of all the documentation related to inspection such as BHEL / TPI / Customer Clearance as per BHEL standard formats, Generation of Inspection Reports etc., and submission of soft copy as well as hard copy of the same to BHEL-QA.

**5) DELIVERY:**

- a) Finished Dished Ends along with all the relevant inspection documents as per approved QAP / ITP and all other certificates are to be delivered to HPVP, Visakhapatnam **within 10 weeks from the date of issue of blanks.**
- b) The delivery period will be calculated from the date of issue of blanks at HPVP, Visakhapatnam to the date of delivery of finished items at BHEL-HPVP, Visakhapatnam.
- c) In case the delivery period offered by the vendor is more than the tender delivery, Loading for additional delivery period shall be @1/2 % per week or part thereof on the price quoted by the vendor for the purpose of evaluation of L1 status.

**6) PRICE:**

- a) The prices shall be quoted **only in Annexure-I** for the detailed scope of work mentioned in the tender document. The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of the work.
- b) The quoted price shall be inclusive of all applicable taxes & duties **except GST**. Income tax shall be deducted at applicable rates from the vendor's bills. GST shall be reimbursable to the vendor as per applicable guidelines.

**7) GOODS & SERVICES TAX (GST):**

**Bidders shall make a note of the following points of GST before submission of their offer: -**

- a) Vendors shall have to mention their GSTIN no. (15 Digits) in their Technical Bid. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.
- b) Semi-finished goods are to be delivered by the Vendors in BHEL, HPVP premises within a maximum period of one year from the date of issue of the material, failing which the whole transaction will be considered as Supply and Sale and GST is required to be paid along with interest (calculated @ SBI Base Rate + 6%) along with penalty, if any, from the date of Challan on the whole value of materials. Hence vendors shall have to ensure that materials issued to them are returned within 365 days.
- c) After fabrication, the vendors shall have to deliver the Semi-Finished Goods by fulfilling the following formalities:
  - i) GST invoice should be raised by the vendors by paying GST on job work charges at applicable rates and by incorporating the HPVP GSTIN no. in the invoice for availing the reimbursement of GST from HPVP.
  - ii) The vendor shall also have to enter in their GST Return -1 (GSTR-1) the details of invoice raised for payment of GST so as to enable HPVP to avail input credit.

**8) RISK PURCHASE:**

In case the contractor fails to execute the work within the scheduled time or due to any other reasons, BHEL-HPVP reserves the right to get the same completed through some other party at the risk & cost of the contractor and any additional expenditure incurred due to the same shall be charged to the contractor.

**9) REVERSE AUCTION:**

- a) BHEL shall be resorting to Reverse Auction (RA) for this tender. RA shall be conducted among the eligible techno-commercially qualified bidders. Business Rules for Reverse Auction are given at Annexure – V and Guidelines for Reverse Auction are available on our website, [www.bhel.com](http://www.bhel.com) → supplier registration → Guidelines for Reverse Auction 2021, before submission of their offer.
- b) E-mail Price bids of all the techno-commercially qualified bidders shall be opened and the same shall be considered as initial bids of the bidders in RA. In case any bidder(s) do(es) not participate in online Reverse Auction, their sealed envelope / Electronic price bid along with applicable loading, if any, shall be considered for ranking.
- c) BHEL will inform bidders the details of service provider who will provide business rules, all necessary training and assistance before commencement of online bidding. The bidders participating in the Reverse Auction shall have to necessarily submit '**Process Compliance Form**' (PCF) to the designated Service Provider.
- d) Bidders are advised to read the 'Business Rules' (Annexure – V) indicating details of RA event carefully, before reverse auction event.

**10) GENERAL:**

- a) The bidders shall study the Tender documents, Drawings, Quality Documents and all other relevant documents in detail for understanding the scope of work and the processes involved before submission of offer. Bidders shall get clarifications, if any, from concerned officials on the scope of work, clarifications related to welding or any other details of the tender document, over phone between 09:00 AM and 04:00 PM on any working day or through e-mail.
- b) **Conditional / Partial Price Bids and any other deviations to the tender terms & conditions are not acceptable** and BHEL reserves the right to reject such offers without further correspondence. Bidders shall confirm their acceptance to all the terms & conditions of the tender enquiry in the Techno-commercial Bids and any deviations mentioned in the Price Bids shall not be considered.

- c) BHEL reserves the right to modify or cancel the tender enquiry at any stage without assigning any reasons thereof.
- d) The General Terms & Conditions, if any, contradicting with the specific terms & conditions given in the tender, then specific terms & conditions shall only be considered.

11) General Terms & Conditions shall be as per Annexure – III enclosed herewith.

12) The following documents shall form part of the tender enquiry: -

- i) Schedule of Rates : Annexure – I
- ii) Details of Dished Ends to be formed : Annexure – II
- iii) General Terms & Conditions : Annexure – III
- iv) Acceptance to tender terms & conditions : Annexure – IV
- v) Business Rules for Reverse Auction : Annexure – V
- vi) GST Compliance for Indigenous Suppliers : Annexure – GST
- vii) Applicable Drawings & QAP / ITP

13) **VALIDITY OF OFFER:**

- a) The offer shall be valid for a period of **3 months** from the date of Reverse Auction.

14) **TENDER SUBMISSION (through E-mail only):**

- a) Techno-commercial bids along with the tender document duly signed & stamped by the bidder on all pages and a covering letter on Company's Letter Head addressed to DGM (Outsourcing), BHEL-HPVP, Visakhapatnam shall be sent through an e-mail to the e-mail ID [technicalbid-hpvp@bhel.in](mailto:technicalbid-hpvp@bhel.in)
- b) Price bid (Annexure – I) shall be sent separately through e-mail to the e-mail ID [pricebid-hpvp@bhel.in](mailto:pricebid-hpvp@bhel.in)
- c) Offers completed in all respects along with all the supporting documents shall be sent to the above e-mails only **latest by 14.00 Hrs. on 17.06.2022** duly mentioning the Name of Work, Tender Ref. No. & Date and Technical Bid / Price Bid in the subject of the e-mail.

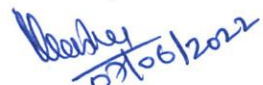
**Note: Don't mark CC and BCC while submitting your offer as the system is designed to reject such mails having more than one recipient. Max. file size of the attachment shall be 20 MB only. In case the file size is more, bidder can submit their offer through multiple mails within the due date and time.**

- d) Bidders shall ensure correctness of the e-mail addresses while submitting their offer. There shall be no other e-mail address at the receiving end while submission of the above bids otherwise the system will reject such mails. Bidder shall be solely responsible for non-receiving of such mails at the above mentioned e-mail addresses and no communication in this regard will be entertained.
- e) **TENDERS RECEIVED AFTER THE DUE DATE & TIME ARE NOT ACCEPTABLE.**
- f) **OFFERS SENT IN ANY OTHER FORM WILL BE TREATED AS INVALID AND WILL BE SUMMARILY REJECTED.**

15) **TENDER OPENING:**

- a) Techno-commercial Bids will be opened at **14.00 Hrs. on 17.06.2022**. The bidders may depute their representatives at the time of opening of Techno-commercial bids.
- b) After evaluation of the Techno-commercial Bids, intimation regarding date & procedure of conducting reverse auction shall be given by the service provider to all the eligible techno-commercially qualified bidders through an e-mail in advance at an appropriate time.

For Bharat Heavy Electricals Limited,

  
D. N. MURTHY  
Dy. Manager (OS)

Bharat Heavy Electricals Ltd  
HPVP, Visakhapatnam-530 01

**SCHEDULE OF RATES**

Item No.	S.O. No.	Description of Item	Unit	Qty.	Unit Rate (Rs.)	Amount (Rs.)
		Cold Forming of <b>CS Dished Ends</b> including DP check on outside & inside surface of KR & SF, NDT etc. as per applicable Drawings, approved QAP, Specifications, Procedures etc. Co-ordination with BHEL / TPIA for Stagewise & Final inspection and obtaining necessary inspection clearance along with relevant documentation and including Collection & transportation of cut to size blanks from HPVP Shops to Vendor's works, Transportation & Delivery of Finished dished ends back to BHEL-HPVP, Visakhapatnam etc., as per the detailed scope of work mentioned in the tender.				
		<b>2:1 Ellipsoidal Dished Ends</b>				
<b>1</b>	<b>7926</b>	ID 1300 mm x 34 mm (Min.) THK from a blank of Dia. 1822 mm x 40 mm THK of Matl. Specn. SA 516 GR.70 - <b>Wt. 817 Kg each</b>	<b>No.</b>	<b>48</b>		
		<b>TOTAL</b>		<b>48</b>		
<b>Total Amount (in Words) :</b>						

**Notes :**

- 1) **L1 status will be evaluated based on the total quoted price.**
- 2) The quantity indicated above is tentative and may vary subject to the requirement at the time of ordering/ execution. However, payment shall be made for the actual quantity only.
- 3) The prices shall be fixed & firm without any escalation during the entire period of contract and till completion of work.
- 4) The quoted price shall be inclusive of all applicable taxes & duties **except GST**. However, GST shall be reimbursed by BHEL on submission of proof of GST payment.
- 5) The bidders are advised to go through all the drawings & documents before quoting the tender.
- 6) The evaluation currency for this tender shall be **INR**.
- 7) Tenderer should quote the amount in figures & words. It may be noted that corrections, overwriting etc. are not allowed. If there is a discrepancy between amount in figures & words, the amount in words shall prevail unless the amount expressed in words is related to an arithmetic error, in which case the amount in figures shall prevail. If there is an error in the total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail and total shall be corrected accordingly.  
In case of mismatch between rate and amount in figures, rate in figures shall be taken into consideration for further evaluation and processing.

**Signature of the Bidder with Stamp**

**DETAILS OF DISHED ENDS TO BE FORMED**

Ref: OS/22-23/DE/7926/05/005

Date: 07.06.2022

Sl. No.	S.O. No.	PGMA	Part No.	Drawing No.	Rev. No.	Description of Item	Matl. Spec.	D'end Size in mm	SF (mm)	Blank Size (mm)	Blank Weight (Kg)	Qty. (Nos.)	Total Weight (Kg)
1	7926	PV-010	01 & 12	2-220-01-49014 VAR-004	0	2:1 Ellipsoidal Dished End	SA 516 GR.70	ID 1300 x 34 (Min) THK	65	Dia. 1822 x 40 THK	817	32	26,144
2	7926	PV-020	01 & 12	2-220-01-49014 VAR-005	0	2:1 Ellipsoidal Dished End	SA 516 GR.70	ID 1300 x 34 (Min) THK	65	Dia. 1822 x 40 THK	817	16	13,072
								<b>TOTAL</b>				<b>48</b>	<b>39,216</b>

**GENERAL TERMS & CONDITIONS****1. TECHNICAL DELIVERY CONDITIONS:**

The work should conform to the technical data given in our drawings, GMS, Shipping List Specifications, QAP, WPS etc.

**2. PARTY'S SCOPE:**

The scope of the party shall be as follows: -

- a) All welding equipments, baking oven, tools, jigs and fixtures, measuring instruments duly calibrated, handling facilities, testing facilities etc.
- b) All materials other than those mentioned under "Free Issue Materials", which are required for completion of the work.
- c) All consumables such as electrodes, gases, grinding wheels etc.

**Note: Electrodes of specification mentioned in the drawings / WPS and of BHEL approved brands only shall be used and MTCs of the same shall be submitted to BHEL for verification before use.**

**3. REVISION OF DRAWINGS:**

There may be minor changes in the drawings during execution. In such a case, party should accommodate the same without any extra claim.

**4. WELDING QUALIFICATION: Qualification of required number of Welders is party's responsibility at their cost.****5. X-RAY:**

All welding shall be of X-ray quality where specified on drawings. Inspection would specify the quantum of X-ray based on drawings / code requirement. Party should strictly follow the WPS and QAP issued by BHEL during welding. Getting the welds radiographed and getting them cleared by inspection is the responsibility of the party.

**6. RECTIFICATIONS / REJECTIONS:**

Any rectification due to defective work, if required, shall be done by the party free of charge with a suitable technology approved before hand by BHEL in writing. The cost of material, if any used for rectification work / rejection work, will be estimated by BHEL and the same shall be debited to party's account. In case any rectification / rework is to be carried out due to defective material supplied by BHEL, the replacement material and consumables will be supplied by BHEL free of Cost.

**7. SECURITY DEPOSIT:**

Vendors shall have to submit a Bank Guarantee for **10% of the order value in case of HPVP ADM site or 25% of the material cost in case of Vendor works** towards Security Deposit and safe custody of free issue materials within 15 days from the date of intimation by Outsourcing dept. The BG shall be valid for the entire contract period with a claim period of 12 months. This Bank Guarantee shall be released to the contractor after completion of work and on acceptance of the same by BHEL.

Bidder agrees to submit performance security required for execution of the contract within the time period mentioned above. In case of delay in submission of performance security, enhanced performance security which would include interest (SBI rate + 6%) for the delayed period, shall be submitted by the bidder. Further, if performance security is not submitted till such time the first bill becomes due, the amount of performance security due shall be recovered as per terms defined in NIT/contract, from the bills along with due interest.

**8. PERFORMANCE BANK GUARANTEE:**

Vendors shall have to submit Performance Bank Guarantee (with claim period of 12 months) for 10% of the order value covering for the defects liability period. If PBG is not submitted, 10% of the order value shall be deducted towards PBG from the final bill and shall be refundable after performance guarantee period, if no defects are found during this period.

**9. RAW MATERIALS ISSUE:**

Raw materials shall be issued with appropriate processing allowance and invisible wastage over the theoretical requirement of raw materials (**Plates, Sheets, Sections and Pipes**).

**10. TRANSFER / RETURN OF LEFT OVER MATERIALS:**

Party should maintain proper records for receipt & use of all free issue materials. The left over materials & scrap as per the material accounting statement shall be returned to HPVP stores along with finished job. Material Transfer Vouchers (MTV) from one order to another or from one vendor to another and Material Return Vouchers should be submitted immediately after transfer / return. The material reconciliation statement shall be submitted by the contractor after verification and certification by BHEL along with the final bill **within 30 days from the date of completion of work**. Otherwise, recovery for the balance materials shall be made from any of their pending bills without further intimation.

**11. MATERIAL RECONCILIATION:**

Orders issued to the vendors have to be completed in all respects including Material Accounting within a maximum of **180 days** from the **date of issue of the first material** from BHEL - HPVP stores.

**Maximum of 0.5 %** on the requirement of materials (**Plates, Sections and Pipes**) is admitted towards **process allowance and invisible wastage**.

Scrap quantity is permissible up to a **maximum of 1% on Structural (Beams, Channels, Angles, Rods, Pipes etc.), 2% on Sheets, 3% for Plates** on the theoretical requirement of materials.

**If wastage and scrap is beyond the above limits**, it should be fully justified with cutting diagrams etc. which are to be approved in advance by BHEL. **Otherwise, the cost of raw materials beyond approved limits will be recovered from the contractor as per BHEL recovery rates including applicable taxes & duties.**

Material reconciliation including return of balance materials, off-cuts is to be completed within 20 days from the date of completion of the order. The material reconciliation statement shall be submitted by the contractor after verification and certification by BHEL-HPVP along with the final bill **within 30 days from the date of completion of work**. Otherwise, recovery for the balance materials shall be made from any of their pending bills without further intimation,

Repeated occurrence of inordinate delays in returning and settling the material accounting will entail BHEL the right to terminate the contract forthwith or impose a temporary suspension on further loading at the discretion of BHEL.

**12. SCRAP & OFF-CUT NORMS:**

Sl. No.	Description	Scrap Size (in mm)	Off-Cut (in MM)
1.	CS/AS Sheets & Plates	Below 500 × 250	500 × 250 & above
2.	Rolled sections Rod, angles etc. (other than -tubes, pipes)	Below 1000	1000 & above
3.	Tubes & Pipes	Below 500	500 & above
4.	Universal column	Below 1000	1000 & Above
5.	SS Sheets & Plates	Below 500 × 250	500 × 250 & above
6.	SS Structural, Rods, Tubes, Pipes	Below 250	250 & above
7.	Non – ferrous: sheets & plates, rods & tubes	Below 500 × 250 (S & PL), Below 250 (Rods & Tubes)	500 × 250 & above, 250 & above
8.	Big size Scrap	(2500 & above) × (150 to 249)	-

**13. INSPECTION:**

Party shall contact our Quality Control Dept. for stages of inspection before commencement of job and should strictly follow the stages of inspection as per QAP.

**14. WORKMANSHIP GUARANTEE:**

The vendors should give workmanship guarantee for fabricated items for a period of 18 months from the date of last delivery of the order. Any defects due to incomplete work, faulty workmanship found in the fabricated items after delivery during the defects liability period shall be rectified / replaced by the vendor free of cost. Otherwise, the expenditure incurred towards the same will be recovered from the pending bills of vendors.

**15. WORK PROGRESS:**

The fabricator shall furnish a weekly report on the progress of work along with the status of availability of free issue materials and requirement of further materials, if any.

Outsourcing dept. personnel will visit vendor's works from time to time to assess and review the work progress. Free access shall be provided to BHEL or its inspection agency at all reasonable times of the day / night.

In case the progress is not satisfactory or supplies are delayed abnormally beyond the contractual delivery date, BHEL-HPVP, Visakhapatnam reserves the right to cancel the order in part or full or get the balance job in as is where is condition completed elsewhere by another agency at the risk and cost of Fabricator. The value of the work carried out by the party will be assessed by BHEL and the same shall be final. No compensation will be given to the fabricator in case of cancellation of order or diversion of balance job even if the jobs have been processed partly.

**16. DELIVERY:**

Finished items should be handed over to BHEL-HPVP on party's delivery challans along with Job completion certificate / Final Inspection Report from inspection agency / HPVP-QC department.

**17. PENALTY:**

If delivery exceeds the stipulated delivery schedule, penalty 1/2 % of the total value of order per week or part there of subject to a maximum of 10% on the total value of the order will be levied. However, time taken for the following will not be considered as delay on the part of the Sub-Contractor.

- 1) Intermediate operations, if any, carried out by BHEL.
- 2) Waiting time for BHEL / Third party Inspection beyond a normal time of 3 days.

**18. PAYMENT TERMS:**

Payment shall be made against RA Bills within 45 days from the date of submission of Bill.

90% payment will be made after handing over of the finished equipments along with all inspection documents to HPVP shops / Logistics dept. / ADM site / Lova Garden site, duly inspected & cleared by Inspection authority. Balance 10% payment shall be made along with the Final Bill against completion of total order in all respects including documentation.

Vendors shall have to submit the bills in the formats specified by HPVP-Outsourcing and the bills submitted in the specified format along with necessary supporting documents are only admitted for processing. The following documents shall be submitted along with the Final Bill: -

1. No Claim Certificate from the contractor
2. No Dues Certificate from BHEL
3. Work Completion Certificate from BHEL
4. Material Reconciliation Statement submitted by the Contractor and certified by concerned authority of BHEL (if applicable)
5. Workmanship Guarantee certificate from the contractor

**19. SECRECY:**

All the documents of BHEL inclusive of Drawings, GMS and Standards made available to the fabricator should be kept in strict confidence and under no circumstance be made available to others or allow others to make use of them. Such documents shall be returned to BHEL on demand after completion of the job. This secrecy clause is binding on the employees of the fabricators also. Violation of the same may lead to suspension of business with the vendor and necessary legal action.

**20. SUB-LETTING:**

In general, sub-letting of jobs will not be permitted. But in special circumstances, this may be allowed. In such case, the party should obtain written approval from BHEL-HPVP, Visakhapatnam before sub-letting.

**21. FACTORY RULES AND REGULATIONS:**

Party shall abide by all the rules and statutory regulations in force from time to time as per factories act. It shall be party's responsibility to ensure the safety of their workmen and fulfilling the ESI, PF and other relevant statutory regulations.

**22. SAFETY:**

- a) Contractor shall adhere to safe construction practices, guard against hazardous & unsafe working conditions and shall comply with the safety rules of BHEL and local authorities. He shall maintain First Aid facilities for all his employees and labour. Contractor's responsibility includes supply of welder kit, all safety items such as safety belts, white and colour glasses, goggles, safety helmets, safety shoes etc.
- b) *Contractor and his employees shall follow all fire & safety, security regulations of BHEL.*

**23. HOUSE KEEPING:**

During execution of work, the contractor at all times keep the working place and storage area clean and free from accumulation of waste materials, rubbish etc.,

**24. ACCIDENT / DAMAGE / CONDUCT ETC.:**

Contractor will be held responsible for any disorderly conduct / misconduct, indiscipline, theft, smoking etc., on the part of his men. He will ensure summarily eviction of such men from his premises failing which BHEL would remove them from the factory on his responsibility. Any damage to and or loss of equipment, machinery, building etc., to BHEL or BHEL employees, visitors or other contractors resulting from his own or any of his men's negligence shall be liable to be made good by him. Contractor shall be solely responsible for any accident in which you or your men or your equipment may be involved during the execution of contract on account of any reason what so ever.

**25. TERMINATION OF CONTRACT:**

In the event of any failure on the part of the contractor, BHEL reserves the right to terminate the contract by giving a notice of 2 weeks for any of the following lapses and contractual violations: -

- a) Failure to make labour payments in time as per the rules
- b) Failure to progress the job according to the agreed schedule
- c) Failure to mobilize adequate man power, tools & tackles and consumables in time
- d) Failure to adhere to Quality Standards of BHEL
- e) Refused to co-operate with other agencies working in the same area
- f) Failure to resolve labour disputes like strikes etc., within 7 days of occurrence
- g) Failure to comply with statutory regulations applicable at BHEL

BHEL shall also be free to intervene and take necessary remedial measures. All costs incurred with interest and overheads shall be recovered from contractor by such foreclosing or off-loading any part of the contract work.

**26. DISPUTES:**

Head of BHEL- HPVP Unit will be the final authority for any disputes arising out of this contract. The disputes / arbitration / settlement of contractual or legal issues shall be under the Jurisdiction of Visakhapatnam Court.

27. For this procurement, Public Procurement (Preference to Make in India), Order 2017 dated 15.06.2017 & 28.05.2018 and subsequent Orders issued by the respective Nodal Ministry shall be applicable even if issued after issue of this NIT but before finalization of Contract / PO / WO against this NIT.

In the event of any Nodal Ministry prescribing higher or lower percentage of purchase preference and / or local content in respect of this procurement, same shall be applicable.

28. The Bidder declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s). This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.

In case, the Bidder is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines.

**Signature of the Bidder with Stamp**

**Acceptance to Tender Terms & Conditions**

I / We hereby confirm that the Tender documents, Drawings, Quality documents etc. have been studied in detail and we have fully understood the scope of work.

I / We accept to all the Terms and Conditions of the Tender Enquiry and the prices quoted are in accordance with the same.

I / We give our acceptance to participate in reverse auction for this tender.

Tender documents duly signed on all the pages by the Owner / authorized representative of the bidder are attached herewith.

**Signature of the Bidder with Stamp**

**BUSINESS RULES FOR REVERSE AUCTION (RA)**

This has reference to tender no. **OS/22-23/DE/7926/05/005, dated 07.06.2022**. BHEL shall finalize the Rates for **Cold Forming of CS Dished Ends against S.O. no. 7926 at Vendor's works** through Reverse Auction mode. BHEL has made arrangement with an authorized Service provider (details will be shared before reverse auction) for conducting RA. Bidders should go through the instructions given below and submit acceptance of the same.

The technical & commercial terms are as per (a) BHEL Tender Enquiry No. **OS/22-23/DE/7926/05/005, dated 07.06.2022**, (b) Bidders' technical & commercial bid (in case of two-part bid) and (c) subsequent correspondences between BHEL and the bidders, if any.

**1. Procedure of Reverse Auctioning:**

- i) Price bids of all techno-commercially qualified bidders shall be opened.
- ii) **Reverse Auction:** The 'bid decrement' will be decided by BHEL.
- iii) The lowest bidder in sealed envelope price bid shall be shown as current L1 automatically by the system and no acceptance of that price is required. System shall have the provision to indicate this bid as current L1.
- iv) Bidders by offering a minimum bid decrement or the multiples thereof can displace a standing lowest bid and become "L1" and this continues as an iterative process. However, no bidder shall be allowed to lower its bid below the current L1 by more than 5 decrements at one go.
- v) After the completion of the reverse auction, the Closing Price shall be available for further processing.
- vi) Wherever the evaluation is done on total cost basis, after Reverse Auction, prices of individual line items shall be reduced on pro-rata basis.

**2. Schedule for reverse auction:** The Reverse Auction schedule will be intimated to the eligible techno-commercially qualified bidders at a later stage.**3. Auction extension time:** If a bidder places a bid in the last {...} minutes of closing of the Reverse Auction and if that bid gets accepted, then the auction's duration shall get extended automatically for another {...} minutes, for the entire auction (i.e. for all the items in the auction), from the time that bid comes in. Please note that the auto-extension will take place only if a bid comes in those last {...} minutes and if that bid gets accepted as the lowest bid. If the bid does not get accepted as the lowest bid, the auto-extension will not take place even if that bid might have come in the last {...} minutes. In case, there is no bid in the last {...} minutes of closing of Reverse Auction, the auction shall get closed automatically without any extension. However, bidders are advised not to wait till the last minute or last few seconds to enter their bid during the auto-extension period to avoid complications related with internet connectivity, network problems, system crash down, power failure, etc.

The above process will continue till completion of Reverse Auction.

Complaints/ Grievances, if any, regarding denial of service or any related issue should be given in writing thru e-mail/ fax to M/s. {Service provider} with a copy to BHEL within 15 minutes prior to initial closing time of Reverse Auction.

**4. Bid price:** The Bidder has to quote the {...} Price inclusive of Packing & Forwarding charges, all the routine & type tests as per tender scope, taxes, duties, freight and insurance as specified in tender document including loading (if indicated by BHEL due to deviations in technical/ commercial terms) for the Items specified. Details are as shown in Excel Sheet for calculation of total cost to BHEL (To be specified by Unit as per NIT conditions).**5. Bidding currency and unit of measurement:** Bidding will be conducted in *Indian Rupees per Unit* of the material as per the specifications mentioned in the tender.

In case of foreign currency bids, exchange rate (TT selling rate of State Bank of India) as on scheduled date of tender opening (Part-I bid) shall be considered for conversion in Indian Rupees. If the relevant day happens to be a Bank holiday, then the forex rate as on the previous bank (SBI) working day shall be taken.

6. **Validity of bids:** Price shall be valid for 3 months from the date of reverse auction. These shall not be subjected to any change whatsoever.
7. **Lowest bid of a bidder:** In case the bidder submits more than one bid, the lowest bid at the end of Reverse Auction will be considered as the bidder's final offer to execute the work.
8. Unique user IDs shall be used by bidders during bidding process. All bids made from the Login ID given to the bidders will be deemed to have been made by the bidders/ bidders' company.
9. **Post auction procedure:** BHEL will proceed with the Lowest Bid in the Reverse Auction for further processing.
10. Any commercial/ technical loading shall be separately intimated to respective bidders prior to RA. The excel sheet provided in this regard shall cover all these aspects. Commercial/ technical loading if any, shall be added by the respective bidder in its price during Reverse Auction.  
Modalities of loading & de-loading shall be separately intimated to the bidders. The responsibility for correctness of total cost to BHEL shall lie with the bidders.
11. Reverse auction shall be conducted by BHEL (through M/s {*Service Provider*}), on pre-specified date, while the bidders shall be quoting from their own offices/ place of their choice. Internet connectivity shall have to be ensured by bidders themselves.

During the RA process if a bidder is not able to bid and requests for extension of time by FAX/ email/ phone then time extension of additional 15 minutes will be given by the service provider provided such requests come before 5 minutes of auction closing time. However, only one such request per bidder can be entertained.

In order to ward-off contingent situation of connectivity failure bidders are requested to make all the necessary arrangements/ alternatives whatever required so that they are able to circumvent such situation and still be able to participate in the reverse auction successfully. Failure of power or loss of connectivity at the premises of bidders during the Reverse auction cannot be the cause for not participating in the reverse auction. On account of this, the time for the auction cannot be extended and neither BHEL nor M/s. {*Service provider*} is responsible for such eventualities.

12. **Proxy bids:** Proxy bidding feature is a pro-bidder feature to safe guard the bidder's interest of any internet failure or to avoid last minute rush. The proxy feature allows bidders to place an automated bid in the system directly in an auction and bid without having to enter a new amount each time a competing bidder submits a new offer. The bid amount that a bidder enters is the minimum that the bidder is willing to offer. Here the software bids on behalf of the bidder. This obviates the need for the bidder participating in the bidding process until the proxy bid amount is decrementally reached by other bidders. When proxy bid amount is reached, the bidder (who has submitted the proxy bid) has an option to start participating in the bidding process.

The proxy amount is the minimum amount that the bidder is willing to offer. During the course of bidding, the bidder cannot delete or change the amount of a proxy bid.

Bids are submitted in decrements (decreasing bid amounts). The application automates proxy bidding by processing proxy bids automatically, according to the decrement that the auction originator originally established when creating the auction, submitting offers to the next bid decrement each time a competing bidder bids, regardless of the fact whether the competing bids are submitted as proxy or standard bids. However, it may please be noted that if a manual bid and proxy bid are submitted at the same instant manual bid will be recognized as the L1 at that instant.

In case of more than one proxy bid, the system shall bid till it crosses the threshold value of 'each lowest proxy bid' and thereafter allow the competition to decide the final L1 price.

Proxy bids are fed into the system directly by the respective bidders. As such this information is privy only to the respective bidder(s).

13. Bidders are advised to get fully trained and clear all their doubts such as refreshing of Screen, quantity being auctioned, tender value being auctioned etc. from M/s. {*Service provider*}.

14. M/s. {*Service provider*}, shall arrange to demonstrate/ train the bidder or bidder's nominated person(s), without any cost to bidders. M/s. {*Service provider*}, shall also explain the bidders, all the business rules related to the Reverse Auction. Bidders are required to submit their acceptance to the terms/ conditions/ modalities before participating in the Reverse Auction in the process compliance form as enclosed. Without this, the bidder will not be eligible to participate in the event.
15. Successful bidder shall be required to submit the final prices (L1) in prescribed format (Annexure – VI) for price breakup, quoted during the Reverse Auction, duly signed and stamped as token of acceptance without any new condition (other than those already agreed to before start of auction), after the completion of auction to M/s. {*Service provider*} besides BHEL within two working days of Auction without fail.
16. Any variation between the final bid value and that in the confirmatory signed price breakup document will be considered as tampering the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings (as available on [www.bhel.com](http://www.bhel.com)).
17. Bidders' bid will be taken as an offer to execute the work/ supplies the item as per enquiry no. **OS/22-23/DE/7926/05/005, dated 07.06.2022**. Bids once made by the bidder, cannot be cancelled/ withdrawn and bidder shall be bound to execute the work as mentioned above at bidder's final bid price. Should bidder back out and not execute the contract as per the rates quoted, BHEL shall take action as per extant guidelines for suspension of business dealings (as available on [www.bhel.com](http://www.bhel.com)).
18. Bidders shall be able to view the following on their screen along with the necessary fields during Reverse Auction:
  - a. Leading (Running Lowest) Bid in the Auction (only total price of package)
  - b. Bid Placed by the bidder
  - c. Start Price
  - d. Decrement value
  - e. Rank of their own bid during bidding as well as at the close of auction.
19. BHEL's decision on award of contract shall be final and binding on all the Bidders.
20. BHEL reserves the right to extend, reschedule or cancel the Reverse Auction process at any time, before ordering, without assigning any reason, with intimation to bidders.
21. BHEL shall not have any liability to bidders for any interruption or delay in access to the site irrespective of the cause. In such cases, the decision of BHEL shall be binding on the bidders.
22. Other terms and conditions shall be as per bidder's techno-commercial offers and other correspondences, if any, till date.
23. If there is any clash between this business document and the FAQ available, if any, in the website of M/s. {*Service provider*}, the terms & conditions given in this business document will supersede the information contained in the FAQs. Any changes made by BHEL/ service provider (due to unforeseen contingencies) after the first posting shall be deemed to have been accepted if the bidder continues to access the portal after that time.
24. Bidder shall not divulge either his Bids or any other exclusive details of BHEL to any other party. If the Bidder or any of his representatives are found to be involved in Price manipulation/ cartel formation of any kind, directly or indirectly by communicating with other bidders, action *as per extant BHEL guidelines for suspension of business dealings (as available on www.bhel.com)*, shall be initiated by BHEL.

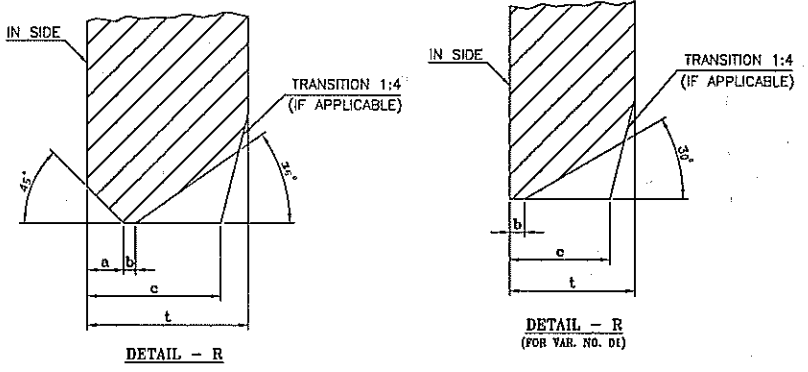
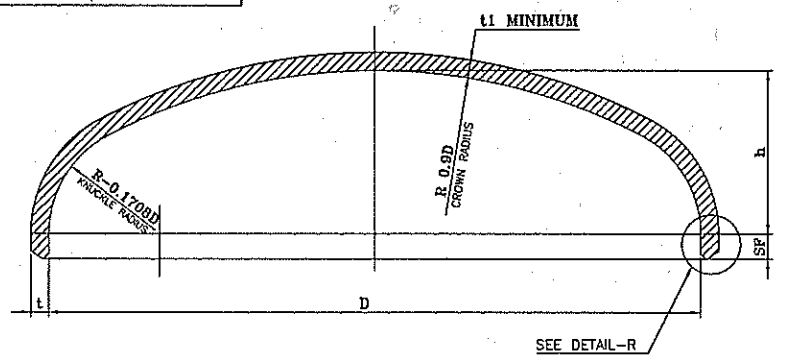
**Signature of the Bidder with Stamp**

**PROCEDURE FOR GST PAYMENT**

1. In Response to Tenders for Indigenous supplier will be entertained only if the vendor has a valid GSTIN which should be clearly mentioned in the offer. If any specific exemption is available, a declaration with due supporting documents need to be furnished for considering the offer.
2. Supplier shall mention their GSTIN in all their invoices and invoices shall be in the format as specified/prescribed under GST laws. Invoices shall necessarily contain Invoice number (in case of multiple numbering system is being followed for billing like SAP invoice no, commercial invoice no etc., then the Invoice No which is linked/uploaded in GSTN network shall be clearly indicated), item description as per PO, Quantity, Rate, Value, applicable taxes with nomenclature (like IGST, SGST, CGST & UTGST) separately, HSN/ SAC Code, etc.
3. All invoices shall bear the HSN Code for each item separately (Harmonized System of Nomenclature)/ SAC code (Services Accounting Code).
4. A declaration to the effect that all invoice particulars are/were uploaded in the GSTN network/ portal & all tax liability as per GST rules and regulations have been and will be discharged, shall be mentioned in the invoice. If not mentioned in the invoice, a separate declaration shall be submitted as per the requirement of BHEL.
5. All documents like Test Certificate, LR copy, Guarantee/Warrantee certificate, work completion certificate, any other document mentioned in PO, shall be sent along with the vehicle/consignment where ever applicable. For all consignments received within the calendar month, input credit will be availed within that month in line with monthly returns filing cycle. In case of any discrepancy in the document or non-submission of documents mentioned in the PO, then BHEL will not be able to accept or account the material, in such case availing of tax credit will be deferred to next month or so.
6. In case of discrepancy in the data uploaded by supplier in the GSTN portal or in case of any shortages or rejection in the supply, then BHEL will not be able to avail the tax credit and will notify the supplier of the same. Supplier has to rectify the data discrepancy in the GSTN portal or issue credit note (details to be uploaded in GSTN portal) for the shortages or rejections in the suppliers, within the calendar month notified by BHEL.
7. For any such delay in availing of tax credit for reasons attributable to supplier (as mentioned above), interest (calculated @ SBI Base Rate + 6%) along with penalty if any will be deducted for the delayed period i.e. from the month of receipt till the month tax credit is availed, from the running bills.
8. Under GST regime, BHEL has to discharge GST liability on LD recovered from suppliers/contractors. Hence applicable GST shall also be recoverable from suppliers/contractors on LD amount. For this Debit note will be issued by BHEL indicating the respective supply invoice number.
9. This is to inform that GST portion of invoice, shall be released only upon Vendor declaring such invoice in his GSTR-1 and receipt of goods and Tax invoice by BHEL and Confirmation of payment of GST thereon by vendor on GSTN portal. Alternatively, BG of appropriate value may be obtained from vendor which shall be valid At least one month after the confirmation of date of payment of GST by vendor on GSTN portal and receipt of Tax invoice and receipt of goods, whichever is later. Above is subject to receipt of goods/service and tax invoice thereof along with vendor declaring invoice in his return and paying GST within timeline prescribed for availing ITC by BHEL.
10. That in case vendor delays Declaring such invoice in his return and GST credit availed by BHEL is denied or reversed subsequently as per GST law, GST amount paid by BHEL towards such ITC reversal as per GST law shall be recoverable from vendor/contractor along with interest levied/ leviable on BHEL.

**Note : The above will be followed strictly for processing vendor payments to ensure GST Compliance.**

**Signature of the Bidder with Stamp**



VAR. NO.	PR. RECEIVER SIZE / N. W. P. IN Kg/cm <sup>2</sup>	I/D (O)±3	PLATE THICKNESS t in mm	SL. FLANGE (S.F.)±3	Min. THICKNESS AFTER FORMATION NOT LESS THAN t <sub>1</sub>	DIM (h)±3	TRANSITION 1:4			BLANK DIA.	WT.	MATL CODE MATL SPCN. ASTM GR 70	REMARK
						(a)	(b)	(c)					
01	0.6 M <sup>3</sup> /60	ø700	25	50	21.5	175	-	3	20	ø1028	162.00	25k x ø1028	
02	1.0/1.6 M <sup>3</sup> /60	ø1000	32	50	27.5	250	10	3	28	ø1408	390.00	32Tk x ø1408	
03	2.5 M <sup>3</sup> /60	ø1070	32	50	27.5	267.5	10	3	32	ø1489	436.00	32Tk x ø1489	
04	4.0 M <sup>3</sup> /60	ø1300	40	65	34	325	13	3	36	ø1822	817.00	40Tk x ø1822	
05	5.6 M <sup>3</sup> /60	ø1650	50	65	42.5	412.5	16	3	45	ø2275	1590.00	50Tk x ø2275	
06	6.3/8/10 M <sup>3</sup> /60	ø1820	56	65	48	455	18	3	50	ø2500	2150.00	56Tk x ø2500	
07	8/10/12M <sup>3</sup> /60	ø2000	63	71	54	500	20	3	56	ø2753	2935.00	63Tk x ø2753	
08	5.4 M <sup>3</sup> /60	ø1750	58	65	48	437.5	18	3	50	ø2428	2031.00	56Tk x ø2428	

**TECHNICAL REQUIREMENTS**

1. DOME ENDS TO BE FORMED AS ELLIPSOIDAL HEAD OF 2:1 WHERE CROWN RADIUS=0.9D AND KNUCKLE RADIUS=0.1708D.
2. THICKNESS SHOWN IS THE DESIGN THICKNESS OF DOME END AFTER FORMATION.
3. TOLERANCES ON ALL DIMENSIONS EXCEPT THICKNESS IS ±0.5% UNLESS OTHERWISE STATED.
4. IF DOME END IS FORMED BY HOT PRESSING, IT SHOULD BE STRESS RELIEVED.
5. IF DOME END IS FORMED BY COLD SPIN METHOD, NORMALISING IS NECESSARY AFTER COLD SPINNING AT 920°C.
6. AFTER STRESS RELIEVING/NORMALISING DOME END TO BE 100% U.T.
7. WELD PREPARATION TO BE DONE AS SHOWN BY MACHINING.
8. VARIATION IN DIM.(SF+h) MUST BE COMPENSATE IN CYLINDER TO MAINTAIN OVER ALL DIM OF WELDED ASSEMBLY OF PRESSURE RECEIVER.

DEVELOPED BLANK =  $O.D. + \frac{OD}{24} + \frac{2}{3}(Kr+t) + 2 SF + 10mm$  UP TO 12 Tk. AND 2t ABOVE 16 Tk. PLATE.


ADDITIONAL INFORMATION		TYPE OF PRODUCT OR NAME OF CUSTOMER/PROJECT		STANDARD																					
STATUS OF DRAWING u		BHARAT HEAVY ELECTRICALS LTD. BHOPAL																							
DISTRIBUTION OF PRINTS HTE-2 FBM-7 WTM-5 THX-1		<table border="1"> <tr> <th>DRN</th> <th>NAME</th> <th>SIGN</th> <th>DATE</th> <th>NO. OF VAR.</th> </tr> <tr> <td>GLB</td> <td></td> <td></td> <td>10.07.10</td> <td></td> </tr> <tr> <td>CKD</td> <td>VKN</td> <td></td> <td>10.07.10</td> <td>08</td> </tr> <tr> <td>APPD</td> <td>PKB</td> <td></td> <td>10.07.10</td> <td></td> </tr> </table>		DRN	NAME	SIGN	DATE	NO. OF VAR.	GLB			10.07.10		CKD	VKN		10.07.10	08	APPD	PKB		10.07.10			
DRN	NAME	SIGN	DATE	NO. OF VAR.																					
GLB			10.07.10																						
CKD	VKN		10.07.10	08																					
APPD	PKB		10.07.10																						
DEPT. HTE	UNTOI. DIMS. GR. REF. DRG. NO. 32000049014	SCALE NTS	WEIGHT(K.G.) SEE TABLE	REF. TO ASSY.DRG.	ITEM NO.																				
CODE 402																									
TITLE <b>DOME END</b> (ASTM 516 GRADE 70)			DRAWING NO. <b>2 220 01 49014</b>		REV. 00																				
			SHT. NO. 01		NO. OF SHT. 01																				




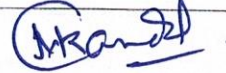
THE INFORMATION ON THIS DOCUMENT IS THE PROPERTY OF BHARAT HEAVY ELECTRICALS LIMITED. IT MUST NOT BE USED DIRECTLY OR INDIRECTLY IN ANY WAY DETRIMENTAL TO THE INTEREST OF THE COMPANY.


INVENTORY NO. SIGN & DATE REF. DRG. NO.

REV.	DATE	ALTERED CHECKED APPD.	REV.	DATE	ALTERED CHECKED APPD.	REV.	DATE	ALTERED CHECKED APPD.	REV.	DATE	ALTERED CHECKED APPD.	REV.	DATE	ALTERED CHECKED APPD.	REV.	DATE	ALTERED CHECKED APPD.

	MANUFACTURER'S NAME & ADDRESS  BHEL-VISAKHAPATNAM or Approved Sub Contractor.	STANDARD QUALITY PLAN for  CS/SS/LAS/CLAD Dished Ends of Columns & Pressure Vessels	SQP: H: PP:29/00  Page 1 of 7
--	--	---	-------------------------------------

Prepared by  Quality Assurance	 P. Gopi Kishore
--------------------------------------	--

Reviewed by	Signature
Engineering (S.K. Biswas)	 06.09.2020.
Production, Planning & Technology (P.C Kandpal)	 09.10.2020
Outsourcing (Y.V.R Rao)	
Quality (A.K. Mandal)	

Rev. No	Date	Approved by	Signature
0		AGM (Quality & BE)	



MANUFACTURER'S  
NAME & ADDRESS  
  
BHEL-VISAKHAPATNAM  
or Approved Sub  
Contractor.

**STANDARD QUALITY PLAN for**

**CS/SS/LAS/CLAD Dished Ends of Columns & Pressure Vessels**


SQP: SQP: H: PP:29/00

Page 2 of 7

S. No	Description of Components / Operations	Characteristics	Quantum of Check	Reference Documents	Acceptance Criteria	Format of Record	Agency			Remarks
							V	B	C	
1	2	3	4	5	6	7	V B	8	9	

RAW MATERIAL										
1.0	Plate Material: Verification & Correlation of Material Spec. & TC	Properties, Material Spec & Heat No. etc.	100%	TDC & Material Specification	TDC & Material Specification	Inspection Report	P	W	H	
	Physical Condition of Plates	Visual	Each Plates	Material Specification	Material Specification	Inspection Report	P	W	-	
	UT of Plates	Detection of flaws	100%	TDC / Material Spec. / Drawing	TDC / Material Spec. / Drawing	Inspection Report	P	R	-	
IN PROCESS INSPECTION										
2.0	Transfer of Marking and Heat Number	Transfer of Stamp	100%	MTC	-	Inspection Report	P	W	-	
3.0	Welding Procedure & Welder Qualification (if applicable)	WPS/PQR/WQR	100%	---	ASME Sec IX	ASME Format	P	R	-	
4.0	Weld Edge Preparation & DPT(if applicable)	Detection of flaws	100%	Drawing/PT Procedure	Drawing/PT Procedure	Inspection Report	P	R	-	
5.0	Fit up & Welding of L-Seam along with PTC as applicable (if applicable)	Fit-up, Dimensions, Welding, PTC	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	Inspection Report	P	R	-	


**LEGEND:** P: Perform, H: Hold, R: Review, B-TPIA: BHEL TPIA, C-TPIA: Customer TPIA, AI-ASME Authorised Inspector, PT: Penetrant Test, RT: Radiographic Test, UT-Ultrasonic Test  
V- Sub Vendor: B-BHEL / BHEL TPIA: C-Customer TPIA / AI

	MANUFACTURER'S NAME & ADDRESS	STANDARD QUALITY PLAN for				SQP: SQP: H: PP:29/00			
	BHEL-VISAKHAPATNAM or Approved Sub Contractor.	CS/SS/LAS/CLAD Dished Ends of Columns & Pressure Vessels				Page 3 of 7			

S. No	Description of Components / Operations	Characteristics	Quantum of Check	Reference Documents	Acceptance Criteria	Format of Record	Agency			Remarks
							V	B	C	
1	2	3	4	5	6	7	8			9


6.0	100% PT on chipped back L-Seam weld (if applicable)	Detection of flaws	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	Inspection Report	P	-	-	
7.0	100% RT of L-Seam weld (if weld is applicable) before forming and heat treatment	Detection of flaws	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	RT Films / Records	P	-	-	Refer enclosed Appendix in case of Clad material
8.0	Forming of Dished End	Dimensional & Template check	100%	As per Drawing	As per Drawing	Inspection Report	P	-	-	Refer enclosed Appendix before forming in case of Clad material
9.0	Heat Treatment (along with PTC if applicable) as applicable	Time & Temperature	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	HT Chart / Report	P	R	-	HT procedure duly approved by BHEL to be followed.

LEGEND: P: Perform, H: Hold, R: Review, B-TPIA: BHEL TPIA, C-TPIA: Customer TPIA, AI-ASME Authorised Inspector, PT: Penetrant Test, RT: Radiographic Test, UT-Ultrasonic Test  
V- Sub Vendor: B-BHEL / BHEL TPIA: C-Customer TPIA / AI

		MANUFACTURER'S NAME & ADDRESS  BHEL-VISAKHAPATNAM or Approved Sub Contractor.	<b>STANDARD QUALITY PLAN for</b>  <b>CS/SS/LAS/CLAD Dished Ends of Columns &amp; Pressure Vessels</b>				SQP: SQP: H: PP:29/00  Page 4 of 7			
S. No	Description of Components / Operations	Characteristics	Quantum of Check	Reference Documents	Acceptance Criteria	Format of Record	Agency			Remarks
							V	B	C	
1	2	3	4	5	6	7	8			9

FINAL INSPECTION										
10.0	100% PT on entire Knuckle area region (both inside & outside) including welds (if applicable) and weld edge preparation after forming & heat treatment	Detection of flaws	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	Inspection Report	P	W	-	100% MPI for LAS materials
11.0	100% RT of L-Seam weld (if weld is applicable) after forming and heat treatment	Soundness of Welds Detection of flaws	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	RT Films / Records	P	R	-	Review of RT Films only
12.0	100% UT after forming & heat treatment	Detection of flaws In Formed Head	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	UT Reports	P	W	-	Refer enclosed Appendix before Final Inspection in case of Clad material

**LEGEND:** P: Perform, H: Hold, R: Review, B-TPIA: BHEL TPIA, C-TPIA: Customer TPIA, AI-ASME Authorised Inspector, PT: Penetrant Test, RT: Radiographic Test, UT-Ultrasonic Test  
 V - Sub Vendor: B-BHEL / BHEL TPIA: C-Customer TPIA / AI

	MANUFACTURER'S NAME & ADDRESS	<b>STANDARD QUALITY PLAN for</b> <b>CS/SS/LAS/CLAD Dished Ends of Columns &amp; Pressure Vessels</b>	SQP: SQP: H: PP:29/00
	BHEL-VISAKHAPATNAM or Approved Sub Contractor.		Page 5 of 7


S. No	Description of Components / Operations	Characteristics	Quantum of Check	Reference Documents	Acceptance Criteria	Format of Record	Agency			Remarks
							V	B	C	
1	2	3	4	5	6	7	8			9

13.0	Testing of Test Piece (if applicable)	Mechanical Properties	100%	As per Drawing / Material Specification	As per Drawing / Material Specification	Inspection Report	P	W	-	Refer Note 6
14.0	Final Inspection (minimum thickness, profile, ovality, Depth, Circumference etc.)	Visual & dimensional	100%	ASME Sec VIII Div.1 & Drawing	ASME Sec VIII Div.1 & Drawing	Inspection Report	P	W	-	Dimensional check including minimum thickness using UT or UT-D meter.
15.0	Shot Blasting & Primer Paint application (if applicable)	Visual & dimensional	100%	Drawing	Drawing	Inspection Report	P	R	-	For CS only
16.0	Pickling & Passivation (if applicable)	Visual & dimensional	100%	Drawing	Drawing	Inspection Report	P	R	-	For AS & SS only.
17.0	Documentation	Record	100%	As per PO	As per PO	Document Book	P	R	R	Refer Note-5

Notes:

- 1) In case of conflict, more stringent requirement shall prevail.
- 2) Check the applicability of this SQP before proceeding.
- 3) All the measuring instruments / equipment shall have valid calibration records as on the date of use, from NABL / equivalent accredited bodies.
- 4) Transfer of identification mark on each part to be ensured before use.
- 5) Documents folder shall comprise reports as per this QP and shall be prefixed with an Index sheet with page numbers.
- 6) Testing of Test Coupon (required if any) to be done at any NABL accredited Laboratory.


**LEGEND:** P: Perform, H: Hold, R: Review, B-TPIA: BHEL TPIA, C-TPIA: Customer TPIA, AI-ASME Authorised Inspector, PT: Penetrant Test, RT: Radiographic Test, UT-Ultrasonic Test  
V- Sub Vendor: B-BHEL / BHEL TPIA: C-Customer TPIA / AI

		MANUFACTURER'S NAME & ADDRESS  BHEL-VISAKHAPATNAM or Approved Sub Contractor.	<b>STANDARD QUALITY PLAN for</b>  <b>CS/SS/LAS/CLAD Dished Ends of Columns &amp; Pressure Vessels</b>				SQP: SQP: H: PP:29/00  Page 6 of 7			
S. No	Description of Components / Operations	Characteristics	Quantum of Check	Reference Documents	Acceptance Criteria	Format of Record	Agency			Remarks
							V	B	C	
1	2	3	4	5	6	7	8			9

**APPENDIX SHEET CONTAINING ADDITIONAL REQUIREMENTS APPLCABLE IN CASE OF CLAD MATERIAL:**

1.0	Clad Restoration on L-Seam weld & test coupon	Continuity of Clad	100%	Approved procedure	Inspection Report	-	P	R	-	(if weld is applicable in Clad Plate)
2.0	100% PT on Clad restoration each layer	Detection of flaws	100%	ASME Sec VIII Div.1 & Drawing	Inspection Report	-	P	R	-	(if the Material of Construction is Clad Plate)
3.0	Copper Sulphate test on L-seam after barrier layer deposition and preparation before start of deposition of subsequent layers	Detection of flaws	100%	Approved Procedure	Inspection Report	-	P	R	-	(if M O C is from clad Plate)
4.0	Ferroyxl Test after L-seam Clad restoration	No iron contamination	100%	Approved Procedure	Inspection Report	-	P	R	-	As applicable

**LEGEND:** P: Perform, H: Hold, R: Review, B-TPIA: BHEL TPIA, C-TPIA: Customer TPIA, AI-ASME Authorised Inspector, PT: Penetrant Test, RT: Radiographic Test, UT-Ultrasonic Test  
 V- Sub Vendor: B-BHEL / BHEL TPIA: C-Customer TPIA / AI

	MANUFACTURER'S NAME & ADDRESS	STANDARD QUALITY PLAN for				SQP: SQP: H: PP:29/00			
	BHEL-VISAKHAPATNAM or Approved Sub Contractor.	CS/SS/LAS/CLAD Dished Ends of Columns & Pressure Vessels				Page 7 of 7			

S. No	Description of Components / Operations	Characteristics	Quantum of Check	Reference Documents	Acceptance Criteria	Format of Record	Agency			Remarks
							V	B	C	
1	2	3	4	5	6	7	8			9

5.0	Disbondment check (100% UT) for rolled sections of clad and weld overlay	Lack of bonding	100%	ASME Sec VIII Div.1 & Drawing	UT Reports	-	R	R	-	
6.0	Ferrite Number (2 spots per seam/overlay)	Microstructure % Delta Ferrite	100%	ASTM	Report	-	P	R	-	Using Ferrite Scope
7.0	Chemical Analysis after Clad Restoration and before forming & heat treatment	Chemical properties	100%	Approved Procedure	Inspection Report	-	P	R	-	

**LEGEND:** P: Perform, H: Hold, R: Review, B-TPIA: BHEL TPIA, C-TPIA: Customer TPIA, AI-ASME Authorised Inspector, PT: Penetrant Test, RT: Radiographic Test, UT-Ultrasonic Test  
V- Sub Vendor: B-BHEL / BHEL TPIA: C-Customer TPIA / AI

Government of Telangana  
Irrigation and CAD Department

From :  
Sri B. Hari Ram, B.Tech,FIE  
Engineer-in- Chief,  
I&CAD Dept., Gajwel,  
Siddipet(Dist.)

To :  
The Chief Engineer,(HPC&HP)  
TSGENCO,3<sup>rd</sup> Floor, A-Block,  
Vidyut Soudha.  
Hyderabad 500 082.

Lr.No.ENC/GAJWEL/EE/Designs/DEE-2/PCS Link-IV/Pkg-02/531/H Dt: 19-07-2021.

Sir,

**Sub: Kaleshwaram Project – Link IV – Parallel conveyor system for additional one TMC-  
Package-02- Design and drawings of Electro Mechanical Equipment– Approval  
– Request – Reg.**

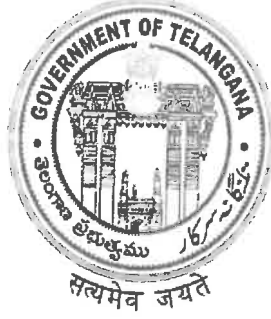
**Ref: 1) Lr.No.ADV/LIS/Kaleshwaram/ /Designs & Drawings /D.No.510/2021 Dt.14.07.2021  
and received in this office on 19.07.2021.**

**2) Lr.No SE/ IC/SDPT/DEE2/AEE1/PKG-02/455/H/4 sets Dt: 02.07.2021**

\*\*\*\*

The following design and drawings of Electro Mechanical Equipment pertaining to Kaleshwaram Project-Link IV-Parallel conveyor system for additional 1 TMC –Package-02 are cleared for approval by the Advisor, LIS, Government of Telangana vide reference 1<sup>st</sup> cited and recommended to get statutory approval from TSGENCO and communicate the comments made by TSGENCO if any for incorporation in final drawings/Documents before taking of execution of works.

S.No.	Description	Drawing No.	Comments
1	Installation of foundation ring	02020521601	No comments and cleared for approval
2	Pipes and Embedments in second stage	02020821601	All embedded pipes shall be stainless steel only
3	Quality plan for Dry type Transformer and vendor list for Dry type Transformer	QP/DT/1325/	No comments and cleared for approval
4	MQAP for vertical Francis pump	QA/HT/2112	No comments and cleared for approval
5	MQAP for drainage and dewatering system	QA/HT/2117	No comments and cleared for approval
6	MQAP for cooling water, compressed air and water decompression system	QA/HT/2113	No comments and cleared for approval



GOVERNMENT OF TELANGANA  
IRRIGATION & C.A.D DEPARTMENT

KALESWARAM PROJECT  
LINK -IV PACKAGE - II

NAME OF THE WORK: - PARALLEL CONVEYOR SYSTEM-PACKAGE-NO-2- LIFTING OF 333CUMES OF WATER FROM ANANTHAGIRI RESERVOIR TO DELIVERY CISTERN AT CHINNAGUNDAVALLY (VILLAGE) COMPRISING OF CONSTRUCTION OF APPROACH CHANNEL, FOREBAY, OPEN PUMP HOUSE, EM&HM WORKS, PRESSURE MAINS, DELIVERY CISTERN INCLUDING CM&CD WORKS E.T.C.

**SUBMISSION OF**

- **MQAP FOR VERTICAL FRANCIS PUMP**
- **MQAP FOR DRAINAGE & DEWATERING SYSTEM**
- **MQAP FOR COOLING WATER, COMPRESSED AIR AND WATER DECOMPRESSION SYSTEM**

**Executive Engineer**  
**Irrigation Division No.2**  
**Siddipet Dist.**



**BHARAT HEAVY ELECTRICALS LIMITED – BHOPAL**  
**QUALITY ASSURANCE – HYDRO**  
**QUALITY ASSURANCE PLAN**

**SHEET- 1 OF 4**

<b>PROJECT:</b> KALESHWARAM LINK-IV Pkg-II (6 X 125 MW) LIS, TELANGANA	<b>QA PLAN NO:</b> QA/HT/2112	REV 00	DATE: 05.04.2021
<b>EQUIPMENT:</b> VERTICAL FRANCIS PUMP	<b>CUSTOMER:</b> GOVT. OF TELANGANA, IRRIGATION & CAD DEPT		

**ABBREVIATIONS:**

B	BHEL QUALITY DEPT / BHEL APPOINTED THIRD PARTY AGENCY	MECH	MECHANICAL TEST
C	CUSTOMER/ CUSTOMER APPOINTED INSPECTION AGENCY	P	PERFORM
CHP	CUSTOMER HOLD POINT	QCR	QC REPORT
CoC	CERTIFICATE OF COMPLIANCE	SAMPLE	ONE SAMPLE PER HEAT/PER LOT AS PER SPEC.
CHEM	CHEMICAL TEST	SPEC	BHEL SPECIFICATION
D	DOCUMENT SUBMISSION TO CUSTOMER	TC	TEST CERTIFICATES
DOC	BHEL INTERNAL DOCUMENT	R	RECORD REVIEW
DRG	DRAWING	VIS	VISUAL EXAMINATION
M	MANUFACTURER (BHEL / BHEL APPROVED VENDOR)	W	WITNESS
MEAS	MEASUREMENT		

*Asst. Engr.*  
आधार शर्मा / AADHAR SHARMA  
वरि. अभियंता (सू.सं.सं.) / Sr. Engineer (CMT)  
गुणता प्रबंधन-अस. उपनि. / Quality Control-NTM  
बी.एच.ई.एल., भोपाल / BHEL, BHOPAL

*Govt*  
*DR/SOL*

*DR*  
**Deputy Executive Engineer**  
Irrigation Sub Division No. 2, Siddipet  
of Irrigation Division No. 1, Siddipet

*P. S. Reddy*  
*13.07.2021*  
**Advisor**  
Lift Irrigation Schemes  
Govt. of Telangana

**BHEL**

**CUSTOMER**



**BHARAT HEAVY ELECTRICALS LIMITED – BHOPAL**  
**QUALITY ASSURANCE – HYDRO**  
**QUALITY ASSURANCE PLAN**

**SHEET- 2 OF 4**

<b>PROJECT:</b> KALESHWARAM LINK-IV Pkg-II (6 X 125 MW) LIS, TELANGANA	<b>QA PLAN NO:</b> QA/HT/2112	REV 00	DATE: 05.04.2021
<b>EQUIPMENT:</b> VERTICAL FRANCIS PUMP	<b>CUSTOMER:</b> GOVT. OF TELANGANA, IRRIGATION & CAD DEPT		

SL NO	COMPONENT/ASSY/ OPERATION	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REF. DOC. /ACCEPTANCE NORMS	RECORD FORMAT	AGENCY			REMARKS
							M	B	C	
1.	IN-COMING MATERIAL									
1.1	Impeller casting (single piece)	Chemical composition	CHEM	SAMPLE	SPEC	TC	P	R	R	
		Mechanical Properties	MECH	SAMPLE	SPEC	TC	P	R	R	
		NDT as per DRG	NDT	100%	DRG./SPEC	TC	P	W	R	
		Surface finish check	MEAS	100%	DRG	QCR	P	W	-	
		Dimension check	MEAS	100%	DRG	QCR	P	W	-	
1.2	Shaft Forging	Chemical composition	CHEM	SAMPLE	SPEC	TC	P	R	R	
		Mechanical Properties	MECH	SAMPLE	SPEC	TC	P	R	R	
		NDT as per DRG	NDT	100%	DRG./SPEC	TC	P	W	R	
		Surface Roughness	MEAS	100%	DRG./SPEC	TC	P	W	-	
		Dimension check	MEAS	100%	DRG	QCR	P	W	-	
1.3	Guide Vane Casting	Chemical composition	CHEM	SAMPLE	SPEC	TC	P	R	R	
		Mechanical Properties	MECH	SAMPLE	SPEC	TC	P	R	R	
		NDT as per DRG	NDT	100%	SPEC	TC	P	W	R	
		Surface finish check	MEAS	100%	DRG	QCR	P	W	-	
		Dimension Check	MEAS	100%	DRG	QCR	P	W	-	
		Profile Check	MEAS	100%	DRG	TC	P	W	R	
1.4	Pipes for water, oil and Air	Chemical composition	CHEM	SAMPLE	SPEC	TC	P	R	R	
		Mechanical Properties	MECH	SAMPLE	SPEC	TC	P	R	R	
		Pressure test	TEST	SAMPLE	SPEC	TC	P	R	R	
1.5	Raw material for GV servo cylinder, air receiver, pressure receiver, spiral casing, stay ring, top cover, pivot ring, regulating ring, DT cone, DT liner, pit liner, guide bearing & coupling fasteners for impeller & shaft	Chemical composition	CHEM	SAMPLE	SPEC	TC	P	R	R	
		Mechanical Properties	MECH	SAMPLE	SPEC	TC	P	R	R	
		NDT as per spec (for plates 40 mm thk and above)	UT	SAMPLE	SPEC	TC	P	R	R	

*Asst. Eng.*  
**AADHAR SHARMA**  
 आधर शर्मा / AADHAR SHARMA  
 सहायक अभियंता (व्युत्पादन/ई.)/ Sr. Engineer (MNT)  
 गुणता नियंत्रण-अल इरिगेशन/ Quality Control-MNT  
 बीएचईएल, बhopal / BHEL, BHOPAL

*Govt*  
 BHEL

*Deputy*  
**Deputy Executive Engineer**  
 Irrigation Sub Division No. 2, Siddipet  
 of Irrigation Division No. 1, Siddipet

*R. K. Reddy*  
**Advisor**  
 Lift Irrigation Schemes  
 Govt. of Telangana  
 13-07-2021  
**CUSTOMER**

BHEL



**BHARAT HEAVY ELECTRICALS LIMITED – BHOPAL**  
**QUALITY ASSURANCE – HYDRO**  
**QUALITY ASSURANCE PLAN**

**SHEET- 3 OF 4**

<b>PROJECT:</b> KALESHWARAM LINK-IV Pkg-II (6 X 125 MW) LIS, TELANGANA	<b>QA PLAN NO:</b> QA/HT/2112	REV 00	DATE: 05.04.2021
<b>EQUIPMENT:</b> VERTICAL FRANCIS PUMP	<b>CUSTOMER:</b> GOVT. OF TELANGANA, IRRIGATION & CAD DEPT		

SL NO	COMPONENT/ASSY/ OPERATION	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REF. DOC. /ACCEPTANCE NORMS	RECORD FORMAT	AGENCY			REMARKS
							M	B	C	
2.	<b>IN PROCESS INSPECTION</b>									
2.1	Stay Ring, Top Cover, Pivot Ring, Regulating Ring, Guide Vane and Coupling Bolt For Impeller & Shaft	NDT	NDT	100%	SPEC. / DRG	QCR	P	W	R	
		Final main dimensions after machining	MEAS	100%	DRG	QCR	P	W	R	
2.2	Pressure Receiver For Pump Controller	NDT as per DRG.	NDT	100%	DRG	QCR	P	W	R	
		Hydraulic pressure test	TEST	100%	SPEC.	QCR	P	W	R	
2.3	Impeller	NDT of welded joints	NDT	100%	SPEC. / DRG.	QCR	P	W	R	
		Profile check	MEAS	100%	DRG	QCR	P	W	R	
		Surface roughness of machined surfaces	MEAS	100%	DRG	QCR	P	W	R	
		Final main dimensions	MEAS	100%	DRG	QCR	P	W	W	CHP for all units
		Impeller static balancing	TEST	100%	DRG	QCR	P	W	W	
		NDT on Coupling face	NDT	100%	DRG	QCR	P	W	R	
2.4	Shaft Seal	Dimension check	MEAS	100%	DRG	QCR	P	W	R	
2.5	DT Cone, Spiral Casing, DT Liner, Pit Liner	NDT of weld joints as per DRG	NDT	AS PER DRG	SPEC.	QCR	P	W	R	
		Final main dimensions	MEAS	100%	DRG	QCR	P	W	R	
2.6	Guide Bearing Pad	NDT as per drawing	NDT	AS PER DRG	SPEC.	QCR	P	W	R	
		Final main dimensions	MEAS	100%	DRG	QCR	P	W	R	

*Asadhar*  
**Asadhar Sharma**  
 आसधर शर्मा / AADHAR SHARMA  
 स.ए. इंजीनियर (सु. संयु. टी.) / Sr. Engineer (SMT)  
 गुणता नियंत्रण-उत्प. विभाग / Quality Control-UTM  
 बी.एच.ई.एल., भोपाल / BHEL, BHOPAL

*GST*  
*ARE/SOR*

*De*  
**Deputy Executive Engineer**  
 Irrigation Sub Division No. 2, Siddipet  
 Irrigation Division No. 1, Siddipet

*P. S. Reddy*  
**Advisor**  
 Lift Irrigation Schemes  
 Govt. of Telangana  
 13-07-2021

**BHEL**

**CUSTOMER**



# BHARAT HEAVY ELECTRICALS LIMITED – BHOPAL

## QUALITY ASSURANCE – HYDRO

### QUALITY ASSURANCE PLAN

SHEET- 4 OF 4

PROJECT: KALESHWARAM LINK-IV Pkg-II (6 X 125 MW) LIS, TELANGANA	QA PLAN NO: QA/HT/2112      REV 00      DATE: 05.04.2021
EQUIPMENT: VERTICAL FRANCIS PUMP	CUSTOMER: GOVT. OF TELANGANA, IRRIGATION & CAD DEPT

SL NO	COMPONENT/ASSY/ OPERATION	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REF. DOC. / ACCEPTANCE NORMS	RECORD FORMAT	AGENCY			REMARKS
							M	B	C	
3.	<b>FINAL INSPECTION</b>									
3.1	Guide Apparatus Assembly (Without Servomotor)	Checking of GV opening at full stroke	MEAS	100%	DRG	QCR	P	W	W	CHP for all units
		Top and bottom clearances with top cover and pivot ring	MEAS	100%	DRG	QCR	P	W	W	
		Clearance between bedding faces of guide vane in closed position	MEAS	100%	DRG	QCR	P	W	W	
3.2	Shaft	Final main dimensions	MEAS	100 %	DRG	RECORD	P	W	W	CHP for all units
		Run out check (individually)	MEAS	100 %	DRG	RECORD	P	W	W	
3.3	Pressure Oil Supply Unit (P.P. Set)	Operational test	TEST	100 %	SPEC	RECORD	P	W	W	
3.4	Cooler For Pump Bearing	Hydraulic test	TEST	100 %	SPEC	RECORD	P	W	R	
3.5	Assembly of Pump Guide Bearing Without Pads	Dimension check	MEAS	100 %	DRG	RECORD	P	W	R	
3.6	Pump Controller (Electrical)	Operational test	TEST	100%	SPEC	RECORD	P	W	R	
3.7	Hydraulic Control Panel For Guide Vane	Operational test	TEST	100%	SPEC	RECORD	P	W	R	
3.8	Guide Vane Servomotors	Hydrostatic pressure test & operational test	TEST	100%	SPEC	RECORD	P	W	R	

*Asst. Engr.*  
**AADHAR SHARMA**  
 आधर शर्मा / AADHAR SHARMA  
 ऑरि. इंजिनियर (विद्युत्/यन्त्र) / Sr. Engineer (E/M)  
 गुणता नियंत्रण-जल प्रकल्प / Quality Control-ITM  
 बी.एस.ई.एल. भोपाल / BHEL, BHOPAL.

*Geet*  
**Geet**  
 AB/SOL

**BHEL**

*Dej*  
**Deputy Executive Engineer**  
 Irrigation Sub Division No. 2, Siddipet  
 of Irrigation Division No. 1, Siddipet

*Sub*  
**Executive Engineer**  
 Irrigation Division No. 2  
 Siddipet.  
 CUSTOMER

*P. S. Reddy*  
**P. S. Reddy**  
 Advisor      13.07.2021  
 Lift Irrigation Schemes  
 Govt. of Telangana

*H. My.*  
**Superintending Engineer, I&CAD**  
 Irrigation Circle, Siddipet.



**TELANGANA STATE POWER GENERATION CORPORATION LIMITED**  
**(Government of Telangana State Undertaking)**  
Vidyut Soudha, Khairathabad, Hyderabad-500082

**From:**

Chief Engineer (HPC&HP),  
TSGENCO, 3<sup>rd</sup> Floor, A Block,  
Vidyut Soudha, Hyderabad-82  
Ph.No. 040-23499311/312  
Email: ce.hpc@tsgenco.co.in

**To:**

Sri. V. Ramesh, B.E,  
Chief Engineer (Irrigation),  
Nagarkurnool.

Lr.No.CE(HPC&HP)/SE(HD-I)/231/F.PRLIS-Pkg-1/E&M Drawings/D.No. 116/21, Dt: 01.03.2021

Sir,

**Sub:** HPC&HP- PRLIS- Pkg. 01- Stage-I- Vetting of Designs/Drawings of Electro-Mechanical equipment- Cleared for approval- Reg.

**Ref:** Lr.No.CE/Irrigation/NGKL/DCE/Pkg.1/227, Dt:22.02.2021.

\*\*\*

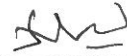
With reference to the letter cited, the drawings of Electro-Mechanical equipment pertaining to PRLIS- Package-01 are vetted and found to be in order and are hereby cleared for approval.

S.No	Description	Drng./Docu. Number	Rev. No	No. of Drgs./Docu.
01.	Embedded tubes for field efficiency testing	02011121201	0	1
02.	Quality assurance plan for pump	QA/HT/2076	0	4
03.	Quality assurance plan for discharge valve	QA/HT/2078	0	2

**"The clearance of preliminary drawings are issued based on the drawings furnished and does not absolve the contractor's responsibility for satisfactory erection, commissioning and operation of the equipment as per the terms of the Purchase Order/Agreement."**

**Encl:** As listed above

Yours Sincerely,

  
CHIEF ENGINEER  
HPC & HYDEL PROJECTS



GOVERNMENT OF TELANGANA  
IRRIGATION & C.A.D DEPARTMENT

LEAD  
DOR 227  
DT: 22/02/2019

## PALAMURU RANGAREDDY LIFT IRRIGATION SCHEME

### PACKAGE-01 (NARLAPUR)

**1Name of the work:** - "PRLIS Project-Package01-Earth Work Excavation of Approach Channe Including Intake Structure and Tunnel from Foreshore of Srisailam Reservoir and Construction of Stage-1 pumping station and design, Manufacturer, Supply, Erection, Testing & Commissioning of Vertical Stage Francis Turbine Pump and Synchronus Motor, Sets for 8 No's. of 145 MW for Stage01 pumping station near Anjanagiri Reservoir at Narlapur Village, Kollapur Mdl. Mahaboobnagar District.

**QUALITY ASSURANCE PLAN FOR PUMP**



# BHARAT HEAVY ELECTRICALS LIMITED – BHOPAL

## QUALITY ASSURANCE – HYDRO

### QUALITY ASSURANCE PLAN

SHEET- 1 OF 4

<b>PROJECT:</b> PALAMARU RANGAREDDY-STAGE-I (8 X 145 MW) LIS, TELANGANA	<b>QA PLAN NO:</b> QA/HT/2076    REV 00    DATE: 20.01.2021
<b>EQUIPMENT:</b> VERTICAL FRANCIS PUMP	<b>CUSTOMER:</b> GOVT. OF TELANGANA, IRRIGATION & CAD DEPT

**ABBREVIATIONS:**

B	BHEL QUALITY DEPT / BHEL APPOINTED THIRD PARTY AGENCY	MECH	MECHANICAL TEST
C	CUSTOMER/ CUSTOMER APPOINTED INSPECTION AGENCY	P	PERFORM
CHP	CUSTOMER HOLD POINT	QCR	QC REPORT
CoC	CERTIFICATE OF COMPLIANCE	SAMPLE	ONE SAMPLE PER HEAT/PER LOT AS PER SPEC.
CHEM	CHEMICAL TEST	SPEC	BHEL SPECIFICATION
D	DOCUMENT SUBMISSION TO CUSTOMER	TC	TEST CERTIFICATES
DOC	BHEL INTERNAL DOCUMENT	R	RECORD REVIEW
DRG	DRAWING	VIS	VISUAL EXAMINATION
M	MANUFACTURER (BHEL / BHEL APPROVED VENDOR)	W	WITNESS
MEAS	MEASUREMENT		

TSGENCO, Vidyal Soudha, Hyderabad  
 Prepared for Approval with/without comments  
 Number of Corrections: 1  
 Vide Lt. No. 116  
 Date: 20/01/2021  
 Chief Engineer (HPC&H)

22-02-2021  
 Advisor

Lift Irrigation Schemes  
 Govt. of Telangana

**CUSTOMER**

**ANUPAM SHARMA**  
 Sr. Eng. (QA) (BHEL)  
 Quality Control (WTM)  
 BHEL, BHOPAL

For Navayuga Engineering Co. Ltd.  
  
 G. Subrah  
 Authorised Signatory

Dy. Chief Engineer  
 Irrigation Nagarkurnool



# BHARAT HEAVY ELECTRICALS LIMITED – BHOPAL

## QUALITY ASSURANCE – HYDRO

### QUALITY ASSURANCE PLAN

SHEET- 2 OF 4

<b>PROJECT:</b> PALAMARU RANGAREDDY-STAGE-I (8 X 145 MW) LIS, TELANGANA	<b>QA PLAN NO:</b> QA/HT/2076 <b>REV 00</b> <b>DATE:</b> 20.01.2021
<b>EQUIPMENT:</b> VERTICAL FRANCIS PUMP	<b>CUSTOMER:</b> GOVT. OF TELANGANA, IRRIGATION & CAD DEPT

SL NO	COMPONENT/ASSY/ OPERATION	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REF. DOC. /ACCEPTANCE NORMS	RECORD FORMAT	AGENCY			REMARKS
							M	B	C	
1.	IN-COMING MATERIAL									
1.1	Impeller casting (Casting Of Blade, Skirt & Crown)	Chemical composition	CHEM	SAMPLE	SPEC	TC	P	R	R	
		Mechanical Properties	MECH	SAMPLE	SPEC	TC	P	R	R	
		NDT as per DRG	NDT	100%	DRG./SPEC	TC	P	W	R	
		Surface finish check	MEAS	100%	DRG	QCR	P	W	-	
		Dimension check	MEAS	100%	DRG	QCR	P	W	-	
1.2	Shaft Forging	Chemical composition	CHEM	SAMPLE	SPEC	TC	P	R	R	
		Mechanical Properties	MECH	SAMPLE	SPEC	TC	P	R	R	
		NDT as per DRG	NDT	100%	DRG./SPEC	TC	P	W	R	
		Surface Roughness	MEAS	100%	DRG./SPEC	TC	P	W	-	
		Dimension check	MEAS	100%	DRG	QCR	P	W	-	
1.3	Guide Vane Casting	Chemical composition	CHEM	SAMPLE	SPEC	TC	P	R	R	
		Mechanical Properties	MECH	SAMPLE	SPEC	TC	P	R	R	
		NDT as per DRG	NDT	100%	SPEC	TC	P	W	R	
		Surface finish check	MEAS	100%	DRG	QCR	P	W	-	
		Dimension Check	MEAS	100%	DRG	QCR	P	W	-	
1.4	Pipes for water, oil and Air	Profile Check	MEAS	100%	DRG	TC	P	W	R	
		Chemical composition	CHEM	SAMPLE	SPEC	TC	P	R	R	
		Mechanical Properties	MECH	SAMPLE	SPEC	TC	P	R	R	
1.5	Raw material for GV servo cylinder, air receiver, pressure receiver, spiral casing, stay ring, top cover, pivot ring, regulating ring, DT cone, DT liner, pit liner, guide bearing & coupling fasteners for impeller & shaft	Pressure test	TEST	SAMPLE	SPEC	TC	P	R	R	
		Chemical composition	CHEM	SAMPLE	SPEC	TC	P	R	R	
		Mechanical Properties	MECH	SAMPLE	SPEC	TC	P	R	R	
		NDT as per spec (for plates 40 mm thk)	UT	SAMPLE	SPEC	TC	P	R	R	

TSGENCO, Vidyal Soudha, Hyderabad  
 Cleared for Approval with/without comments  
 Number of Corrections: 116  
 Date: 01/03/21  
 Chief Engineer (HPC&H)

P. S. Reddy  
 22/02/2021

Advisor  
 Lift Irrigation Schemes  
 Govt. of Telangana

*Handwritten initials*

**AADHAR SHARMA**  
 Sr. Engineer (QWT)  
 Quality Control  
 BHEL, BHOPAL

*Handwritten signature*

For Navayuga Engineering Co. Ltd.

*Handwritten signature*

Authorised Signatory

CUSTOMER

*Handwritten signature*  
 19/2/21  
 Dy. Chief Engineer  
 Irrigation, Nagarkurnool



# BHARAT HEAVY ELECTRICALS LIMITED – BHOPAL

## QUALITY ASSURANCE – HYDRO

### QUALITY ASSURANCE PLAN

SHEET- 3 OF 4

<b>PROJECT:</b> PALAMARU RANGAREDDY-STAGE-I (8 X 145 MW) LIS, TELANGANA	<b>QA PLAN NO:</b> QA/HT/2076 REV 00 DATE: 20.01.2021
<b>EQUIPMENT:</b> VERTICAL FRANCIS PUMP	<b>CUSTOMER:</b> GOVT. OF TELANGANA, IRRIGATION & CAD DEPT

SL NO	COMPONENT/ASSY/ OPERATION	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REF. DOC. /ACCEPTANCE NORMS	RECORD FORMAT	AGENCY			REMARKS
							M	B	C	
2.	IN PROCESS INSPECTION									
2.1	Stay Ring, Top Cover, Pivot Ring, Regulating Ring, Guide Vane and Coupling Bolt For Impeller & Shaft	NDT	NDT	100%	SPEC. / DRG	QCR	P	W	R	
		Final main dimensions after machining	MEAS	100%	DRG	QCR	P	W	R	
2.2	Pressure Receiver For Pump Controller	NDT as per DRG.	NDT	100%	DRG	QCR	P	W	R	
		Hydraulic pressure test	TEST	100%	SPEC.	QCR	P	W	R	
2.3	Impeller	NDT of welded joints	NDT	100%	SPEC. / DRG.	QCR	P	W	R	
		Profile check	MEAS	100%	DRG	QCR	P	W	R	
		Surface roughness of machined surfaces	MEAS	100%	DRG	QCR	P	W	R	
		Final main dimensions	MEAS	100%	DRG	QCR	P	W	W	CHP for all units
		Impeller static balancing	TEST	100%	DRG	QCR	P	W	W	
		NDT on Coupling face	NDT	100%	DRG	QCR	P	W	R	
2.4	Shaft Seal	Dimension check	MEAS	100%	DRG	QCR	P	W	R	
2.5	DT Cone, Spiral Casing, DT Liner, Pit Liner	NDT of weld joints as per DRG	NDT	AS PER DRG	SPEC.	QCR	P	W	R	
		Final main dimensions	MEAS	100%	DRG	QCR	P	W	R	
2.6	Guide Bearing Pad	NDT as per drawing	NDT	AS PER DRG	SPEC.	QCR	P	W	R	
		Final main dimensions	MEAS	100%	DRG	QCR	P	W	R	

TSEENICO, Vidyut Soudha, Hyderabad  
 Chief Engineer Approval without comments  
 Number of Corrections: 116  
 Date: 20/01/2021  
 Chief Engineer (HP&HP)

*For*

*Iron*

*Vannu*

**AADHARSHARMA**  
Sr. Engineer (IWT)  
Quality Control-WTM  
BHEL, BHOPAL

*21/01/2021*  
(Dulpat Borane)

For Navayuga Engineering Co. Ltd

*G. S. S. S. S.*

CUSTOMER

Authorised Signatory

*19/12/20*

**Dy. Chief Engineer**  
Irrigation, Nagarkurnool

*22-02-2021*

Advisor

Lift Irrigation Schemes  
Govt. of Telangana



# BHARAT HEAVY ELECTRICALS LIMITED – BHOPAL

## QUALITY ASSURANCE – HYDRO

### QUALITY ASSURANCE PLAN

SHEET- 4 OF 4

<b>PROJECT:</b> PALAMARU RANGAREDDY-STAGE-I (8 X 145 MW) LIS, TELANGANA	<b>QA PLAN NO:</b> QA/HT/2076 <b>REV 00</b> <b>DATE:</b> 20.01.2021
<b>EQUIPMENT:</b> VERTICAL FRANCIS PUMP	<b>CUSTOMER:</b> GOVT. OF TELANGANA, IRRIGATION & CAD DEPT

SL NO	COMPONENT/ASSY/ OPERATION	CHARACTERISTICS	TYPE OF CHECK	QUANTUM OF CHECK	REF. DOC. / ACCEPTANCE NORMS	RECORD FORMAT	AGENCY			REMARKS
							M	B	C	
3.	<b>FINAL INSPECTION</b>									
3.1	<b>Guide Apparatus Assembly (Without Servomotor)</b>	Checking of GV opening at full stroke	MEAS	100%	DRG	QCR	P	W	W	CHIP for all units
		Top and bottom clearances with top cover and pivot ring	MEAS	100%	DRG	QCR	P	W	W	
		Clearance between bedding faces of guide vane in closed position	MEAS	100%	DRG	QCR	P	W	W	
3.2	<b>Shaft</b>	Final main dimensions	MEAS	100 %	DRG	RECORD	P	W	W	CHP for all units
		Run out check (individually)	MEAS	100 %	DRG	RECORD	P	W	W	
3.3	<b>Pressure Oil Supply Unit (P.P. Set)</b>	Operational test	TEST	100 %	SPEC	RECORD	P	W	W	
3.4	<b>Cooler For Pump Bearing</b>	Hydraulic test	TEST	100 %	SPEC	RECORD	P	W	R	
3.5	<b>Assembly of Pump Guide Bearing Without Pads</b>	Dimension check	MEAS	100 %	DRG	RECORD	P	W	R	
3.6	<b>Pump Controller (Electrical)</b>	Operational test	TEST	100%	SPEC	RECORD	P	W	R	
3.7	<b>Hydraulic Control Panel For Guide Vane</b>	Operational test	TEST	100%	SPEC	RECORD	P	W	R	
3.8	<b>Guide Vane Servomotors</b>	Hydrostatic pressure test & operational test	TEST	100%	SPEC	RECORD	P	W	R	

<p style="text-align: center;"><b>BHEL</b></p>	<p style="font-size: small;">Number of Corrections: 116</p> <p style="font-size: small;">Cleared for Approval without comments</p> <p style="font-size: small;">Date Lt. No. 116</p> <p style="font-size: small;">D/16/22</p> <p style="font-size: small;">Chief Engineer (HPC&amp;HP)</p>	<p style="font-size: small;">P. S. Reddy</p> <p style="font-size: small;">22.02.2021</p> <p style="font-size: small;">Advisor</p> <p style="font-size: small;">Lift Irrigation Schemes</p> <p style="font-size: small;">Govt. of Telangana</p>	<p style="font-size: small;">CUSTOMER</p>
--	--	--	---

For Navayuga Engineering Co. Ltd

Authorised Signatory

G. S. Reddy  
21/01/2021  
(Dalpat Bhojra)

Dy. Chief Engineer  
Irrigation, Nagarkurnool