



**Bharat Heavy Electricals Limited**  
(A Govt. Of India Undertaking)  
**PROJECT ENGINEERING MANAGEMENT**  
**NOTICE INVITING TENDER (NIT)**

Enquiry No- 77/23/6148/SUM

Date- **11-Oct-24**

BHEL invites offers from reputed Suppliers as per following terms and conditions -

1. Tender Type	Open Tender (Domestic-Indian)	
2. Mode of Enquiry	E - PROCUREMENT	
3. Project	Framework Agreement (Rate Contract) of FLOW ELEMENT - NOZZLE	
4. Executing Agency	BHEL-PEM	
5. Package	FLOW ELEMENT - NOZZLE	
6. Whether Package is DIVISIBLE or NON - DIVISIBLE	DIVISIBLE	
7. Due Date & Time	21 October 2024	2:00 PM
8. Earnest Money Deposit (EMD)	Not Applicable	
9. Tender Cost	NIL	
10. Numbers of Part bid	2-Part bid (Techno-Commercial and Price Bid)	
11. Technical Scope	As per Tech. Spec No: PE-TS-20-145-H105B REV No. 00	
12. Pre-Bid clarifications	Suppliers to contact BHEL-PEM (over phone/ mail/ visit-BHEL-PEM) for any clarification (Technical or Commercial) at least 05 days before the due date of Tender opening & get it clarified well before due date, so that offers by the Suppliers may be submitted within the due date & time.	
13. Prequalification Requirement	Financial PQR-NO	Technical PQR- YES
14. Delivery terms	For Supply Portion: FOR Despatch Station	
15. Delivery Schedule: -		
Engineering	Drawing/ documents submission & re-submission schedule shall be as per Technical Specification: PE-TS-20-145-H105B REV No. 00	
Main Supply (“A”)	• 200 Days from the date of PO (for Unit-1, Unit-2 and common area) Additional 90 days for one or two additional unit i.e. 290 days in case of 3 and 4 units.	

**Notes:**

- Supplier to start manufacturing/supply only after getting the applicable engineering Drgs./Docs. approved from BHEL/End Customer.
- Drawings /documents submission/re-submission schedule shall be as per Technical specification (PE-TS-20-145-H105B REV No. 00) which shall be used for progress monitoring purpose and required course correction, if any.
- The delivery date specified is for completion of the deliveries. Deliveries to start progressively so as to meet the completion schedule.
- The delivery conditions specified are for contractual purposes. However, to meet project requirement, BHEL may ask for early deliveries without any compensation thereof.
- Branch pipe to be made available 120 days before the stage wise delivery date. Delay in making branch pipe available will be added in delivery schedule and Validity of contract.**



Bharat Heavy Electricals Limited  
(A Govt. Of India Undertaking)  
PROJECT ENGINEERING MANAGEMENT  
NOTICE INVITING TENDER (NIT)

2.0 Validity of contract placed on basis of Framework Agreement (Rate Contract) for individual projects (PO rates, terms and conditions):

Vendor has to make supply of goods/services as per the delivery time mentioned above. However, due to unavoidable circumstances if delay happens in providing inputs/ clearances (inputs, Engineering approvals, deputing inspector for inspection, issuance of MDCC and any hold imposed owing to site issues etc.) for which delivery time extension is admissible as per point no.3, in such situation it shall be obligatory at vendor part to execute the contract at PO rates, terms and conditions where inputs/ clearances has been accorded within validity of contract. Validity period for various activities shall be as defined below or as mentioned in the NIT.

2.1 Contract for main supply shall be valid for **365 ('C')** days from the PO date. In case of more than 2 units, validity period will be increased by supply time considered for subsequent units. However, delay at vendor's end (if any) shall be added to the validity period and contract validity shall get extended by the delay period at vendor's end.

For example: Original Delivery period for main supply: A (in days)

Delay at vendor's end: B (in days beyond "A" days)

Contract validity: C+B (in days)

**Further, Branch pipe to be made available 120 days before the stage wise delivery date. Delay in making branch pipe available will be added in the Validity of contract**

Notes:

- a. B is the Vendor delay days beyond original contractual delivery period for main supply /extended delivery period owing to time taken by BHEL.
- b. Main supply, applicable in the contract released/ cleared for manufacturing within contractual validity period, to be supplied by vendor/supplier at PO rates, terms and conditions.
- c. Execution of the contract quantities released beyond contract validity period shall be decided on mutual consent basis at PO rates, terms and conditions.



**Bharat Heavy Electricals Limited**  
(A Govt. Of India Undertaking)  
**PROJECT ENGINEERING MANAGEMENT**  
**NOTICE INVITING TENDER (NIT)**

**3.0 Delivery Extension: Extension of contractual delivery time:**

Delivery time mentioned in the NIT includes Engineering completion time (time for drawing/document submission/resubmission by the vendor and review/approval of the same by the BHEL/End customer), manufacturing, inspection, Packing and dispatch time. Due diligence is to be observed by the vendor to ensure timely completion of engineering and supply.

During the execution of the contract, time loss occurred owing to the reason attributable to BHEL besides force majeure shall be considered for delivery time extension to the vendor as given below: -

- i. Any Delay in providing comments/ approval on Primary drawing/documents beyond the stipulated time as specified in NIT.
- ii. **Branch pipe to be made available 120 days before the stage wise delivery date. Delay in making branch pipe available will be added in delivery schedule and Validity of contract.**
- iii. Time Loss in approval of the drawing/document as a result of increase in the iteration not attributable to the vendor (i.e. resubmission owing to end customer comments) as certified by BHEL. Time extension equivalent to the resubmission time noted in the tech. spec and consequential increase in the approval time in lieu of increase in iteration shall be applicable. However, for incomplete re-submission time loss shall be in vendor account.
- iv. Delay in providing engineering input/material by BHEL.
- v. Delay in deputing inspector for inspection and delay in release of MDCC in line with GCC
- vi. Any hold put by BHEL for whatever reasons during execution of contract (within contract validity period), time extension equivalent to hold period shall be admissible. However, in the event hold period continues for more than 30 days then, an additional fifteen days for the purposes of mobilization and demobilization of resources shall also be admissible.

Note: Extension in delivery period if any with or without imposition of LD shall be considered after detailed delay analysis based on provisions given above. However, no delay analysis will be applicable if supply is completed within delivery schedule as specified in Purchase order.

16. **Liquidated Damages:** As per Clause No-16.0 of General Commercial Terms & Condition of GCC Rev 07.

17. **Guarantee Terms:** As per Clause No-12.0 except Clause no 12.2 (b) of General Commercial Terms & Condition of GCC Rev 07.

18. Validity of offer shall be as per Clause no. 7 (Instruction to Suppliers) of GCC Rev 07.

19. CIF Content	Not Applicable
-----------------	----------------

20. Integrity Pact Applicability	YES
----------------------------------	-----

21. In line with Cl. No. 12 of (ITB) GCC Rev07, following Independent External Monitors (IEMs) have been appointed by BHEL.

Shri Otem Dai, IAS (Retd.) (iem1@bhel.in)  
Shri Bishwamitra Pandey, IRAS (Retd.) (iem2@bhel.in)  
Shri Mukesh Mittal, IRS (Retd.) (iem3@bhel.in)

22. Performance Security (PS)	PS Applicability	No Performance Security (PS) against the current enquiry for Framework Agreement (Rate Contract) for Tender package. However, Suppliers to note that Performance Security shall be submitted for orders placed by Project Groups of BHEL-PEM on the Framework Agreement (Rate Contract).
-------------------------------	------------------	---



Bharat Heavy Electricals Limited  
(A Govt. Of India Undertaking)  
PROJECT ENGINEERING MANAGEMENT  
NOTICE INVITING TENDER (NIT)

		<p>Successful Supplier/s will have to submit Performance Security for each POs (irrespective of value) which will be placed under the Framework Agreement (Rate Contract) finalised through this tender considering FA (RC) as original contract as per the format given in GCC Rev 07.</p> <p>Relevant details of the PS to be submitted on the basis of Framework Agreement (Rate Contract) as following:</p>
		<p><b>Validity of PS:</b> As per clause no-11.0 of General Commercial Terms and Conditions of GCC Rev-07.</p> <p><b>PS Submission:</b> PS should be in favour of BHEL-PEM. Supplier may opt any of the following for submission of Performance Security: -</p> <p>Initially 10% of the contract value (total Ex-works price). However, 5% of the contract value (as above) will be released after completion of Main Supply based on certification by Project Group/ Purchaser.</p> <p style="text-align: center;">OR</p> <p>5% of the contract value (total Ex-works price). Additional 5% of the contract value will be retained from first bill &amp; subsequent bill(s) of the same contract. The retention amount will be released after completion of Main Supply based on certification by Project Group/ Purchaser.</p>





**Bharat Heavy Electricals Limited**  
(A Govt. Of India Undertaking)  
**PROJECT ENGINEERING MANAGEMENT**  
**NOTICE INVITING TENDER (NIT)**

	Modes of Deposit	<p>Performance security may be furnished in the following forms:</p> <p>a) Local cheques of Scheduled Banks (subject to realization)/ Pay Order/ Demand Draft/ Electronic Fund Transfer in favour of BHEL.</p> <p>b) Bank Guarantee from Scheduled Banks / Public Financial Institutions as defined in the Companies Act. The Bank Guarantee format should have the approval of BHEL.</p> <p>c) Fixed Deposit Receipt issued by Scheduled Banks / Public Financial Institutions as defined in the Companies Act (FDR should be in the name of the Contractor, a/c BHEL).</p> <p>d) Securities available from Indian Post offices such as National Savings Certificates, Kisan Vikas Patras etc. (held in the name of Contractor furnishing the security and duly endorsed/ hypothecated/ pledged, as applicable, in favour of BHEL).</p> <p>e) Insurance Surety Bond.</p> <p>(Note: BHEL will not be liable or responsible in any manner for the collection of interest or renewal of the documents or in any other matter connected therewith)</p> <p>Performance Security is to be furnished within 14 days from the date of PO and it should remain valid for a period of 60 (sixty) days beyond the date of completion of all contractual obligations of the Supplier, including warranty obligations.</p>
	Remarks for PS	<p>a) The performance security will be forfeited and credited to BHEL's account in the event of a breach of contract by the supplier.</p> <p>b) Performance security should be refunded to the contractor without interest, after he duly performs and completes the contract in all respects but not later than 60 (sixty) days of completion of all such obligations including the warranty under the contract.</p> <p>The Performance Security shall not carry any interest.</p>



**Bharat Heavy Electricals Limited**  
(A Govt. Of India Undertaking)  
**PROJECT ENGINEERING MANAGEMENT**  
**NOTICE INVITING TENDER (NIT)**

<p>23. Breach of contract, Remedies and Termination (Tenderer to note that this clause will supersede any clause regarding recovery amount from Tenderer due to Breach on contract mentioned anywhere in GCC Rev07 and its Corrigendum)</p>	<p>In case of Breach of Contract, BHEL shall recover 10% of the contract value from the Supplier using following instruments:</p> <p>(i) Encashment of security instruments like EMD, Performance Security with executing agency (PEM) against the said contract.</p> <p>(ii) Balance amount (if value of security instruments is less than 10% of the contract value) from other Financial remedies i.e. available bills of the Supplier, retention amount etc. with executing agency (PEM).</p> <p>(iii) Balance amount from security instruments like EMD, Performance Security and other Financial remedies i.e. available bills of the Supplier, retention amount etc. with other units of BHEL.</p> <p>(iv) If recovery is not possible then legal remedies shall be pursued.</p> <p>However, Supplier shall continue performance of the Order/ Contract, under all circumstances, to the extent not cancelled.</p>
<p>24. <b>Tender Evaluation – Price will be finalized through RA</b> The evaluation currency for this tender shall be INR. Evaluation will be done on overall L1 (Total Package Price including Freight excluding taxes) basis with necessary loading as applicable.</p> <p>In the course of evaluation, if more than one Supplier happens to occupy L-1 status, effective L-1 will be decided by soliciting discounts from the respective L-1 Suppliers.</p> <p>In case more than one Supplier happens to occupy the L-1 status even after soliciting discounts, the L-1 Supplier shall be decided by a toss/ draw of lots, in the presence of the respective L-1 Supplier (s) or their representative(s). Ranking will be done accordingly. BHEL's decision in such situations shall be final &amp; binding.</p>	
<p>25. <b>Terms &amp; Conditions:</b> - The Terms &amp; Conditions shall be as per enclosed Special Conditions of the Contract (copy enclosed), GCC Rev 07 &amp; Corrigendum 01 to GCC Rev-07 which is available on <a href="http://www.pem.bhel.com">www.pem.bhel.com</a> and other Terms and Conditions included in this Enquiry Letter.</p>	
<p>26. <b>Payment Terms:</b>  <b>For Main Supply:</b> As per clause No. 9.1 of General Commercial Terms and Conditions of GCC, Rev 07.  <b>For Calibration Charges:</b> As per clause No. 9.5 of General Commercial Terms and Conditions of GCC, Rev 07.</p>	
<p>27. <b>Reverse Auction:</b>  BHEL shall be resorting to Reverse Auction (RA) (Guidelines as available on <a href="http://www.bhel.com">www.bhel.com</a> on "Supplier registration page") for this tender. RA shall be conducted among all the Techno-Commercially qualified Suppliers.  Price Bids of all the Techno-Commercially qualified Suppliers shall be opened and same shall be considered as initial bids of Suppliers in RA. In case any Supplier(s) do(es) not participate in online Reverse Auction, their sealed envelope price bid along with applicable loading, if any, shall be considered for ranking.</p>	
<p>28. Supplier to note that this is an Open Tender enquiry &amp; Reverse Auction participation shall be subject to following condition:  a. Qualifying Technical Pre-Qualification Requirement.  b. Techno-Commercial acceptance of offer by BHEL-PEM.</p>	



**Bharat Heavy Electricals Limited**  
(A Govt. Of India Undertaking)  
**PROJECT ENGINEERING MANAGEMENT**  
**NOTICE INVITING TENDER (NIT)**

c. Registration in BHEL-PEM for the Tender package.

The Suppliers who are not registered with BHEL-PEM may apply for registration in BHEL-PEM through Registration Portal available at [https://pem.bhel.com/Bhel\\_Supplier\\_section.aspx](https://pem.bhel.com/Bhel_Supplier_section.aspx) >online supplier registration (<https://supplier.bhel.in/>). All credentials and/ or documents duly signed & stamped related to registration has to be uploaded on the website & submit the application for registration. One set of hard copy filled-up SRF downloaded from Online Registration Portal duly signed & stamped has to be submitted.

29. Clause no 9.6 (excluding Notes) of GCTC of GCC Rev. 07 shall be read as-  
"Suppliers shall submit billing documents for payment directly to BHEL. Payment will be released within days as mentioned below after submission of complete documents as per clause no 9.7.2 – 9.7.5:  
a. 90 days for non-MSME as per MSMED Act.  
b. 45 days for Suppliers qualified and registered as Micro and Small Enterprises MSEs as per MSMED Act.  
c. 60 days for Suppliers qualified as Medium Enterprises as per MSMED Act."

30. Suppliers are requested to refer clause no 26.0 (Make in India) of instructions to Supplier of GCC Rev 07. Further, following shall be taken into consideration for submitting bids by Suppliers:
- For this procurement, Public Procurement (preference to make in India), order 2017 dtd. 15.06.17, 28.05.18, 29.05.19, 16.09.20 & 19.07.24 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. Suppliers are requested to go through the above-mentioned orders and submit their in adherence to Public Procurement (preference to make in India), order 2017 dtd. 15.06.17, 28.05.18, 29.05.19, 16.09.20 & 19.07.24 and subsequent orders.
  - Minimum Local Content prescribed for Tender package by Nodal Ministry is 70% and hence for this procurement, as per Public Procurement (preference to make in India), order 2017 dtd. 15.06.17, 28.05.18, 29.05.19, 16.09.20 & 19.07.24 and subsequent orders issued by the nodal ministry, **this package is reserved for only Class-I supplier having Minimum local Content 70%**. Class-II and Non-Local suppliers are not eligible to quote for this enquiry.

31. Purchase preference to MSE Supplier: Yes.

32. Framework Agreement (Rate contract) shall be done with 2 suppliers in ratio of 70:30 at L1 FOR Site Price (Ex-works + freight) for this package. For splitting order, L1 Rates (Ex works + Freight) shall be counteroffered to remaining techno-commercially approved Suppliers.

33. GOI circular dated 18.05.2023 for Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order, 2017 shall be applicable for order splitting and order finalization.

34. If none of the Supplier accepts counteroffered L1 Rates (Ex works + Freight), then contract shall be awarded to L1 Supplier for 100% value.

35. All corrigenda, addenda, amendments, time extensions, clarifications, etc. to the tender will be hosted on BHEL website ([www.bhel.com](http://www.bhel.com)), <https://eprocurebhel.co.in/nicgep/app> & BHEL-PEM website (<https://pem.bhel.com/Home.aspx>). Suppliers should regularly visit websites to keep themselves updated.



**Bharat Heavy Electricals Limited**  
(A Govt. Of India Undertaking)  
**PROJECT ENGINEERING MANAGEMENT**  
**NOTICE INVITING TENDER (NIT)**

36. If Supplier mentions Not Applicable/ Not Required/ Not Quoted in BHEL price format, the same to be substantiated by the Supplier. If such item is required to be supplied for system completion in future, same will be supplied free of cost.

37. All other correspondence thereof shall be addressed to the undersigned by name & designation and sent at the following address:

**Manish Kumar Sinha/ Sr. Mgr.-CMM**  
**M/s Bharat Heavy Electricals Ltd.,**  
Project Engineering Management,  
BHEL SADAN,  
Plot No 25, Sector-16 A, Noida-201301  
E-MAIL: [manish.sinha@bhel.in](mailto:manish.sinha@bhel.in)  
Ph. No. 0120-6748120

**Kumar Suman Saurabh/ Mgr.-CMM**  
**M/s Bharat Heavy Electricals Ltd.,**  
Project Engineering Management,  
BHEL SADAN,  
Plot No 25, Sector-16 A, Noida-201301  
E-MAIL: [sumansaurabh@bhel.in](mailto:sumansaurabh@bhel.in)  
Ph. No. 9718771765

38. GST shall be payable extra at actual as per the HSN code finalized for the items during detailed BBU.

39. GeM Seller ID shall be mandatory before placement of order/ award of contract to the successful Supplier.

40. Suppliers to quote freight charges in percentage of their quoted Total Ex-works Prices. Supplier to quote non-zero freight % for supply.

41. Over all (%) quantity variation: The variation on overall package value shall be limited to +/-30%

42. Suppliers shall Quote for the entire Scope. Partial scope is not acceptable.

43. Suppliers to ensure that Third party/ Customer issued certificates being submitted as proof of PQR qualification should have verifiable details of document/ certificate issuing authority such as name & designation of Issuing Authority and its organization contact number and e - mail Id etc. Offer of only those Suppliers shall be considered further, who meets the PQR criteria. Suppliers to furnish latest verification details for checking veracity of document(s) by BHEL. In case the same found not available, Purchaser has right to reject such document from evaluation. Format for the same is below: -

Sl. No.	Project Name	Customer Name, Contact Address, Phone No. & Email ID	Contract/ Order No.	Value of Contract/ Order	Brief of Work	Completion Date

44. Self-declarations/ auditor's/ accountant's certificates submitted by the manufacturer/ supplier may be verified randomly by the committee constituted as per MoP Order 28-07-2020. In case of false documents/ misrepresentation of the facts requisite action against such manufacturer/ supplier will be taken based on the recommendation of the Committee

45. Suppliers to comply Govt. of India, Ministry of Power, Order no.-25-111612018-PG dated 02/07/2020 regarding mandatory testing of all the Imported items/ Equipment's/ Components.

46. This item/ Package falls under the list of items defined in Para 3 of Ministry guideline ref no. F.20/2/214-PPD(Pt.) dated 20-09-2016 (in respect of procurement of items related to public safety, health, critical security operations and equipment's, etc.) & hence no relaxation of PQR for start-up/ MSME Suppliers is envisaged for the items/ Package.



**Bharat Heavy Electricals Limited**  
(A Govt. Of India Undertaking)  
**PROJECT ENGINEERING MANAGEMENT**  
**NOTICE INVITING TENDER (NIT)**

47. The Supplier declares that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Supplier(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 Supplier is found having indulged in above activities, suitable action shall be taken by BHEL as per extant policies/ guidelines
48. The offers of the Suppliers who are under suspension as also the offers of the Suppliers, who engage the services of the firms debarred across BHEL, shall be rejected. The list of firms debarred across BHEL is available on BHEL web site [www.bhel.com](http://www.bhel.com).
- 1.0 Integrity commitment, performance of the contract and punitive action thereof:
- 1.1. Commitment by BHEL: BHEL commits to take all measures necessary to prevent corruption in connection with the tender process and execution of the contract. BHEL will during the tender process treat all Supplier(s) in a transparent and fair manner, and with equity.
- 1.2. Commitment by Supplier/ Supplier/ Contractor:
- 1.2.1. The Supplier/ supplier/ contractor commits to take all measures to prevent corruption and will not directly or indirectly influence any decision or benefit which he is not legally entitled to nor will act or omit in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India.
- 1.2.2. The Supplier/ supplier/ contractor will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract and shall adhere to relevant guidelines issued from time to time by Govt. of India/ BHEL.
- 1.2.3. The Supplier/ supplier/ contractor will perform/ execute the contract as per the contract terms & conditions and will not default without any reasonable cause, which causes loss of business/ money/ reputation, to BHEL.
- If any Supplier/ supplier/ contractor during pre-tendering/ tendering/ post tendering/ award/ execution/ post-execution stage indulges in malpractices, cheating, bribery, fraud or and other misconduct or formation of cartel so as to influence the bidding process or influence the price or acts or omits in any manner which tantamount to an offence punishable under any provision of the Indian Penal Code, 1860 or any other law in force in India, then, action may be taken against such Supplier/ supplier/ contractor as per extant guidelines of the company available on [www. bhel.com](http://www.bhel.com) and/or under applicable legal provisions”.
49. A Supplier shall not have conflict of interest with other Suppliers. Such conflict of interest can lead to anticompetitive practices to the detriment of Procuring Entity's interests. The Supplier found to have a conflict of interest shall be disqualified. A Supplier may be considered to have a conflict of interest with one or more parties in this bidding process, if:
- a) they have controlling partner (s) in common;' or
  - b) they receive or have received any direct or indirect subsidy/ financial stake from any of them; or
  - c) they have the same legal representative/ agent for purposes of this bid; or
  - d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Supplier; or
  - e) Supplier participates in more than one bid in this bidding process. Participation by a Supplier in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ assemblies from one bidding manufacturer in more than one bid, or
- f) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorize only one agent/ dealer. There can be only one bid from the following:
- 1. The principal manufacturer directly or through one Indian agent on his behalf; and
  - 2. Indian/ foreign agent on behalf of only one principal,
- Or



**Bharat Heavy Electricals Limited**  
(A Govt. Of India Undertaking)  
**PROJECT ENGINEERING MANAGEMENT**  
**NOTICE INVITING TENDER (NIT)**

- g) A Supplier or any of its affiliates participated as a consultant in the preparation of the design or Technical specifications of the contract that is the subject of the Bid, or
- h) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/ management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Suppliers must proactively declare such sister/ common business/ management units in same/ similar line of business.

50. All the above terms and conditions, post-bid agreements/ MoMs (during Techno- Commercial evaluation) shall automatically become a part of the Order/Contract after its finalization.

51. Suppliers to note that offers shall be submitted strictly in accordance with the requirements of tender documents. Suppliers shall upload their complete offer meeting the requirements of the tender documents on e-procurement portal <https://eprocurebhel.co.in/nicgep/app>.

Following documents need to be uploaded:


- Offer forwarding/ Covering letter with Un-price bid, DEVIATION SHEET (COST OF WITHDRAWAL).
- Documents required for meeting Technical PQRs.
- Land Border certificate compliance as per DOE circular dated 23.02.2023.
- Integrity pact.
- Price bid along with Annexure-II on e-procurement portal - <https://eprocurebhel.co.in/nicgep/app>

52. It shall be the responsibility of the Supplier to ensure that the tender is uploaded on or before the due date and time. Late offers are not accepted.

53. All other terms and conditions shall be as per Special Conditions of Framework Agreement (Rate Contract), and GCC Rev 07 & Corrigenda-01 to GCC Rev 07.

In the event of any contradiction in the terms and conditions mentioned, the order of preference shall be as mentioned in clause no. 36 of GCTC of GCC (Rev.07).

Note: - In case you are not making an offer against this enquiry, you are requested to send a regret letter so as to reach us on or before the due date.

	TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

## RATE CONTRACT

TECHNICAL  
 SPECIFICATION  
 FOR FLOW NOZZLE  
 ASSEMBLY

SPECIFICATION No. PE-TS-20-145-H105B

REV NO. 00




BHARAT HEAVY ELECTRICALS LIMITED  
 POWER SECTOR  
 PROJECT ENGINEERING MANAGEMENT  
 NOIDA, INDIA



	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024


## INDEX

SL NO.	DESCRIPTION	SHEET NO.
1	Project Information	3
2	Scope	4
3	General Technical Requirement	5-6
4	Specific Technical Requirement	7-8
4a	Technical Datasheet - Part - A	9-17
4b	Technical Datasheet - Part - B (Supplier Data to be submitted after award of contract)	18
4c	Compliance drawing	19-22
5	Quality Plan	23-26
6	Painting Requirement	27
7	Packing Requirement	28
8	Bill of Quantity (BOQ)	29-31
8a	Supply	
8b	Spares	
8c	Services	
9	Compliance Certificate	32
10	Documentation Requirement	33
10a	Documents Required Along with Bid By Bidders	
10b	Documents to be submitted by Successful Bidder after award of contract along with submission schedule	
10c	Documents to Be Submitted As Final/As-Built	
11	Pre-Qualification Requirement (Technical)	34-35
Annex: A	Pipe sizes for nozzle of different services for reference	36-37
Annex: B	Flow Nozzle measurement connection details	38-39

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

### PROJECT INFORMATION

SL.NO	DESCRIPTION	DETAILS
1	CUSTOMER	PROJECT SPECIFIC REQUIREMENT SHALL BE FURNISHED LATER
2	LOCATION	
2.1	COORDINATES	
2.2	NEAREST RAILWAY STATION	
2.3	NEAREST SEA PORT	
2.4	NEAREST AIRPORT	
2.5	NEAREST NATIONAL HIGHWAY	
3	METEOROLOGICAL DATA	
3.1	MAXIMUM TEMPERATURE	
3.2	MINIMUM TEMPERATURE	
3.3	RELATIVE HUMIDITY (FOR DESIGN)	
3.4	AVERAGE ANNUAL RAINFALL	
3.5	SEISMIC ZONE (AS PER IS 1893)	
3.6	HEIGHT ABOVE MSL	

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

**SCOPE OF THIS PACKAGE COVERS THE FOLLOWING:**

SL.NO	PARAMETERS	REQUIREMENT
1	Supply Including Design, Engineering, Manufacturing of	
a)	Main Supply	YES
b)	Commissioning Spares	NO
2	Painting	YES
3	Inspection & Testing	YES
4	Packing	YES
5	Transportation & Delivery to Site	YES
6	Erection & Commissioning	NO
7	Supervision of Erection & Commissioning	NO
8	Performance Guarantee (PG) Test	NO
9	Mandatory Spares	NO
10	O & M Service	NO
11	O & M Spares	NO

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

### GENERAL TECHNICAL REQUIREMENT

1.0	It is not the intent to specify herein all the details of design and manufacturing. The equipment shall conform in all respects to high standards of design, engineering and workmanship and shall be capable of performing the required duties in a manner acceptable to purchaser who will interpret the meaning of drawings and specifications and shall be entitled to reject any work or material which in his judgement is not in full accordance herewith.
2.0	Bidder shall also ensure that the offered equipment shall comply with all applicable statutory and regulatory requirements.
3.0	In the event of any conflict between the requirements of two clauses of this specification, documents or requirements of different codes and standards specified, the more stringent requirement as per the interpretation of the owner shall apply.
4.0	Drawing/document submission shall be through web-based Document Management System (DMS) of BHEL. Bidder would be provided access to the DMS for drawing/document submission. Bidder to ensure internet connectivity of min speed of 2Mbps at their end.
5.0	Drawings/ documents submitted by vendor at any stage shall be complete in all respects. Any incomplete drawing submitted shall be treated as non- submission with delays attributable to vendor. For any clarification/ discussion required to complete the drawings, the bidder shall depute his personnel to BHEL / Customer's Office as per the requirement for across the table submission/ finalizations of drawings.
6.0	Latest codes and standards shall be complied with as on date.
7.0	In case, the bidder is sourcing the item/any component from outside India, the third-party inspection shall be arranged by bidder at their cost and shall be deemed to be considered by the bidder in their offer without any delivery impact.
8.0	Document approval by BHEL / Customer shall not absolve the supplier of their contractual obligations of completing the work as per specification requirement without any commercial and delivery impact.
9.0	Equipment must be safe, reliable and easy to maintain at all operating conditions.
10.0	Root valves is in BHEL Scope conforming to ASME B16.34.
11.0	Flow element Nozzle assembly (along with duly machined branch pipe having proper end connection for welding on to the associated pipe at site) and accessories like expander, nipple etc. shall be packed (as per packaging spec) and supplied to specific project.
12.0	Nipple between Branch Pipe Stub and root valve is in bidder's scope and shall be supplied loose. Nipple size should match with branch pipe stub as well as BHEL supplied root valve of 25NB size as per datasheet and drawing attached at Annex-B.
13.0	Each branch pipe shall be inspected by the purchaser after the completion of machining and prior to welding of the nozzle. This test will include dimensional checks, surface smoothness checks etc.
14.0	Bidder to ensure minimum thickness of the branch pipe as per IBR/ASME regulations while machining the ID to maintain uniform internal diameter.
15.0	Expander-reducer (25 NB X 15 NB) between root valve & impulse pipe valve is in bidder's scope and shall be supplied loose.
16.0	The bidder shall be responsible for machining of the branch pipe and welding the flow nozzle inside the branch pipe. The cost of machining & other related activities shall be included by the bidder in the offer and no commercial implication shall be accepted for the same.
17.0	Edge preparation details required for the branch pipe shall be as per drawings attached in Compliance Input drawings.

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

18.0	Bidder shall submit certified flow calculation and differential pressure vs. flow curves for each element for approval. Sizing calculation, precise flow calculation for all the flow elements, fabrication and assembly drawings and installation drawings shall be submitted for approval.
19.0	Nameplates shall be manufactured from stainless steel or aluminum with a matte or satin finish, and engraved with black lettering of a minimum 6 mm height or as per equipment standard whichever is higher.
20.0	For vertical installation of nozzles (if any) as per technical data sheet, the S-bend impulse pipe shall be supplied by the bidder without any commercial implication.
21.0	Flow nozzle assembly name plate will have following details: (a) Tag number (b) Service (c) Element material (d) Beta ratio (e) Pipe size (f) Pipe thickness (g) Flow direction

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024


### SPECIFIC TECHNICAL REQUIREMENT

1.0	This specification is intended for finalization of rate contract between BHEL-PEM and Bidder. Standard technical detail as indicated in the specification shall be agreed upon between BHEL-PEM and Bidder. Project specific technical detail shall be made available to the bidder along with project enquiry.
2.0	This specification covers the Design, Manufacture, Calibration (at approved labs), Inspection and testing at manufacturer's works, proper packing for transportation and delivery to site of the complete Nozzle assembly.
3.0	The bids shall be evaluated as per NIT. Ordering shall be done separately for each project.
4.0	The bidder to quote for items as per price schedule attached. The quantity as mentioned in the BOQ is only for evaluation purpose. However actual ordered quantity may vary from project to project.
5.0	BHEL's / Customer representatives shall be given access to the shop in which the equipment's are being manufactured or tested and all test records shall be made available to them.
6.0	The Equipment covered under this specification shall not be dispatched unless the same have been finally inspected, accepted and Material Dispatch Clearance Certificate (MDCC) is issued by BHEL / Customer.
7.0	Quality plan to be duly signed and stamped and to be furnished along with the bid as a token of acceptance. Any deviation w.r.t Quality Plan shall not be acceptable and bid / offer shall be rejected.
8.0	Bidder shall submit project specific Quality Plan in the event of placement of order for specific project. Same shall be subject to BHEL / CUSTOMER approval & customer hold points for inspection / testing shall be marked and followed in the QP at the contract stage without implication.
9.0	Inspection shall be carried out in line with pre-approved project specific drawings/data sheet/QP
10.0	Wherever in data sheet more than one options are marked, bidder to note that one option shall be selected by BHEL for a specific project and the same shall be supplied by bidder without any commercial implication with respect to rate contract.
11.0	In case of any discrepancy in the requirement within the same or different section, as noted by the bidder in the specification, the same will be brought to the notice of BHEL in the form of pre- bid clarification. In absence of any pre-bid clarification, the more stringent requirement as per interpretation of BHEL/customer shall prevail without any commercial implication.
12.0	Bidder to note that thickness of the pipe for various sizes may vary from project to project. Same shall be informed during project specific order. No commercial implication shall be acceptable for the same. Typical pipe sizes are indicated in Annexure – A for reference.
13.0	Bidder to note that CALIBRATION TEST is required to be conducted on one type per size for a specific project and the requirement shall be informed during project specific order. BHEL reserves the right to withdraw the calibration test for any project based on customer requirements.
14.0	Process pressure, temperature & flow may vary for a particular service from project to project. Bidder to comply with these process parameters without any commercial implication. However, max. pressure and temperature are indicated in the datasheet.
15.0	Extra pressure tapping (in addition to THREE pair no's tapping) shall be provided in case to case basis for a specific project (if required) by the bidder without any commercial implication. Associated accessories for this particular extra tapping like nipple shall be supplied by the bidder as per the unit price quoted in the price format.
16.0	If extra Nipples etc are to be provided, same shall be supplied by the bidder as per the unit price quoted in the price format.
17.0	Inspection will be conducted by BHEL and/or their authorized representatives as per the agreed inspection schedule. The inspection schedule will be submitted by the bidder for BHEL's approval at


	<p>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</p>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

	contract stage. The cost of all tests and inspections will be deemed to have been included in the rate contract.
18.0	<p>Branch pipe shall be <b>free-issued</b> by BHEL. Bidder shall collect the same from BHEL Trichy to bidder's works. Finished flow nozzle assembly and accessories duly packed after inspection shall be supplied to specific project by bidder.</p> <p>Transportation of branch pipes from BHEL-Trichy to bidder's works and finished product from bidder's work to specific project shall under bidder's scope.</p>
19.0	<p>Bidder to note that the branch pipe supplied by BHEL, may have tolerance as per ASTM standard (i.e. OD 1% (Max. 4 mm), wall thickness 12.5%). Bidder to comply with these tolerance variations without any commercial implication.</p> <p>Demagnetization (if required) of any pipe received from BHEL shall be in bidder's scope.</p>
20.0	<p>The service description indicated in respective datasheets 1 to 8 are for reference only. The actual service description for each datasheet shall be informed during project execution after selection based on pipe size, design/process parameters &amp; accessories requirements.</p>



	TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

## TECHNICAL DATASHEET - PART - A

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 16.09.2024

Tag No. : NOZZLE ASSEMBLY AS PER TYPE "I" OF THE PRICE FORMAT


Data Sheet No.-1

DATA SHEET – A		
ELEMENT	SERVICE MAKE : MODEL TYPE STANDARD * DESIGN MATERIAL BETA RATIO BORE DIAMETER	SHALL BE FURNISHED DURING PROJECT BIDDER TO FURNISH DURING PROJECT [■] ASME PTC 19.5 / [■] ISO 5167 LONG RADIUS : HIGH BETA SS316 ~ 0.7 BIDDER TO FURNISH DURING PROJECT
END CONNECTION	TYPE BRANCH PIPE BRANCH PIPE MATERIAL TAPPING LOCATION NUMBER OF TAPPINGS <b>ROOT VALVE QTY</b> NIPPLE: SIZE/MATL/RATING/QTY EXPANDER : SIZE/MATL/RATING/QTY	BUTT WELD END YES (FREE ISSUE BY BHEL) SAME AS PIPE MATERIAL D&D/2 : ON PIPE [■] 3 PAIRS / [■] 4 PAIRS <b>NIL (BHEL SCOPE)</b> 25NB: SS316: SCH.80: 250mm LONG: 12 15NBx25NB: SS316: CLASS 3000: 50.8mm LONG: 6
PROCESS DATA	FLUID *  FLOW (T/HR) PRESSURE (KG/CM <sup>2</sup> (A)) TEMPERATURE (DEG. C.) MAX. ALLOWABLE PRESS LOSS DESIGN PRESS : TEMP DIFF. PRESS AT MAX FLOW	[■] STEAM / [■] CONDENSATE / [■] FEEDWATER / [■] DRAIN WATER MAX.                      NORMAL                      MINIMUM  SHALL BE FURNISHED DURING PROJECT  75 Kg/cm <sup>2</sup> : 400 DEG C BIDDER TO FURNISH DURING PROJECT
PIPE LINE DATA	PIPE SIZE (OD X THK) mm PIPE MATERIAL * BORE DIAMETER MIN. AVAILABLE STRAIGHT LENGTH UPSTREAM:DOWNSTREAM FLOW DIRECTION *	<b><u>AS PER PRICE SCHEDULE</u></b> [■] SA106 GR B / [■] SA106 GR C BIDDER TO FURNISH DURING PROJECT 15D 10D : 5D [■]HORIZONTAL / [■]VERTICAL \$
OTHER DATA	IBR CERTIFICATION APPROX. WEIGHT OF ASSEMBLY	REQUIRED BIDDER TO FURNISH DURING PROJECT
PACKING	PACKING	As per attached packing specification
\$ S-bent to be provided for vertical flow direction * Project specific data shall be informed by BHEL during project ordering.		

**BIDDER TO QUOTE IN COLUMN "I" OF PRICE FORMAT FOR DETAILS SPECIFIED ABOVE**

**BIDDER TO NOTE THE FOLLOWING FOR EACH NOZZLE ASSEMBLY:**

- A) 4 Nos. Nipples and 2 Nos. of expander to be provided by bidder for extra pair of tappings also. Price for the same shall be as per unit price quoted in the price schedule.
- B) Blind plug and Stub material shall be of SS316 material for all tapping's.
- C) All accessories, including blind plug, stub shall be considered by the bidder and shall have IBR Certification, as applicable (indicated in respective Data Sheets).
- D) Approximately 33 Nos. of Flow Nozzles in Data Sheet-1 may require IBR Certification.
- E) S-bend to be considered for vertical flow direction / main steam process requirement.

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 16.09.2024


Tag No. : NOZZLE ASSEMBLY AS PER TYPE “II” OF THE PRICE FORMAT

Data Sheet No.-2

DATA SHEET – A		
ELEMENT	SERVICE MAKE : MODEL TYPE STANDARD * DESIGN MATERIAL BETA RATIO BORE DIAMETER	SHALL BE FURNISHED DURING PROJECT BIDDER TO FURNISH DURING PROJECT [■] ASME PTC 19.5 / [■] ISO 5167 LONG RADIUS : HIGH BETA SS316 ~ 0.7 BIDDER TO FURNISH DURING PROJECT
END CONNECTION	TYPE BRANCH PIPE BRANCH PIPE MATERIAL TAPPING LOCATION NUMBER OF TAPPINGS <b>ROOT VALVE QTY</b> NIPPLE: SIZE/MATL/RATING/QTY EXPANDER: SIZE/MATL/RATING/QTY	BUTT WELD END YES ( FREE ISSUE BY BHEL) SAME AS PIPE MATERIAL D&D/2 : ON PIPE [■] 3 PAIRS / [■] 4 PAIRS <b>NIL (BHEL SCOPE)</b> 25NB: SS316: SCH.XXS: 1000mm LONG: 12 15NBx25NB: SS316: CLASS 9000: 50.8mm LONG: 6
PROCESS DATA	FLUID  FLOW (T/HR) PRESSURE (KG/CM <sup>2</sup> (A)) TEMPERATURE (DEG. C.) MAX. ALLOWABLE PRESS LOSS DESIGN PRESS : TEMP DIFF. PRESS AT MAX FLOW	FEEDWATER MAX.                      NORMAL                      MINIMUM  SHALL BE FURNISHED DURING PROJECT  390 Kg/cm <sup>2</sup> : 315 DEG C BIDDER TO FURNISH DURING PROJECT
PIPE LINE DATA	PIPE SIZE (OD X THK) mm PIPE MATERIAL * BORE DIAMETER MIN. AVAILABLE STRAIGHT LENGTH UPSTREAM:DOWNSTREAM FLOW DIRECTION	<u><b>AS PER PRICE SCHEDULE</b></u> [■] SA106 GR B / [■] SA106 GR C BIDDER TO FURNISH DURING PROJECT 15D 10D : 5D HORIZONTAL
OTHER DATA	IBR CERTIFICATION APPROX. WEIGHT OF ASSEMBLY	REQUIRED BIDDER TO FURNISH DURING PROJECT
PACKING	PACKING	As per attached packing specification
* Project specific data shall be informed by BHEL during project ordering		

**BIDDER TO QUOTE IN COLUMN “II” OF PRICE FORMAT FOR DETAILS SPECIFIED ABOVE  
BIDDER TO NOTE THE FOLLOWING FOR EACH NOZZLE ASSEMBLY:**

- A) 4 Nos. Nipples and 2 Nos. of expander to be provided by bidder for extra pair of tappings also. Price for the same shall be as per unit price quoted in the price schedule.
- B) Blind plug and Stub material shall be of SS316 material for all tapping's.
- C) All accessories, including blind plug, stub, shall be considered by the bidder and shall have IBR Certification, as applicable (indicated in respective Data Sheets).
- D) Approximately 8 Nos. of Flow Nozzles in Data Sheet-2 may require IBR Certification.

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 16.09.2024

Tag No. : NOZZLE ASSEMBLY AS PER TYPE “III” OF THE PRICE FORMAT


Data Sheet No.-3

DATA SHEET – A		
ELEMENT	SERVICE MAKE : MODEL TYPE STANDARD * DESIGN MATERIAL BETA RATIO BORE DIAMETER	SHALL BE FURNISHED DURING PROJECT BIDDER TO FURNISH DURING PROJECT [■] ASME PTC 19.5 / [■] ISO 5167 LONG RADIUS : HIGH BETA SS316 ~ 0.7 BIDDER TO FURNISH DURING PROJECT
END CONNECTION	TYPE BRANCH PIPE BRANCH PIPE MATERIAL TAPPING LOCATION NUMBER OF TAPPINGS <b>ROOT VALVE QTY</b> NIPPLE : SIZE/MATL/RATING/QTY EXPANDER : SIZE/MATL/RATING/QTY	BUTT WELD END YES ( FREE ISSUE BY BHEL) SAME AS PIPE MATERIAL D&D/2 : ON PIPE [■] 3 PAIRS / [■] 4 PAIRS <b>NIL (BHEL SCOPE)</b> 25NB : SS316 : SCH.80 : 250mm LONG : 12 15NBx25NB : SS316 : CLASS 3000 : 50.8mm LONG : 6
PROCESS DATA	FLUID  FLOW (T/HR) PRESSURE (KG/CM <sup>2</sup> (A)) TEMPERATURE (DEG. C.) MAX. ALLOWABLE PRESS LOSS DESIGN PRESS : TEMP DIFF. PRESS AT MAX FLOW	DM WATER MAX.                      NORMAL                      MINIMUM  SHALL BE FURNISHED DURING PROJECT  15 Kg/cm <sup>2</sup> : 60 DEG C BIDDER TO FURNISH DURING PROJECT
PIPE LINE DATA	PIPE SIZE (OD X THK) mm PIPE MATERIAL BORE DIAMETER MIN. AVAILABLE STRAIGHT LENGTH UPSTREAM:DOWNSTREAM FLOW DIRECTION	<b><u>AS PER PRICE SCHEDULE</u></b> SA 312 TP304 BIDDER TO FURNISH DURING PROJECT 15D 10D : 5D HORIZONTAL
OTHER DATA	IBR CERTIFICATION APPROX. WEIGHT OF ASSEMBLY	REQUIRED BIDDER TO FURNISH DURING PROJECT
PACKING	PACKING	As per attached packing specification
* Project specific data shall be informed by BHEL during project ordering		

**BIDDER TO QUOTE IN COLUMN “III” OF PRICE FORMAT FOR DETAILS SPECIFIED ABOVE**

**BIDDER TO NOTE THE FOLLOWING FOR EACH NOZZLE ASSEMBLY:**

- A) Blind plug and Stub material shall be of SS316 material for all tapping's.  
B) All accessories including blind plug, stub shall be considered by the bidder and shall have IBR Certification, as applicable (indicated in respective Data Sheets).  
C) S-bend to be considered for vertical flow direction / main steam process requirement.

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 16.09.2024

Tag No. : NOZZLE ASSEMBLY AS PER TYPE “IV” OF THE PRICE FORMAT


Data Sheet No.-4

DATA SHEET – A		
ELEMENT	SERVICE MAKE : MODEL TYPE STANDARD * DESIGN MATERIAL BETA RATIO BORE DIAMETER	SHALL BE FURNISHED DURING PROJECT BIDDER TO FURNISH DURING PROJECT [■] ASME PTC 19.5 / [■] ISO 5167 LONG RADIUS : HIGH BETA SS316 ~ 0.7 BIDDER TO FURNISH DURING PROJECT
END CONNECTION	TYPE BRANCH PIPE BRANCH PIPE MATERIAL TAPPING LOCATION NUMBER OF TAPPINGS <b>ROOT VALVE QTY</b> NIPPLE : SIZE/MATL/RATING/QTY EXPANDER : SIZE/MATL/RATING/QTY	BUTT WELD END YES ( FREE ISSUE BY BHEL) SAME AS PIPE MATERIAL D&D/2 : ON PIPE [■] 3 PAIRS / [■] 4 PAIRS <b>NIL (BHEL SCOPE)</b> 25NB : SS316 : SCH.XXS : 1000mm LONG : 12 15NBx25NB : SS316 : CLASS 9000 : 50.8mm LONG : 6
PROCESS DATA	FLUID  FLOW (T/HR) PRESSURE (KG/CM <sup>2</sup> (A)) TEMPERATURE (DEG. C.) MAX. ALLOWABLE PRESS LOSS DESIGN PRESS : TEMP DIFF. PRESS AT MAX FLOW	STEAM MAX.                      NORMAL                      MINIMUM  SHALL BE FURNISHED DURING PROJECT  20 Kg/cm <sup>2</sup> : 415 DEG C BIDDER TO FURNISH DURING PROJECT
PIPE LINE DATA	PIPE SIZE (OD X THK) mm PIPE MATERIAL BORE DIAMETER MIN. AVAILABLE STRAIGHT LENGTH UPSTREAM:DOWNSTREAM FLOW DIRECTION	<b><u>AS PER PRICE SCHEDULE</u></b> SA 335 P22 BIDDER TO FURNISH DURING PROJECT 15D 10D : 5D HORIZONTAL
OTHER DATA	IBR CERTIFICATION APPROX. WEIGHT OF ASSEMBLY	REQUIRED BIDDER TO FURNISH DURING PROJECT
PACKING	PACKING	As per attached packing specification
* Project specific data shall be informed by BHEL during project ordering		

**BIDDER TO QUOTE IN COLUMN “IV” OF PRICE FORMAT FOR DETAILS SPECIFIED ABOVE**

**BIDDER TO NOTE THE FOLLOWING FOR EACH NOZZLE ASSEMBLY:**

- A) 4 Nos. Nipples and 2 Nos. of expander to be provided by bidder for extra pair of tappings also. Price for the same shall be as per unit price quoted in the price schedule.
- B) Blind plug and Stub material shall be of SS316 material for all tapping's.
- C) All accessories, including blind plug, stub shall be considered by the bidder and shall have IBR Certification, as applicable (indicated in respective Data Sheets).
- D) S-bend to be considered for vertical flow direction / main steam process requirement.
- E) Approximately 6 Nos. of Flow Nozzles in Data Sheet-4 may require IBR Certification.

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 16.09.2024

Tag No. : NOZZLE ASSEMBLY AS PER TYPE “V” OF THE PRICE FORMAT


Data Sheet No.-5

DATA SHEET – A		
ELEMENT	SERVICE MAKE : MODEL TYPE STANDARD * DESIGN MATERIAL BETA RATIO BORE DIAMETER	SHALL BE FURNISHED DURING PROJECT BIDDER TO FURNISH DURING PROJECT [■] ASME PTC 19.5 / [■] ISO 5167 LONG RADIUS : HIGH BETA SS316 ~ 0.7 BIDDER TO FURNISH DURING PROJECT
END CONNECTION	TYPE BRANCH PIPE BRANCH PIPE MATERIAL TAPPING LOCATION NUMBER OF TAPPINGS <b>ROOT VALVE QTY</b> NIPPLE : SIZE/MATL/RATING/QTY EXPANDER : SIZE/MATL/RATING/QTY	BUTT WELD END YES ( FREE ISSUE BY BHEL) SAME AS PIPE MATERIAL D&D/2 : ON PIPE [■] 3 PAIRS / [■] 4 PAIRS <b>NIL (BHEL SCOPE)</b> 25NB : SS316 : SCH.XXS : 1000mm LONG : 12 15NBx25NB : SS316 : CLASS 9000 : 50.8mm LONG : 6
PROCESS DATA	FLUID  FLOW (T/HR) PRESSURE (KG/CM <sup>2</sup> (A)) TEMPERATURE (DEG. C.) MAX. ALLOWABLE PRESS LOSS DESIGN PRESS : TEMP DIFF. PRESS AT MAX FLOW	STEAM MAX.                      NORMAL                      MINIMUM  SHALL BE FURNISHED DURING PROJECT  292 Kg/cm <sup>2</sup> : 610 DEG C BIDDER TO FURNISH DURING PROJECT
PIPE LINE DATA	PIPE SIZE (OD X THK) mm PIPE MATERIAL BORE DIAMETER MIN. AVAILABLE STRAIGHT LENGTH UPSTREAM:DOWNSTREAM FLOW DIRECTION	<b><u>AS PER PRICE SCHEDULE</u></b> SA 335 P92 BIDDER TO FURNISH DURING PROJECT 15D 10D : 5D HORIZONTAL
OTHER DATA	IBR CERTIFICATION APPROX. WEIGHT OF ASSEMBLY	REQUIRED BIDDER TO FURNISH DURING PROJECT
PACKING	PACKING	As per attached packing specification
* Project specific data shall be informed by BHEL during project ordering		

### **BIDDER TO QUOTE IN COLUMN “V” OF PRICE FORMAT FOR DETAILS SPECIFIED ABOVE**

### **BIDDER TO NOTE THE FOLLOWING FOR EACH NOZZLE ASSEMBLY:**

- 4 Nos. Nipples and 2 Nos. of expander to be provided by bidder for extra pair of tappings also. Price for the same shall be as per unit price quoted in the price schedule.
- Blind plug and Stub material shall be of SS316 material for all tapping's.
- All accessories, including blind plug, stub shall be considered by the bidder and shall have IBR Certification, as applicable (indicated in respective Data Sheets).
- S-bend to be considered for vertical flow direction / main steam process requirement.
- Approximately 12 Nos. of Flow Nozzles in Data Sheet-5 may require IBR Certification.

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 16.09.2024

Tag No. : NOZZLE ASSEMBLY AS PER TYPE “VI” OF THE PRICE FORMAT

Data Sheet No.-6


DATA SHEET – A		
ELEMENT	SERVICE MAKE : MODEL TYPE STANDARD * DESIGN MATERIAL BETA RATIO BORE DIAMETER	SHALL BE FURNISHED DURING PROJECT BIDDER TO FURNISH DURING PROJECT [■] ASME PTC 19.5 / [■] ISO 5167 LONG RADIUS: HIGH BETA ASME SA182-GRADE SS316L ~ 0.7 BIDDER TO FURNISH DURING PROJECT
END CONNECTION	TYPE BRANCH PIPE BRANCH PIPE MATERIAL TAPPING LOCATION NUMBER OF TAPPINGS <b>ROOT VALVE QTY</b> NIPPLE : SIZE/MATL/RATING/QTY EXPANDER : SIZE/MATL/RATING/QTY	BUTT WELD END YES ( FREE ISSUE BY BHEL) SAME AS PIPE MATERIAL D&D/2 : ON PIPE [■] 3 PAIRS / [■] 4 PAIRS <b>NIL (BHEL SCOPE)</b> 25NB : SS316 : SCH.80 : 250mm LONG : 12 15NBx25NB : SS316 : CLASS 3000 : 50.8mm LONG : 6
PROCESS DATA	FLUID *  FLOW (T/HR) PRESSURE (KG/CM <sup>2</sup> (A)) TEMPERATURE (DEG. C.) MAX. ALLOWABLE PRESS LOSS DESIGN PRESS : TEMP DIFF. PRESS AT MAX FLOW	[■] STEAM / [■] CONDENSATE / [■] FEEDWATER / [■] DRAIN WATER MAX.                      NORMAL                      MINIMUM  SHALL BE FURNISHED DURING PROJECT  77 Kg/cm <sup>2</sup> : 400 DEG C BIDDER TO FURNISH DURING PROJECT
PIPE LINE DATA	PIPE SIZE (OD X THK) mm PIPE MATERIAL * BORE DIAMETER MIN. AVAILABLE STRAIGHT LENGTH UPSTREAM:DOWNSTREAM FLOW DIRECTION *	<b><u>AS PER PRICE SCHEDULE</u></b> [■] SA106 GR B / [■] SA106 GR C BIDDER TO FURNISH DURING PROJECT 15D 10D : 5D [■]HORIZONTAL / [■]VERTICAL <sup>\$</sup>
OTHER DATA	IBR CERTIFICATION APPROX. WEIGHT OF ASSEMBLY	REQUIRED BIDDER TO FURNISH DURING PROJECT
PACKING	PACKING	As per attached packing specification
\$ S-bent to be provided for vertical flow direction * Project specific data shall be informed by BHEL during project ordering.		

**BIDDER TO QUOTE IN COLUMN “VI” OF PRICE FORMAT FOR DETAILS SPECIFIED ABOVE**

**BIDDER TO NOTE THE FOLLOWING FOR EACH NOZZLE ASSEMBLY:**

- 4 Nos. Nipples and 2 Nos. of expander to be provided by bidder for extra pair of tappings also. Price for the same shall be as per unit price quoted in the price schedule.
- Blind plug and Stub material shall be of SS316 material for all tapping's.
- All accessories, including blind plug, stub shall be considered by the bidder and shall have IBR Certification, as applicable (indicated in respective Data Sheets).
- Approximately 40 Nos. of Flow Nozzles in Data Sheet-6 may require IBR Certification.
- S-bend to be considered for vertical flow direction / main steam process requirement.



	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 16.09.2024


Tag No. : NOZZLE ASSEMBLY AS PER TYPE “II” OF THE PRICE FORMAT

Data Sheet No.-7

DATA SHEET – A		
ELEMENT	SERVICE MAKE : MODEL TYPE STANDARD * DESIGN MATERIAL BETA RATIO BORE DIAMETER	SHALL BE FURNISHED DURING PROJECT BIDDER TO FURNISH DURING PROJECT [■] ASME PTC 19.5 / [■] ISO 5167 LONG RADIUS : HIGH BETA ASME SA182-GRADE SS316L ~ 0.7 BIDDER TO FURNISH DURING PROJECT
END CONNECTION	TYPE BRANCH PIPE BRANCH PIPE MATERIAL TAPPING LOCATION NUMBER OF TAPPINGS <b>ROOT VALVE QTY</b> NIPPLE : SIZE/MATL/RATING/QTY EXPANDER : SIZE/MATL/RATING/QTY	BUTT WELD END YES ( FREE ISSUE BY BHEL) SAME AS PIPE MATERIAL D&D/2 : ON PIPE [■] 3 PAIRS / [■] 4 PAIRS <b>NIL (BHEL SCOPE)</b> 25NB : SS316 : SCH.XXS : 1000mm LONG : 12 15NBx25NB : SS316 : CLASS 9000 : 50.8mm LONG : 6
PROCESS DATA	FLUID  FLOW (T/HR) PRESSURE (KG/CM <sup>2</sup> (A)) TEMPERATURE (DEG. C.) MAX. ALLOWABLE PRESS LOSS DESIGN PRESS : TEMP DIFF. PRESS AT MAX FLOW	FEEDWATER MAX.                      NORMAL                      MINIMUM  SHALL BE FURNISHED DURING PROJECT  390 Kg/cm <sup>2</sup> : 315 DEG C BIDDER TO FURNISH DURING PROJECT
PIPE LINE DATA	PIPE SIZE (OD X THK) mm PIPE MATERIAL * BORE DIAMETER MIN. AVAILABLE STRAIGHT LENGTH UPSTREAM:DOWNSTREAM FLOW DIRECTION	<u><b>AS PER PRICE SCHEDULE</b></u> [■] SA106 GR B / [■] SA106 GR C BIDDER TO FURNISH DURING PROJECT 15D 10D : 5D HORIZONTAL
OTHER DATA	IBR CERTIFICATION APPROX. WEIGHT OF ASSEMBLY	REQUIRED BIDDER TO FURNISH DURING PROJECT
PACKING	PACKING	As per attached packing specification
* Project specific data shall be informed by BHEL during project ordering		

**BIDDER TO QUOTE IN COLUMN “VII” OF PRICE FORMAT FOR DETAILS SPECIFIED ABOVE  
BIDDER TO NOTE THE FOLLOWING FOR EACH NOZZLE ASSEMBLY:**

- A) 4 Nos. Nipples and 2 Nos. of expander to be provided by bidder for extra pair of tappings also. Price for the same shall be as per unit price quoted in the price schedule.  
B) Blind plug and Stub material shall be of SS316 material for all tapping's.  
C) All accessories, including blind plug, stub shall be considered by the bidder and shall have IBR Certification, as applicable (indicated in respective Data Sheets).  
D) Approximately 10 Nos. of Flow Nozzles in Data Sheet-7 may require IBR Certification.

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 16.09.2024

Tag No. : NOZZLE ASSEMBLY AS PER TYPE “V” OF THE PRICE FORMAT


Data Sheet No.-8

DATA SHEET – A		
ELEMENT	SERVICE MAKE : MODEL TYPE STANDARD * DESIGN MATERIAL BETA RATIO BORE DIAMETER	SHALL BE FURNISHED DURING PROJECT BIDDER TO FURNISH DURING PROJECT [■] ASME PTC 19.5 / [■] ISO 5167 LONG RADIUS : HIGH BETA A182F92 ~ 0.7 BIDDER TO FURNISH DURING PROJECT
END CONNECTION	TYPE BRANCH PIPE BRANCH PIPE MATERIAL TAPPING LOCATION NUMBER OF TAPPINGS <b>ROOT VALVE QTY</b> NIPPLE : SIZE/MATL/RATING/QTY EXPANDER : SIZE/MATL/RATING/QTY	BUTT WELD END YES ( FREE ISSUE BY BHEL) SAME AS PIPE MATERIAL D&D/2 : ON PIPE [■] 3 PAIRS / [■] 4 PAIRS <b>NIL (BHEL SCOPE)</b> 25NB : P92 : SCH.XXS : 1000mm LONG : 12 15NBx25NB : P92 : CLASS 9000 : 50.8mm LONG : 6
PROCESS DATA	FLUID  FLOW (T/HR) PRESSURE (KG/CM <sup>2</sup> (A)) TEMPERATURE (DEG. C.) MAX. ALLOWABLE PRESS LOSS DESIGN PRESS : TEMP DIFF. PRESS AT MAX FLOW	STEAM MAX.                      NORMAL                      MINIMUM  SHALL BE FURNISHED DURING PROJECT  293 Kg/cm <sup>2</sup> : 608 DEG C BIDDER TO FURNISH DURING PROJECT
PIPE LINE DATA	PIPE SIZE (OD X THK) mm PIPE MATERIAL BORE DIAMETER MIN. AVAILABLE STRAIGHT LENGTH UPSTREAM:DOWNSTREAM FLOW DIRECTION	<b><u>AS PER PRICE SCHEDULE</u></b> SA 335 P92 BIDDER TO FURNISH DURING PROJECT 15D 10D : 5D HORIZONTAL
OTHER DATA	IBR CERTIFICATION APPROX. WEIGHT OF ASSEMBLY	REQUIRED BIDDER TO FURNISH DURING PROJECT
PACKING	PACKING	As per attached packing specification
* Project specific data shall be informed by BHEL during project ordering		


### **BIDDER TO QUOTE IN COLUMN “VIII” OF PRICE FORMAT FOR DETAILS SPECIFIED ABOVE**

### **BIDDER TO NOTE THE FOLLOWING FOR EACH NOZZLE ASSEMBLY:**

- 4 Nos. Nipples and 2 Nos. of expander to be provided by bidder for extra pair of tappings also. Price for the same shall be as per unit price quoted in the price schedule.
- Blind plug and Stub material shall be of P92 material for all tapping's.
- All accessories, including blind plug, stub, shall be considered by the bidder and shall have IBR Certification, as applicable (indicated in respective Data Sheets).
- S-bend to be considered for vertical flow direction / main steam process requirement.
- Approximately 43 Nos. of Flow Nozzles in Data Sheet-8 may require IBR Certification.

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

<b>TECHNICAL DATA SHEET - B (SUPPLIER DATA TO BE FURNISHED AFTER AWARD OF CONTRACT FOR EACH TAG)</b>		
<b>SL.NO</b>	<b>DESCRIPTION</b>	<b>DETAILS</b>
1	MAKE: MODEL TYPE	
2	BETA RATIO	
3	BORE DIAMETER OF ELEMENT	
4	DIFF PRESSURE LOSS AT SCALE FLOW	
5	DIFF PRESSURE LOSS AT MAX FLOW	
6	APPROX. WEIGHT OF ASSEMBLY	

	TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

## COMPLIANCE DRAWING

### EDGE PREPARTION AND WELD END DIAMETER (d<sub>1</sub> VALUES)

TP 062 05 99

[illegible]

22861-003-08-3

DRAWING No.

NOTES: - 01. APPLICABLE FOR P91/P92

i) STRAIGHT WITH STRAIGHT/FITTING  
ii) BEND WITH BEND/FITTING

02. FOR OD MISMATCH, REFER FIGURE-Xa

03. REFER STYLE-DL FOR THICKNESS &lt;14.2mm (FOR ALL OD/ID)

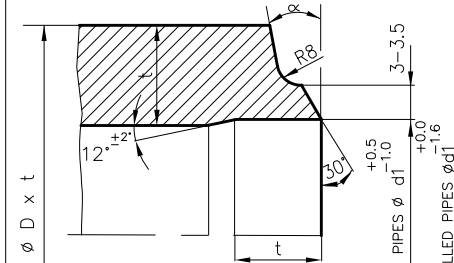
04. REFER STYLE-PL  
i) WHEN THICKNESS IS  $\geq 14.2$  mm & <20mm (FOR ALL OD/ID)ii) WHEN THICKNESS  $\geq 20$ mm & OD <219.1mm.05.  $\alpha = 6^\circ$  FOR WALL THICKNESS  $\geq 20$ MM AND  $\leq 30$  mm06.  $\alpha = 10^\circ$  FOR WALL THICKNESS > 30 mm

FIGURE - X

MATCHING EDGE PREPARATION  
FOR MISMATCH OD APPLICABLE FOR  
BENDS/FITTINGS OF P91/P92 MATERIALS

NOTES: -

01. OD OF STRAIGHT TO BE PHYSICALLY MEASURED/VERIFIED.

02. t = THK OF CONNECTING PIPE (STRAIGHT)

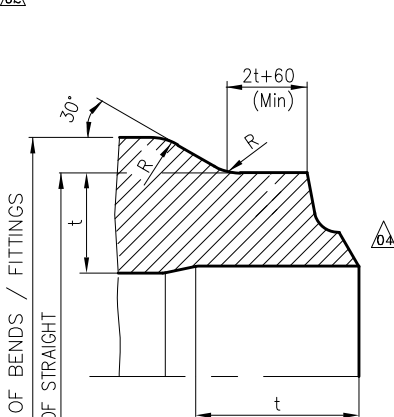
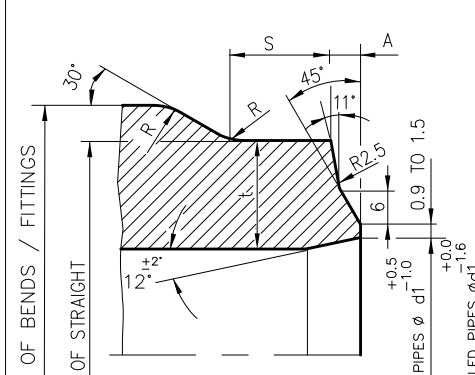


FIGURE - Xa

MATCHING EDGE PREPARATION FOR MISMATCH OD  
DIAMETRICALLY GREATER THAN 8 mm  
(ie OD1 - OD2 > 8mm) APPLICABLE FOR  
BENDS/FITTINGS OTHER THAN P91/P92 MATERIALS

NOTES: -

01. OD OF STRAIGHT TO BE PHYSICALLY MEASURED/VERIFIED.

02. WHEN  $t < 65$ ,  $S+A = 65$  Min. &  $t > 65$ ,  $S=65$  Min.  
WHERE t=THK OF CONN.PIPE(STRAIGHT).

STYLE - Pa

MATCHING EDGE PREPARATION FOR MISMATCH OD  
DIAMETRICALLY GREATER THAN 8 mm  
(ie OD1 - OD2 > 8mm) APPLICABLE FOR  
ELBOWS OTHER THAN P91/P92 MATERIALS

NOTES: -

01. OD = OUTSIDE DIA OF CONN. PIPE (STRAIGHT)  
TO BE PHYSICALLY MEASURED/VERIFIED.

02. t = THK OF CONN.PIPE (STRAIGHT)

03. t = THK OF CONN.PIPE (STRAIGHT)

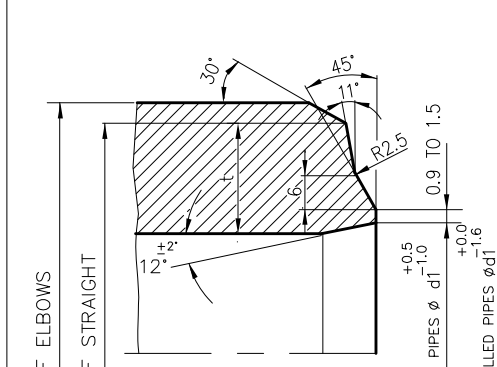


FIGURE - Z

NOTES: - 01. APPLICABLE FOR P91/P92 ZERO ARM PIPEBEND WELDED WITH P91/P92 STRAIGHT PIPE

02. FOR OD MISMATCH, REFER FIGURE-Xa

03. REFER STYLE-DL FOR THICKNESS &lt;14.2mm (FOR ALL OD/ID)

04. REFER STYLE-PL

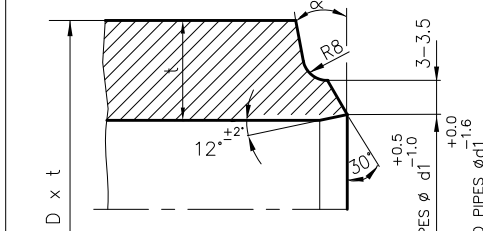
i) WHEN THICKNESS IS  $\geq 14.2$  mm AND < 20 mm FOR ALL OD/ID.ii) WHEN THICKNESS  $\geq 20$ mm AND OD < 219.1 mm.05.  $\alpha = 6^\circ$  FOR WALL THICKNESS  $\geq 20$ MM AND  $\leq 30$  mm06.  $\alpha = 10^\circ$  FOR WALL THICKNESS > 30 mm

FIGURE - Xb

(BEND END)

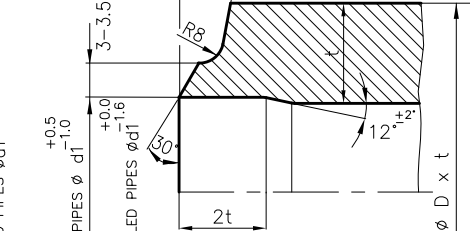
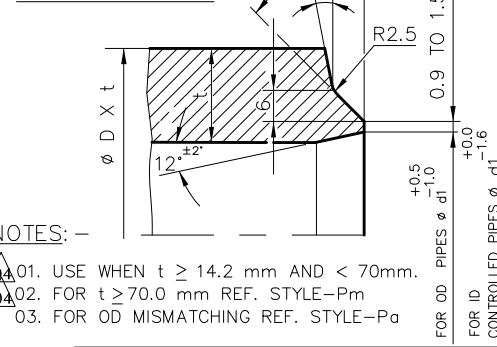


FIGURE - Xc

(STRAIGHT END)

STYLE - P

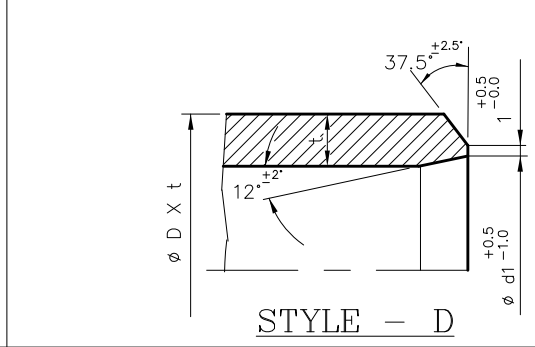


NOTES: -

01. USE WHEN  $t \geq 14.2$  mm AND < 70mm.02. FOR  $t \geq 70.0$  mm REF. STYLE-Pm

03. FOR OD MISMATCHING REF. STYLE-Pa

NOTES: -

01. USE WHEN  $t < 14.2$  mm.

STYLE - D

TYPE OF PRODUCT  
OR NAME OF  
CUSTOMER/PROJECT

01

STANDARD

## GENERAL NOTES:

01. THE MINIMUM THICKNESS AT WELD END SHALL NOT BE LESS THAN

a) 0.875 TIMES t NOM. FOR OD PIPES.

b) t MIN. FOR ID CONTROLLED PIPES.

02. t NOM &amp; t MIN SHALL BE AS PER SPECIFIED PIPE SIZE.

03. SHARP CORNERS SHALL BE ROUNDED OFF WHEREVER 'R' IS INDICATED.

## NOTES FOR WELDING:

01. WELD REINFORCEMENT TO BE FLUSH GROUND AND MERGED WITH  
PARENT METAL WITHOUT ANY UNEVENNESS.

REV 04	DATE 07.12.16	ALTERED: P SURESH
ZONE	SHEET 2 OF 2 IS ADDED. NOTES ADDED, MODIFIED AND DELETED IN FIGURE-X, Xa, Xb, Xc AND STYLE-P	
REV 03	DATE 10.04.13	ALTERED: M.R.K
ZONE	FIG.Xb AND FIG.Xc ADDED. IN FIG.X NOTE 01 MODIFIED. IN FIG.Xa, STYLE-Pa, FIG.2, P92 MATERIAL ADDED	
REV 02	DATE 10.01.13	ALTERED: M.R.K
ZONE	IN FIG.Xa, NOTE 04 ADDED. GENERAL NOTES 03 ADDED. IN FIG.Xa, 5MM OD MISMATCH IS REMOVED	
REV 01	DATE 11.05.04	ALTERED: R.SENDHIL
ZONE	PROJECT NAME REMOVED AND STANDARD INCORPORATED IN TITLE BLOCK	

BHARAT HEAVY ELECTRICALS LTD., DRN  
PIPING CENTRE, MADRAS

NAME	SIGN	DATE	NO OF ITEMS
K.B.RAGUNATH		11.10.01	
M.C.SEKARAN		11.10.01	
A.VELAYUTHAM		11.10.01	

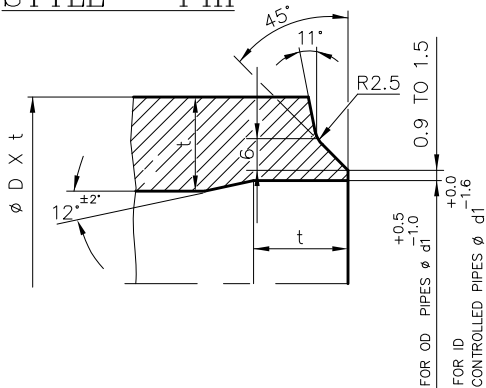
DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	NAME OF ORIGINAL ORGANISATION	ITEM No.
CODE	C/M/F				
TITLE	EDGE PREPARATION DETAILS			CARD CODE	REV
				U 01	04
				DRAWING No.	
				3-80-300-19825	
				SHEET 1 OF 2	

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

3-80-300-19825

DRAWING No.

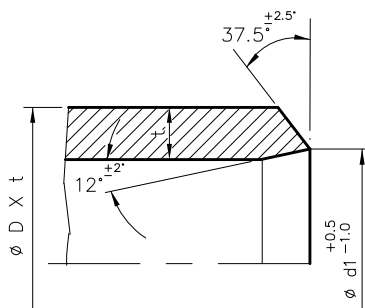
STYLE - P<sub>m</sub>



NOTES: -

01. USE FOR SA106GRC PIPES WHEN  $t \geq 70.0$  mm.
02. FOR OD MISMATCHING REF. FIGURE-P<sub>d</sub>
03. FOR FITTINGS USE STYLE-P.

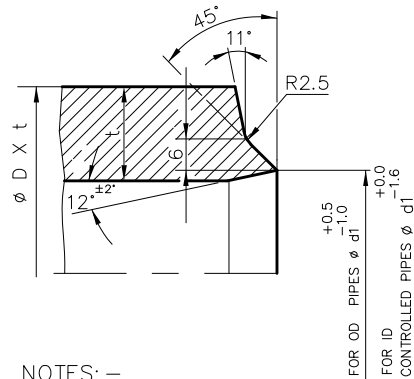
STYLE - D<sub>L</sub>



NOTES: -

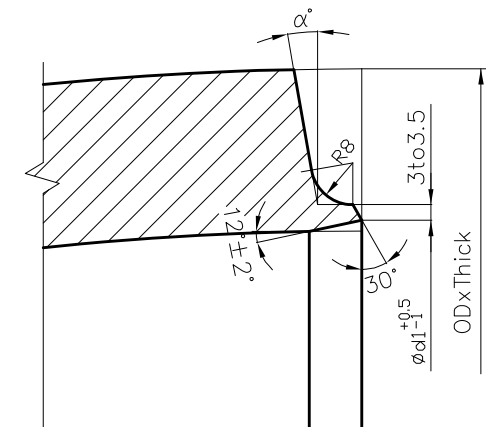
01. USE FOR P91 / P92 PIPES AND FITTINGS WHEN  $t < 14.2$  mm (ALL OD/ID).

STYLE - P<sub>L</sub>



NOTES: -

01. USE FOR P91 / P92 PIPES AND FITTINGS
  - i) WHEN THICKNESS IS  $\geq 14.2$  mm AND  $< 20$  mm FOR ALL OD/ID.
  - ii) WHEN THICKNESS  $\geq 20$  mm AND OD  $< 219.1$  mm.
02. FOR OD MISMATCHING REF. FIGURE-P<sub>d</sub>



01. USE FOR P91 / P92 FITTINGS
02. REFER STYLE-D<sub>L</sub> FOR THICKNESS  $< 14.2$  mm FOR ALL OD/ID.
03. REFER STYLE-P<sub>L</sub>
  - i) WHEN THICKNESS IS  $\geq 14.2$  mm AND  $< 20$  mm FOR ALL OD/ID.
  - ii) WHEN THICKNESS  $\geq 20$  mm AND OD  $< 219.1$  mm.
04.  $\alpha = 6^\circ$  FOR WALL THICKNESS  $\geq 20$  mm AND  $\leq 30$  mm
05.  $\alpha = 10^\circ$  FOR WALL THICKNESS  $> 30$  mm.
06. FIGURE-Xf IS APPLICABLE FOR ALL BUTT WELDED FITTINGS NOT COVERED IN NOTES 02 & 03

FIGURE - Xf

NOTE :

01. FOR GENERAL NOTES AND NOTES FOR WELDING REFER SHEET 1 OF 2.

TYPE OF PRODUCT  
OR NAME OF  
CUSTOMER/PROJECT

STANDARD



BHARAT HEAVY ELECTRICALS LTD.,  
PIPING CENTRE, MADRAS


NAME	SIGN	DATE	NO OF ITEMS
P SURESH		07.12.16	
R SESHAGIRI		07.12.16	
C KARUNAKARAN		07.12.16	

DEPT.	GRADE OF UN TOL DIM	SCALE	WEIGHT (Kg).	NAME OF ORIGINAL ORGANISATION	ITEM No.
CODE	C/M/F				


TITLE	CARD CODE	DRAWING No.	REV
EDGE PREPARATION DETAILS	U 01	3-80-300-19825	04

SHEET 2 OF 2




	TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

## QUALITY PLAN




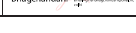

		MANUFACTURER / BIDDER / SUPPLIER NAME & ADDRESS			STANDARD QUALITY PLAN			SPEC. NO :			DATE:			
					CUSTOMER :			QP NO.: PE-QP-999-145-H 105, Rev.00			DATE: 03.01.2024			
					PROJECT:			PO NO.:			DATE:			
					ITEM: FLOW NOZZLE		SYSTEM:-S&CE					SHEET 1 OF 3		
S No.	Component & Operations	Characteristics	Class	Type of Check	Quantum of check		Reference document	Acceptance norms	Format of record		Agency			Remarks
1	2	3	4	5	6		7	8	9	*	10 **			11
					M	B/C				D	M	B	C	


1	RAW MATERIAL													
1.1	Flow Nozzle, pipe, adapter	1. Physical, Chemical properties	MA	Physical, Chemical tests	1/Heat	1/Heat	Approved Drg / data Sheet	Approved Drg / data Sheet	Mill Test Certificate*	√	P	V	-	1) Branch pipe shall be supplied by BHEL with correlated TC & Identification. 2) Correlation and identification to be maintained. 3) IBR certification to be verified by BHEL, if applicable * In case correlated TC is not available, testing in NABL lab shall be carried out.
		2. Ultrasonic testing (nozzle and adaptor only)	MA	Ultrasonic test	100%	100%	ASTMA388	ASTMA388	Test Certificate	√	P	V	-	For thickness > 40 mm
2	IN PROCESS													
2.1	Welding procedure specification (WPS)	Correctness	MA	Review	100%	100%	IS:7307 / ASME IX	IS:7307 / ASME IX	Format of IS / ASME	-	P	V	-	In case WPS is already approved by NTPC/LLOYDS/BHEL, it need not to be approved again. Same shall be reviewed.
2.2	Procedure Qualification Record (PQR) & Welders qualification	Qualification records shall be verified	MA	Physical test / Radiographic Test	100%	100%	ASME IX	ASME IX	Format of / ASME	-	P	W	-	In case of NTPC / LLOYDS / BHEL qualified welders available, then prequalification and WPS, PQR not required, only Test Certificate to be verified.
2.3	Weld Edge preparation /Root run	1.Surface flaw	MA	Dye penetration test (DPT)	100%	100%	ASTM E 165/ASME Sec VII Div I	ASTM E 165/ASME Sec VII Div I	Inspection report	-	P	V		
		2.Dimension and Visual	MA	Measurement	100%	100%	Approved Drawing	Approved Drawing	Inspection report		P	V		
2.4	Weld FIT-UPS	Dimension, Alignment, Orientation.	MA	Measurement & Visual	100%	--	WPS/Approved drg.	WPS/Approved drg.	Inspection Report	-	P	--	-	

BHEL						BIDDER/ SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Name	Sign & Date		Name	Sign & Date	Seal			Name	Sign & Date	Seal
Prepared by:	Priyanka	Priyanka	Prepared by:	Kusum Gautam	Kusum Gautam						
Reviewed by:	S.C. Sharma	Suresh Chand Sharma	Reviewed by:								
Approved by:	Girish Bhagchandani	Girish Bhagchandani	Approved by:	Harish Kumar	Harish Kumar						

		MANUFACTURER / BIDDER / SUPPLIER NAME & ADDRESS			STANDARD QUALITY PLAN			SPEC. NO :		DATE:				
					CUSTOMER :			QP NO.: PE-QP-999-145-H 105, Rev.00		DATE: 03.01.2024				
					PROJECT:			PO NO.:		DATE:				
					ITEM: FLOW NOZZLE		SYSTEM:-S&CE				SHEET 2 of 3			
S No.	Component & Operations	Characteristics	Class	Type of Check	Quantum of check		Reference document	Acceptance norms	Format of record		Agency		Remarks	
1	2	3	4	5	6		7	8	9	*	10 **			11
					M	B/C				D	M	B	C	

2.5	Weldments final run	1.Surface defects	MA	Penetrant Test	100%	10%	IS: 3658 / ASTM 165/ ASME VIII Div. I	ASTM. / 165ASME VIII Div I	Inspection Report / Log Book	-	P	V	-	
		2.Heat Treatment	MA	Review of HT Chart	100%	10%	ASME SEC. VIII	ASME SEC. VIII	HT Chart	√	P	V	-	As applicable, depending on pipe thickness. Films to be reviewed by BHEL
		3.Sub Surface defects(After PWHT)	MA	Radiographic Test	100%	100%	ASME SEC. VIII	ASME SEC. VIII	Inspection Report	-	P	V	-	Review of RT report by BHEL
		4. Hardness on Butt Joint and HAZ	MA	Measurement	100%	10%	ASTM E10	ASTM E10/Less than 300BHN	Hardness report		P	V		
		5. Weld Quality (DP/MPI for stub welding)	MA	Visual	100%	100 %	ASTM E165	ASTM E165/ ASME Sec VII Div I	Inspection Report		P	V		
2.6	Machining													
	1. Flow Nozzle (machined)	1.Dimensions	MA	Measurement	100%	100%	Approved Drg / data Sheet	Approved Drg / data Sheet	Inspection Report	√	P	W	-	Positive material identification testing for Nozzle and adapter shall be performed by vendor and the same shall be witnessed by BHEL..
		2. Profile	MA	Measurement	100%	100%	Approved Drg / data Sheet	Approved Drg / data Sheet	Inspection Report	-	P	W	-	
		3. Surface finish	MA	Measurement	100%	100%	Approved Drg / data Sheet	ISO-5167-3/ AGA	Inspection Report / Mfd Records	-	P	W	-	Surface Roughness Meter
	2. Pipe, Adapter	1. Machining of pipe ID	MA	Measurement	100%	100%	Approved Drg / data Sheet	Approved Drg / data Sheet	Inspection Report	-	P	W	-	
		2. Dimensions	MA	Measurement	100%	100%	Approved Drg / data Sheet	Approved Drg / data Sheet	Inspection Report	-	P	W	-	
		3. Surface flaw on weld edge preparation (for shop welding)	MA	Penetrant Test	100%	100%	ASTM E-165/ ASME Sec VII, Div I	ASTM E-165/ ASME Sec VII, Div I	Inspection Report / Test Certificate	-	P	W	-	

BHEL						BIDDER / SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Name	Sign & Date		Name	Sign & Date	Seal			Name	Sign & Date	Seal
Prepared by:	Priyanka		Prepared by:	Kusum Gautam							
Reviewed by:	S.C. Sharma		Reviewed by:								
Approved by:	Girish Bhagchandani		Approved by:	Harish Kumar							

		MANUFACTURER / BIDDER / SUPPLIER NAME & ADDRESS			STANDARD QUALITY PLAN			SPEC. NO :		DATE:				
					CUSTOMER :			QP NO.: PE-QP-999-145-H 105, Rev.00		DATE: 03.01.2024				
					PROJECT:			PO NO.:		DATE:				
					ITEM: FLOW NOZZLE		SYSTEM:-S&CE				SHEET 3 of 3			
S No.	Component & Operations	Characteristics	Class	Type of Check	Quantum of check		Reference document	Acceptance norms	Format of record	Agency			Remarks	
1	2	3	4	5	6		7	8	9	*	10 **			11
					M	B/C				D	M	B	C	







3	ROUTINE TEST	1. Leak tightness	CR	Hydraulic test (1.5 times Design pressure)	100%	100%	Approved Drg / data Sheet	No Leakage	Test Certificate	-	P	W	--	Minimum time duration of test shall be ½ hours.
		2. Calibration	CR	Measurement	1 / type per size	1 / type per size	Tech Spec.	Tech Spec.	Test Certificate / Inspection Report	√	P	V		CALIBRATION Test to be carried out at IIT / FCRI or NABL approved laboratory.
4	FINAL ASSEMBLY	1. Marking–Tag No., direction of flow	MI	Visual	100%	10%	Approved Drg / data Sheet	Approved Drg / data Sheet	Inspection Report	-	P	V		
		2. Workmanship, surface flaw on weld edge preparation on end of pipe (for site welding)	MA	Visual, Penetrant test	100%	10%	ASTM165 / ASME Sec VII, Div I	ASTM E-165-7 ASME Sec VII, Div I	Test Certificate / Inspection Report	-	P	W	-	
		3.Overall dimension and end connection	MA	Measurement	100%	10%	Approved Drg / data Sheet	Approved Drg / data Sheet	Inspection Report	√	P	V	--	
		4. IBR Clearance	MA	Review	100%	100%	IBR Compliance	IBR Compliance	Form III C	-	P	V	-	
5	PACKING & DISPATCH	Soundness of packing	MA	Visual	100%	--	Approved Drg / data Sheet	Approved Drg / data Sheet		--	P	VW	---	

**LEGEND:**

\* RECORDS, IDENTIFIED WITH "TICK"(√) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION, **D**: DOCUMENTATION.

\*\* **M**: SUPPLIER/ MANUFACTURER/ SUB-SUPPLIER/SUB-CONTRACTOR, **B**: BHEL/ BHEL NOMINATED THIRD PARTY INSPECTION AGENCY, **C**: CUSTOMER,

**P**: PERFORM, **W**: WITNESS, **V**: VERIFICATION, AS APPROPRIATE, **MA**: MAJOR, **MI**: MINOR, **CR**: CRITICAL.

BHEL						BIDDER / SUPPLIER		FOR CUSTOMER REVIEW & APPROVAL			
ENGINEERING			QUALITY			Sign & Date		Doc No:			
	Name	Sign & Date		Name	Sign & Date	Seal			Name	Sign & Date	Seal
Prepared by:	Priyanka		Prepared by:	Kusum Gautam							
Reviewed by:	S.C. Sharma		Reviewed by:	Kusum Gautam				Reviewed by:			
Approved by:	Girish Bhagchandani		Approved by:	Harish Kumar				Approved by:			



TECHNICAL SPECIFICATION  
FLOW NOZZLE ASSEMBLY  
(RATE CONTRACT)

PE-TS-20-145-H105B

Rev. No. 00

Date: 10.09.2024


**PAINTING REQUIREMENT**

Package	Surface Preparation	Primer Coat	No. of Coats	DFT (in Microns)	Intermediate Coat (in Microns)	No. of Coats	DFT (in Microns)	Final Coat	No. of Coats	DFT (in Microns)	Total DFT	Remarks
Flow Nozzle (along with Branch Pipe)	Sa 2.5 as per ISO 8501	Heat Resistant Aluminium Paint IS 13183, Grade I (for temperature between 400-600 Deg C) / II for temperature between 200 - 400 Deg C/ III for temperature upto 200 Deg C	1	20	NA	NA	NA	Heat Resistant Aluminium Paint IS 13183, Grade I/II	1	20	40	Stainless Steel, Non-Ferrous and Galvanised item/portion will not be painted

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

**PACKING REQUIREMENT - Minimum requirement of packing specified herewith, any superior packing can also be acceptable**

Sl.no	DESCRIPTION
1	Type of Packing:
1.1	Item shall be fully covered with multi layered cross laminated colourless polyethylene sheet of at least 100 GSM and shall be packed inside wooden box or crate or fixed on wooden pallet depending upon the size.
1.2	Item shall be firmly fixed to the bottom of the packing box/crate/pallet with the help of supports/blocks to arrest the movement from all sides.
1.3	Loose items/accessories like expander reducer, nipples etc. shall be separately packed with polyethylene sheet of at least 100 GSM inside the packing box/crate.
1.4	Marking for Fragile & Condensing environment shall be done on the packing box.
2	Quality of wood:
2.1	Quality of wood: Wood used for packing box shall be Pinewood, Rubber wood, Mango wood, Fir wood, Silver Oak wood or other as per availability with moisture content not exceeding 30%.
3	Cushioning material and moisture absorber:
3.1	Suitable cushioning shall be provided by rubberized coir/ expanded soft polyethylene foam.
3.2	Adequate quantity of packed desiccant shall be suitably placed inside the packing box.
4	Packing slip & holder:
4.1	Packing slip kept in polyethylene bag shall be placed inside the wooden box at appropriate place.
4.2	One copy of packing slip wrapped in polyethylene bag covered in galvanized iron tin sheet/ aluminium packing slip holder shall be fixed on the external surface the packing box.


	TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

## BILL OF QUANTITY

BOQ FOR RATE CONTRACT FE- NOZZLE (DATE 16.09.2024)															
SERVICE	I			II			III			IV			V		
	DATASHEET NO. DS-1			DATASHEET NO. DS-2			DATASHEET NO. DS-3			DATASHEET NO. DS-4			DATASHEET NO. DS-5		
SL NO	A1	A2	A6	B1	B2	B6	C1	C2	C6	D1	D2	D6	E1	E2	E6
	PIPE SIZE (INCH)	Nozzle assembly with nozzle material <b>SS316</b> , pipe material <b>SA106GRB / SA106GRC</b> with tappings and accessories like Nipples (SS316) , Expanders (SS316) , Pressure Take off points etc. (Ex-Works)	CALIBRATION CHARGES for Complete Nozzle assembly (Ex-Works)	PIPE SIZE (INCH)	Nozzle assembly with nozzle material <b>SS316</b> , pipe material <b>SA106GRB / SA106GRC</b> with tappings and accessories like Nipples (SS316) , Expanders (SS316) , Pressure Take off points etc. ( <b>service: ECONIMISER I/L</b> )	CALIBRATION CHARGES for Complete Nozzle assembly (Ex-Works)	PIPE SIZE (INCH)	Nozzle assembly of nozzle material <b>SS316</b> , pipe material <b>SA312TP304</b> with tappings and accessories like Nipples (SS316) , Expanders (SS316) , Pressure Take off points etc	CALIBRATION CHARGES for Complete Nozzle assembly (Ex-Works)	PIPE SIZE (INCH)	Nozzle assembly with nozzle material <b>SS316</b> , pipe material <b>SA335 P22</b> with tappings and accessories like Nipples (SS316) , Expanders (SS316) , Pressure Take off points etc	CALIBRATION CHARGES for Complete Nozzle assembly (Ex-Works)	PIPE SIZE (INCH)	Nozzle assembly with nozzle material <b>SS316</b> , pipe material <b>SA335 P91/P92</b> with tappings and accessories like Nipples (SS316) , Expanders (SS316) , Pressure Take off points etc	CALIBRATION CHARGES for Complete Nozzle assembly (Ex-Works)
		QTY	No.		QTY	No.		QTY	No.		QTY	No.			
1	03" (80 NB)	1	1	22" (550 NB)	1	1	01" (25 NB)	3	1	12" (300 NB)	1	1	08" (200 NB)	4	2
2	04" (100 NB)	9	4	24" (600 NB)	1	1	02" (50 NB)	1	1	16" (400 NB)	6	2	12" (300 NB)	8	2
3	06" (150 NB)	1	1	26" (650 NB)	7	3	04" (100 NB)	3	1	<div></div>			<div></div>		
4	08" (200 NB)	4	2	<div></div>			08" (200 NB)	4	2						
5	10" (250 NB)	20	5												
6	12" (300 NB)	8	3												
7	14" (350 NB)	3	1												
8	16" (400 NB)	25	7												
9	18" (450 NB)	24	10												
10	20" (500 NB)	6	1												
	QTY	101	35		9	5		11	5		7	3		12	4



BOQ FOR RATE CONTRACT FE- NOZZLE (DATE 16.09.2024)															
VI			VII			VIII			IX	X	XI	XII	XIII	XIV	TOTAL PRICE (EX WORKS)
DATASHEET NO. DS-6			DATASHEET NO. DS-7			DATASHEET NO. DS-8			Additional Expander			Additional NIPPLE	Additional NIPPLE	Additional NIPPLE	
F1	F2	F6	G1	G2	G6	H1	H2	H6	I1	J1	K1	L1	M1	N1	
PIPE SIZE (INCH)	Nozzle assembly with nozzle material <b>ASME SA182-GRADE SS316L</b> , pipe material <b>SA106GRB / SA106GRC</b> with tappings and accessories like Nipples (SS316) , Expanders (SS316), Pressure Take off points etc.	CALIBRATION CHARGES for Complete Nozzle assembly (Ex-Works)	PIPE SIZE (INCH)	Nozzle assembly with nozzle material <b>ASME SA182-GRADE SS316L</b> , pipe material <b>SA106GRB / SA106GRC</b> with tappings and accessories like Nipples (SS316) , Expanders (SS316) , Pressure Take off points etc. ( <b>ECONIMISER I/L</b> )	CALIBRATION CHARGES for Complete Nozzle assembly (Ex-Works)	PIPE SIZE (INCH)	Nozzle assembly with nozzle material <b>A182F92</b> , pipe material <b>SA335P92</b> with tappings and accessories like Nipples (P92) , Expanders (P92) , Pressure Take off points etc	CALIBRATION CHARGES for Complete Nozzle assembly (Ex-Works)	15NBx25NB: SS316:CLASS 3000: Size: 50.8mm LONG	15NBx25NB: SS316:CLASS 9000 Size: 50.8mm LONG	15NBx25NB:P92:CL ASS 9000 Size: 50.8mm LONG	NIPPLE 25Nb , SS316 , 1000mm long, SCH XXS	NIPPLE 25Nb , SS316 , 250mm long, SCH 80	NIPPLE 25Nb , P92 , 1000mm long, SCH XXS	
	QTY	No.		QTY	No.		QTY	No.	QTY	QTY	QTY	QTY	QTY	QTY	
02" (50 NB)	2	2	24" (600 NB)	6	4	12" (300 NB)	22	6	50	38	18	76	100	36	
04" (100 NB)	10	6	26" (650 NB)	4	2	14" (350 NB)	2	1							
06" (150 NB)	1	1	28" (700 NB)	1	1	8" (200 NB)	15	8							
08" (200 NB)	1	1				10" (250 NB)	4	1							
10" (250 NB)	23	9													
12" (300 NB)	10	6													
14" (350 NB)	1	1													
16" (400 NB)	28	9													
18" (450 NB)	24	10													
20" (500 NB)	8	5													
	108	50		11	7		43	16	50	38	18	76	100	36	
													TOTAL PRICE		

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

COMPLIANCE CERTIFICATE	
1	It is hereby confirmed that the technical specification (page 1 to 39) has been read and understood. We confirm compliance to the tender specification including any pre-bid clarification and amendments issued prior to techno-commercial bid opening without any deviation.
2	It is hereby declared that any technical submittals which was not specifically asked by BHEL in NIT shall not to be considered as part of bid and shall not be evaluated by BHEL.

Signature of authorized Representative Name

and Designation:


Name & Address of the Bidder

Date

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

DOCUMENTATION REQUIREMENT		
DRAWINGS & DOCUMENTS TO BE SUBMITTED BY ALL THE BIDDERS ALONG WITH THE BID		
Sl. No.	DOCUMENT TITLE	
1	PQR CREDENTIALS	
2	COMPLIANCE SHEET	
DRAWINGS & DOCUMENTS TO BE SUBMITTED BY SUCCESSFUL BIDDER AFTER AWARD OF CONTRACT ALONG WITH SUBMISSION SCHEDULE		
Sl. No.	DOCUMENT TITLE	FIRST SUBMISSION
		SCHEDULE
1	DATASHEET	Within 10 days after placement of project specific PO
2	GA DRAWING WITH EDGE PREPARATION	Within 10 days after placement of project specific PO
3	DESIGN CALCULATION	Within 10 days after placement of project specific PO
4	DP vs FLOW CURVE	Within 10 days after placement of project specific PO
5	QUALITY PLAN DULY SIGNED & STAMPED	Within 10 days after placement of project specific PO
6	CALIBRATION CERTIFICATE	Test Report to be submitted prior to final inspection
BHEL/Customer comments/approval and Vendor Resubmission schedule		
BHEL on First revision		Within 10 days of Vendor submission/Resubmission
BHEL /Customer Comment/Approval on subsequent revision		Within 18 days of Vendor submission/Resubmission
Vendor Resubmission		Within 7 days of BHEL/ Customer Comments.

<b>DRAWINGS &amp; DOCUMENTS TO BE SUBMITTED AS FINAL/AS-BUILT DOCUMENT</b>		
SNo.	DOCUMENT TITLE	SUBMISSION SCHEDULE
1	APPROVED DOCUMENTS	Along with dispatch
2	CALIBRATION CERTIFICATE	
3	O&M MANUAL	
4	ALL TEST CERTIFICATES	

	TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024


## PRE-QUALIFICATION REQUIREMENT (TECHNICAL)

## PRE-QUALIFICATION REQUIREMENT


	<b>FLOW NOZZLE ASSEMBLY</b>	PE-TS-20-145-H105B	
		DATE	24.08.24
		REV NO	00

1.0	<p>Bidder should be Original equipment manufacturer (OEM) for FLOW NOZZLE.</p> <p>In case bidder is not the OEM, evaluation shall be done as following :-</p> <p>(i) If bidder happens to be an Indian subsidiary of foreign OEM, then credentials of foreign OEM can be considered for meeting the PQR.</p> <p>(ii) If bidder happens to be authorised channel partner or has a valid collaboration agreement/licensing agreement with some other company or being a Joint Venture company, then the credentials of collaborator/licensing company/Principal company/JV partner can also be considered for meeting PQR as per the scope of work. The scope matrix shall include their respective roles including design vetting, manufacturing of critical component and warranty/ guarantee. If bidder qualifies on the basis of credentials of their principal/ JV partner/ Collaborator etc., then the principal/ JV partner/ Collaborator shall be responsible for overall design vetting and warranty/ guarantee of the package.</p>
2.0	<p>The Product being offered by the bidder should be in use successfully in power plant or any other industrial application for at least 1 (One) year. Bidder to submit either of following supporting documents for the product (flow nozzle):-</p> <p>Copy of minimum 1 (One) Performance Certificate from end user / Customer certifying that product is running successfully for 1 (One) year from date of commissioning. The certificate should clearly indicate date of commissioning, date of issue of certificate and name/designation of the certificate issuer. Copy of purchase order &amp; technical parameters to be attached along with the performance certificate.</p> <p style="text-align: center;">OR</p> <p>Copy of repeat orders from minimum 2 (Two) different purchasers. Order received by supplier from same purchaser with a gap of minimum 2 (Two) years shall be considered as repeat order. Copy of technical parameters for each order to be attached.</p>
3.0	<p>Bidder to furnish experience list of last 5 years indicating customer name, purchase order reference, item supplied &amp; year of supply to establish the continuity of business.</p>
4.0	<p>Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.</p>

<b>PREPARED BY</b>  <div style="display: flex; justify-content: space-between;"> <div> <b>BHOOPRIYA CHAUDHARY</b>  <small>Digitally signed by BHOOPRIYA CHAUDHARY DN: cn=BHOOPRIYA CHAUDHARY, o=BHEL, ou=PEM, email=bhoopriya@bhel.in, c=IN Date: 2024.03.08 17:03:36 +05'30'</small> </div> <div> <b>Vipul Kumar Verma</b>  <small>Digitally signed by Vipul Kumar Verma DN: cn=Vipul Kumar Verma, o=BHEL, ou=PEM, email=vipulverma@bhel.in, c=IN Date: 2024.03.08 17:25:29 +05'30'</small> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <span><b>BHOOPRIYA / VIPUL KUMAR VERMA</b></span> <span><b>(DY. MGR) / (SR. MGR)</b></span> </div>	<b>REVIEWED BY</b>  <div style="display: flex; justify-content: space-between;"> <div> <b>Suresh Chand Sharma</b>  <small>Digitally signed by Suresh Chand Sharma DN: cn=Suresh Chand Sharma, o=BHEL, ou=PEM, email=scha@rediffmail.com, c=US Date: 2024.03.08 17:33:00 +05'30'</small> </div> </div> <div style="text-align: center; margin-top: 10px;"> <b>SURESH CHAND SHARMA</b>  <b>(SR. DGM-S&amp;CE)</b> </div>	<b>APPROVED BY</b>  <div style="display: flex; justify-content: space-between;"> <div> <b>Girish Bhagchandani</b>  <small>Digitally signed by Girish Bhagchandani DN: cn=Girish Bhagchandani, o=BHEL, ou=PEM, email=girishbhagchandani@bhel.in, c=IN</small> </div> </div> <div style="text-align: center; margin-top: 10px;"> <b>GIRISH BHAGCHANDANI</b>  <b>(DH-S&amp;CE)</b> </div>
---	--	--

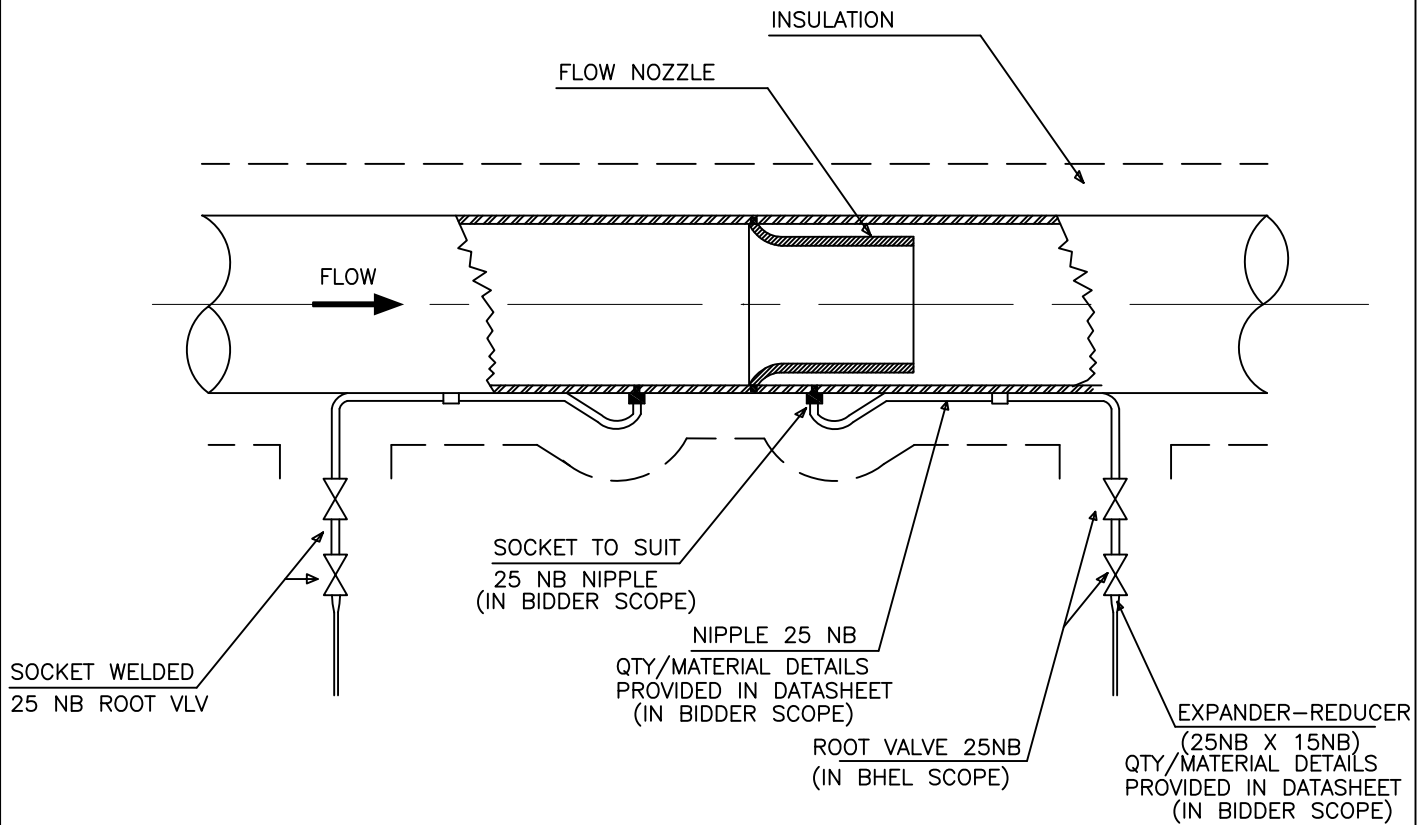
	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

ANNEXURE-A: PIPE SIZES FOR NOZZLE OF DIFFERENT SERVICES FOR REFERENCE FLOW PAGE (1 OF 2)				
SL.	DATASHEET NO.	TYPICAL PIPE SIZE		PIPE MATERIAL
NO.		NB	OD ( mm X mm )	
1	DS-1/DS-6	500 NB	508 X 12.7	SA 106 GR. B/C
			508 X 9.53	
		450 NB	457.2 X 12.7	
			457.2 X 9.53	
		400 NB	406.4 X 12.7	
			406.4 X 9.53	
		350 NB	355.6 X 12.7	
			355.6 X 9.53	
		300 NB	323.9 X 10.31	
			323.9 X 9.53	
			323.9 X 7.92	
		250 NB	273 X 12.7	
			273 X 9.27	
			273 X 6.35	
		200 NB	219.1 X 12.7	
			219.1 X 8.18	
			219.1 X 6.35	
		150 NB	168.3 X 7.11	
			168.3 X 5.6	
		100 NB	114.3 X 9.53	
			114.3 X 8.56	
			114.3 X 6.02	
		50 NB	60.3 X 5.54	
2	DS-2/DS-7	650 NB	660 x 97	SA 106 GR. B/C
			660 x 95	
		600 NB	610 x 86	
			ID 440 x 75	
			ID 445 x 76	
3	DS-3	200 NB	219.1 X 6.35	SA 312 TP 304 (ERW)
			219.1 x 3.76	
		100 NB	114.3 X 6.02	
			114.3 X 3.05	
		25 NB	33.4 x 3.38	
4	DS-4	400 NB	406.4 X 12.7	SA 335 P22
			406.4 X 9.53	
			406.4 X 7.92	

	<b>TECHNICAL SPECIFICATION FLOW NOZZLE ASSEMBLY (RATE CONTRACT)</b>	PE-TS-20-145-H105B
		Rev. No. 00
		Date: 10.09.2024

ANNEXURE-A: PIPE SIZES FOR FLOW NOZZLE OF DIFFERENT SERVICES FOR REF PAGE 2 OF 2				
SL. NO.	DATASHEET NO.	TYPICAL PIPE SIZE		PIPE MATERIAL
		NB	OD ( mm X mm )	
				SA 335 P92
5	DS-5/DS-8	300 NB	ID 200 x 51	
			ID 200 x 57	
		250 NB	ID 180 x 45	
		350 NB	ID 225 X65	
		200 NB	219.1 x 43	
			219.1 x 46	
			219.1 x 47	
			219.1 x 48	

# FLOW MEASUREMENT



## NOTES:

1. FOR STEAM SERVICE IN HORIZONTAL PIPE THE PRESSURE HOLES AND CONNECTING NIPPLES SHOULD BE IN HORIZONTAL PLANE OF THE PIPE CENTER LINE.
2. FLOW ELEMENTS SHALL BE PROVIDED WITH 3 /4 PAIRS OF TAPPING POINTS. (AS PER DATASHEET)



TITLE:—

FLOW ELEMENT NOZZLE

DRG.  
No.

PE-TS-20-145-H105B

REV.  
No.

00

DATE

30.08.24

SHEET

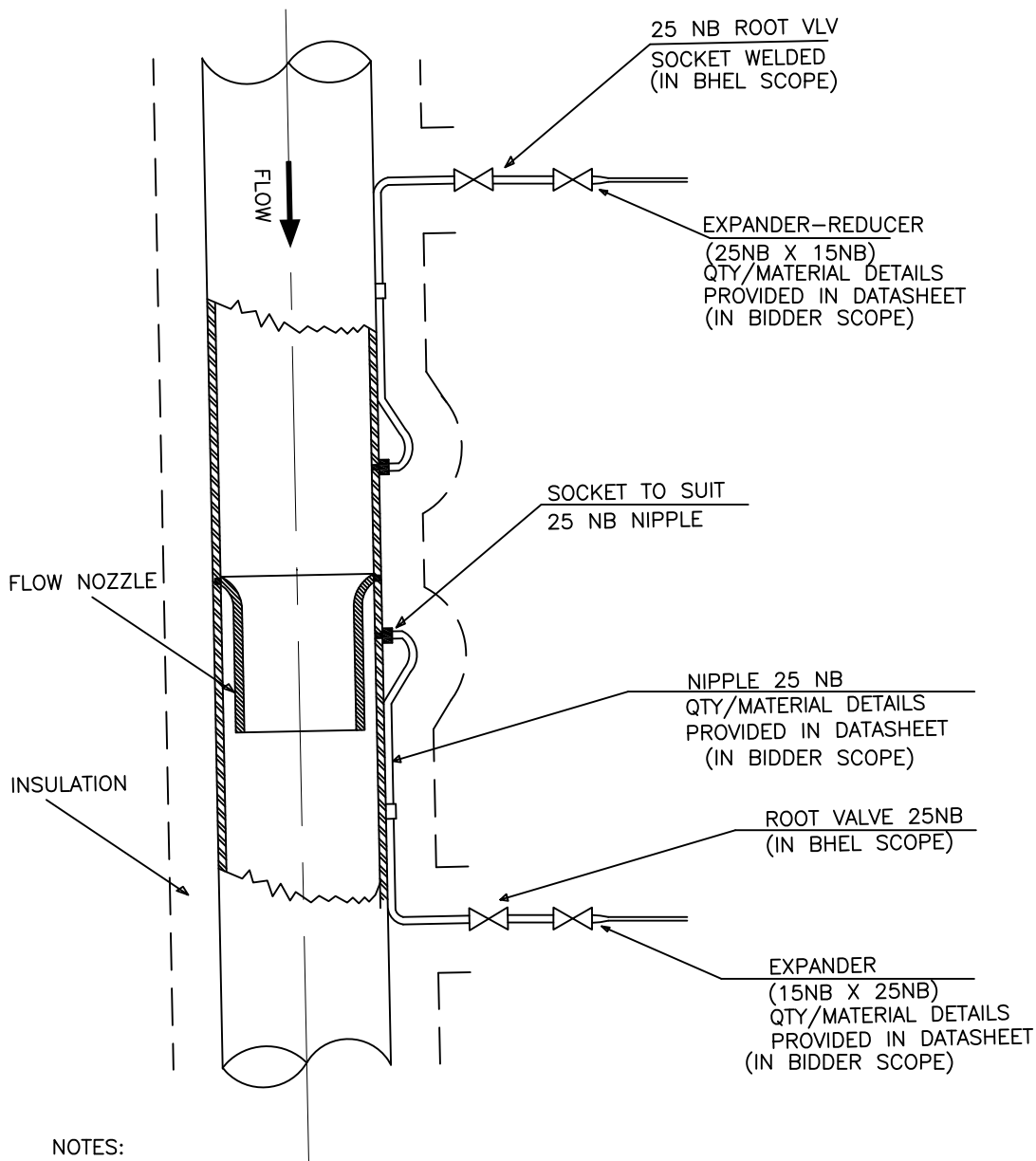
38

OF

39



# FLOW MEASUREMENT



1. FLOW ELEMENTS SHALL BE PROVIDED WITH 3 /4 PAIRS OF TAPPING POINTS. (AS PER DATASHEET)



TITLE:—

FLOW ELEMENT NOZZLE

DRG.  
No.

PE-TS-20-145-H105B

REV.  
No.

00

DATE

30.08.24

SHEET

39

OF





39

# TECHNICAL PQR

## PRE-QUALIFICATION REQUIREMENT

	FLOW NOZZLE ASSEMBLY	PE-TS-20-145-H105B	
		DATE	24.08.24
		REV NO	00

1.0	<p>Bidder should be Original equipment manufacturer (OEM) for FLOW NOZZLE.</p> <p>In case bidder is not the OEM, evaluation shall be done as following :-</p> <p>(i) If bidder happens to be an Indian subsidiary of foreign OEM, then credentials of foreign OEM can be considered for meeting the PQR.</p> <p>(ii) If bidder happens to be authorised channel partner or has a valid collaboration agreement/licensing agreement with some other company or being a Joint Venture company, then the credentials of collaborator/licensing company/Principal company/JV partner can also be considered for meeting PQR as per the scope of work. The scope matrix shall include their respective roles including design vetting, manufacturing of critical component and warranty/ guarantee. If bidder qualifies on the basis of credentials of their principal/ JV partner/ Collaborator etc., then the principal/ JV partner/ Collaborator shall be responsible for overall design vetting and warranty/ guarantee of the package.</p>
2.0	<p>The Product being offered by the bidder should be in use successfully in power plant or any other industrial application for at least 1 (One) year. Bidder to submit either of following supporting documents for the product (flow nozzle):-</p> <p>Copy of minimum 1 (One) Performance Certificate from end user / Customer certifying that product is running successfully for 1 (One) year from date of commissioning. The certificate should clearly indicate date of commissioning, date of issue of certificate and name/designation of the certificate issuer. Copy of purchase order &amp; technical parameters to be attached along with the performance certificate.</p> <p style="text-align: center;">OR</p> <p>Copy of repeat orders from minimum 2 (Two) different purchasers. Order received by supplier from same purchaser with a gap of minimum 2 (Two) years shall be considered as repeat order. Copy of technical parameters for each order to be attached.</p>
3.0	Bidder to furnish experience list of last 5 years indicating customer name, purchase order reference, item supplied & year of supply to establish the continuity of business.
4.0	Bidder to submit all supporting documents in English. If documents submitted by bidder are in language other than English, a self-attested English translated document should also be submitted.

PREPARED BY		REVIEWED BY	APPROVED BY
 BHOOPRIYA CHAUDHARY <small>Digitally signed by BHOOPRIYA CHAUDHARY DN: cn=BHOOPRIYA CHAUDHARY, o=BHEL, ou=PEM, email=bhoopriya@bhel.in, c=IN Date: 2024.03.08 17:03:36 +05'30'</small>	 <b>Vipul Kumar Verma</b> <small>Digitally signed by Vipul Kumar Verma DN: cn=Vipul Kumar Verma, o=BHEL, ou=PEM, email=vipulverma@bhel.in, c=IN Date: 2024.03.08 17:25:29 +05'30'</small>	 <b>Suresh Chand Sharma</b> <small>Digitally signed by Suresh Chand Sharma DN: cn=Suresh Chand Sharma, o=BHEL, ou=PEM, email=schandra@bhel.in, c=IN Date: 2024.03.08 17:33:00 +05'30'</small>	 <b>Girish Bhagchandani</b> <small>Digitally signed by Girish Bhagchandani DN: cn=Girish Bhagchandani, o=BHEL, ou=PEM, email=girishbhagchandani@bhel.in, c=IN</small>
BHOOPRIYA / (DY. MGR)	VIPUL KUMAR VERMA / (SR. MGR)	SURESH CHAND SHARMA / (SR. DGM-S&CE)	GIRISH BHAGCHANDANI / (DH-S&CE)

PRICE SCHEDULE FOR RATE CONTRACT OF FLOW ELEMENT-NOZZLE BIDDER NAME:																																																																	
I										II										III										IV										V										VI															
DATASHEET NO. DS-1										DATASHEET NO. DS-2										DATASHEET NO. DS-3										DATASHEET NO. DS-4										DATASHEET NO. DS-5										DATASHEET NO. DS-6															
SL NO	A1	A2	A3	A4	A5	A6	A7	A8	A9	B1	B2	B3	B4	B5	B6	B7	B8	B9	C1	C2	C3	C4	C5	C6	C7	C8	C9	D1	D2	D3	D4	D5	D6	D7	D8	D9	E1	E2	E3	E4	E5	E6	E7	E8	E9	F1	F2	F3	F4	F5	F6														
	PIPE SIZE (INCH)				Nozzle assembly with nozzle material <b>SS316</b> , pipe material <b>SA106GRB / SA106GRC</b> with tappings and accessories like Nipples (SS316) , Expanders (SS316) , Pressure Take off points etc. (Ex-Works)					CALIBRATION CHARGES for Complete Nozzle assembly (Ex-Works)					PIPE SIZE (INCH)				Nozzle assembly with nozzle material <b>SS316</b> , pipe material <b>SA106GRB / SA106GRC</b> with tappings and accessories like Nipples (SS316) , Expanders (SS316) , Pressure Take off points etc. ( <b>service: ECONIMISER I/L</b> )					CALIBRATION CHARGES for Complete Nozzle assembly (Ex-Works)					PIPE SIZE (INCH)				Nozzle assembly of nozzle material <b>SS316</b> , pipe material <b>SA312TP304</b> with tappings and accessories like Nipples (SS316) , Expanders (SS316) , Pressure Take off points etc					CALIBRATION CHARGES for Complete Nozzle assembly (Ex-Works)				PIPE SIZE (INCH)				Nozzle assembly with nozzle material <b>SS316</b> , pipe material <b>SA335 P22</b> with tappings and accessories like Nipples (SS316) , Expanders (SS316) , Pressure Take off points etc					CALIBRATION CHARGES for Complete Nozzle assembly (Ex-Works)				PIPE SIZE (INCH)				Nozzle assembly with nozzle material <b>ASME SA182-GRADE SS316L</b> , pipe material <b>SA106GRB / SA106GRC</b> with tappings and accessories like Nipples (SS316) , Expanders (SS316) , Pressure Take off points etc.					CALIBR assembl	
	QTY	UNIT PRICE (EX WORKS)	TOTAL PRICE (EX WORKS)	% Allocation	No.	UNIT PRICE (EX WORKS)	TOTAL PRICE (EX WORKS)	% Allocation		QTY	UNIT PRICE (EX WORKS)	TOTAL PRICE (EX WORKS)	% Allocation	No.	UNIT PRICE (EX WORKS)	TOTAL PRICE (EX WORKS)	% Allocation		QTY	UNIT PRICE (EX WORKS)	TOTAL PRICE (EX WORKS)	% Allocation	No.	UNIT PRICE (EX WORKS)	TOTAL PRICE (EX WORKS)	% Allocation		QTY	UNIT PRICE (EX WORKS)	TOTAL PRICE (EX WORKS)	% Allocation	No.	UNIT PRICE (EX WORKS)	TOTAL PRICE (EX WORKS)	% Allocation		QTY	UNIT PRICE (EX WORKS)	TOTAL PRICE (EX WORKS)	% Allocation	No.	UNIT PRICE (EX WORKS)	TOTAL PRICE (EX WORKS)	% Allocation		QTY	UNIT PRICE (EX WORKS)	TOTAL PRICE (EX WORKS)	% Allocation	No.															
1	03" (80 NB)	1	#VALUE!	#VALUE!	0.02	1	#VALUE!	#VALUE!	0.01	22" (550 NB)	1	#VALUE!	#VALUE!	0.90	1	#VALUE!	#VALUE!	0.14	01" (25 NB)	3	#VALUE!	#VALUE!	0.04	1	#VALUE!	#VALUE!	0.01	12" (300 NB)	1	#VALUE!	#VALUE!	0.25	1	#VALUE!	#VALUE!	0.04	08" (200 NB)	4	#VALUE!	#VALUE!	0.84	2	#VALUE!	#VALUE!	0.06	02" (50 NB)	2	#VALUE!	#VALUE!	0.04	2														
2	04" (100 NB)	9	#VALUE!	#VALUE!	0.26	4	#VALUE!	#VALUE!	0.06	24" (600 NB)	1	#VALUE!	#VALUE!	0.98	1	#VALUE!	#VALUE!	0.15	02" (50 NB)	1	#VALUE!	#VALUE!	0.03	1	#VALUE!	#VALUE!	0.01	16" (400 NB)	6	#VALUE!	#VALUE!	2.46	2	#VALUE!	#VALUE!	0.12	12" (300 NB)	8	#VALUE!	#VALUE!	2.02	2	#VALUE!	#VALUE!	0.08	04" (100 NB)	10	#VALUE!	#VALUE!	0.30	6														
3	06" (150 NB)	1	#VALUE!	#VALUE!	0.07	1	#VALUE!	#VALUE!	0.02	26" (650 NB)	7	#VALUE!	#VALUE!	7.47	3	#VALUE!	#VALUE!	0.50	04" (100 NB)	3	#VALUE!	#VALUE!	0.11	1	#VALUE!	#VALUE!	0.01											06" (150 NB)	1	#VALUE!	#VALUE!	0.07	1																						
4	08" (200 NB)	4	#VALUE!	#VALUE!	0.37	2	#VALUE!	#VALUE!	0.06											08" (200 NB)	4	#VALUE!	#VALUE!	0.30	2	#VALUE!	#VALUE!											0.06	08" (200 NB)	1	#VALUE!	#VALUE!	0.10	1																					
5	10" (250 NB)	20	#VALUE!	#VALUE!	2.34	5	#VALUE!	#VALUE!	0.18											10" (250 NB)	23	#VALUE!	#VALUE!	2.77	9																																								
6	12" (300 NB)	8	#VALUE!	#VALUE!	1.66	3	#VALUE!	#VALUE!	0.13											12" (300 NB)	10	#VALUE!	#VALUE!	2.14	6																																								
7	14" (350 NB)	3	#VALUE!	#VALUE!	0.73	1	#VALUE!	#VALUE!	0.05											14" (350 NB)	1	#VALUE!	#VALUE!	0.30	1																																								
8	16" (400 NB)	25	#VALUE!	#VALUE!	8.26	7	#VALUE!	#VALUE!	0.40											16" (400 NB)	28	#VALUE!	#VALUE!	9.53	9																																								
9	18" (450 NB)	24	#VALUE!	#VALUE!	8.87	10	#VALUE!	#VALUE!	0.65											18" (450 NB)	24	#VALUE!	#VALUE!	9.19	10																																								
10	20" (500 NB)	6	#VALUE!	#VALUE!	2.48	1	#VALUE!	#VALUE!	0.07											20" (500 NB)	8	#VALUE!	#VALUE!	3.40	5																																								
11					#VALUE!	25.05				#VALUE!	1.62					#VALUE!	9.35			#VALUE!	0.79					#VALUE!	0.48			#VALUE!	0.09					#VALUE!	2.71			#VALUE!	0.16					#VALUE!	2.86			#VALUE!	0.14			#VALUE!	27.84										
	Total Quantity	101				35					9			5					11				5				7				3				12			4					108					50																	

TOTAL EX-WORKS (INR)

TOTAL CALIBRATION CHARGES (INR)

FREIGHT CHARGES EXCLUDING CALIBRATION CHARGES WITHOUT GST @ % OF TOTAL EX-WORKS

FREIGHT CHARGES EXCLUDING CALIBRATION CHARGES WITHOUT GST (in INR)

APPLICABLE GST RATE % ON (TOTAL EX WORKS + FREIGHT EXCLUDING CALIBRATION)

GST (in INR)

TOTAL F.O.R. SITE PRICE (INR)

Note:  
1) Bidder to quote grand total value of the complete package (Rs X) only as per the BOQ above. The item wise break up of total price and unit price shall be derived as per the formulae indicated above. Bidder to note that evaluation shall be on Grand Total FOR site price to BHEL, however, Bidder to quote grand total Ex works value of the complete package only as per the BOQ above. The item wise break up of Ex works prices (unit as well as total) shall be derived as per the percentage indicated above by BHEL. Bidder need to indicate GST rate applicable on ex-works & freight in the respective column and single freight percentage of Ex work  
2) Value is to be filled only where "to be quoted" is mentioned and for other columns where "Ivalue" is mentioned same shall be derived by BHEL as per % allocation fixed against each item.  
3) Supplier to quote the Prices in "figures" along with corresponding "words".  
4) Supplier to note that variation in order value shall be +/- 30%.  
5) Commissioning spares applicable are also in the scope of supplier.

(s value (exclusive of GST) considering delivery anywhere in India in the freight column.

COST OF WITHDRAWAL									
PROJECT:-						Framework Agreement (Rate Contract)			
PACKAGE :-						FLOW ELEMENT- NOZZLE			
TENDER ENQUIRY :-									
NAME OF THE BIDDER									
Sl. No.	Volume/Section	Page No.	Clause No.	Technical Specification/Tender Document No	Complete Description of Deviation	Cost of withdrawal of deviation to be entered by the bidder in	Reference of price Schedule of which Cost of Withdrawal of Deviation is applicable	Nature of cost of withdrawal of deviation (Positive/Negative)	Reasons for quoting deviation
1	<b>TECHNICAL DEVIATION</b>								
1.01									
1.02									
1.03									
1.04									
1.05									
2	<b>COMMERCIAL DEVIATION</b>								
2.01									
2.02									
2.03									
2.04									
2.05									

NOTES:

**Tentative List of projects considered for FrameWork Agreement (rate Contract) of Flow Element-Nozzle**

1. NTPC Lara (2X800 MW),
2. NTPC Singrauli (2X800 MW),
3. NLC Talabira (3X800 MW),
4. HPCGCL Yamunanagar (1X800 MW),
5. NTPC Talcher (2X660 MW),
6. TG RAGHUNATHPUR (2 x 660 MW),
7. NTPC Sipat (1X800 MW)
8. SCCL (1X800 MW)
9. MEL Mahaan (Stage-II) (2X800 MW),
10. Adani Raigarh (2X800 MW) and
11. DVC KODERMA (2 X 800 MW)



**BHEL / PEM / CMM**  
**SPECIAL CONDITIONS OF CONTRACT OF FRAMEWORK AGREEMENT (RATE CONTRACT)**

**SPECIAL CONDITIONS OF CONTRACT OF FRAMEWORK AGREEMENT (RATE CONTRACT) FOR FLOW ELEMENT - NOZZLE**

1. BHEL/PEM intends to enter into Framework Agreement (Rate Contract) for FLOW ELEMENT - NOZZLE package. Framework Agreement (Rate Contract) validity for ordering shall be two years from the purchase order for Rate Contract.
2. BHEL-PEM will place purchase order for Framework Agreement (Rate Contract) only on suppliers who are registered with BHEL-PEM. Bidders who are not registered with BHEL-PEM needs to apply & get registered for subject package with PEM before Reverse Auction & hence they need to apply online for registration on PEM web portal & have to enclose acknowledgement with the bid documents else their bid may not be considered for evaluation.

The bidders who are not registered with BHEL-PEM may apply for registration in BHEL-PEM through Registration Portal available at [www.pem.bhel.com](http://www.pem.bhel.com) --> vendor section --> online supplier registration. All credentials and/ or documents duly signed & stamped related to registration has to be uploaded on the website & submit the application for registration. One set of hard copy filled-up SRF downloaded from Online Registration Portal duly signed & stamped has to be submitted.

3. Framework Agreement (Rate contract) is proposed to be done with 2 suppliers in ratio of 70:30 value wise at L1 FOR site price (Ex-works + freight) for this package. However, order for a project shall not be split.
4. Quantity variation shall be applicable as +/- 30 % of the contract value. Bidders shall be informed that the quantities indicated in the tender are tentative quantities. No minimum quantity is guaranteed by BHEL.
5. This tender is issued by BHEL PEM for Framework Agreement (Rate Contract) of FLOW ELEMENT - NOZZLE required at various BHEL project sites. All bidders will be informed the following: –

a) As and when requirement arises, the concerned Project Groups of BHEL-PEM will place order directly on the supplier against the Framework Agreement (Rate Contract).

b) The drawings/ documents submission & approval, submission of Performance Security/ Performance Bank Guarantee, submission of invoices, processing and release of payment after supply of material shall be dealt as per Framework Agreement (Rate Contract) contract terms and shall be directly done with Project Groups which has placed purchase order noted at sl. no. (a) above.

6. Details of consignee and project site information for dispatch of material shall be intimated at the time of placement of PO for specific project after finalization of RC.
7. The items will be required against respective projects. Exact quantities and Project information shall be intimated while placing order for a specific project based on the Rate Contract.
8. The prices shall be FIRM during the period of two years with a provision for further extension after review on mutual consent.
9. Inspection of materials shall be carried out by BHEL/ CQA and or by Customer or by an Authorized Agency at manufacture's works before dispatch, if required. Dispatch of material to be done, only after receipt of BHEL/ Customer MDCC. It is responsibility of vendor to obtain Material Dispatch Clearance Certificate (MDCC) from BHEL or Customer as required before dispatch of material.

Vendor shall give inspection call on BHEL-CQS web site to applicable inspection agency with a copy of inspection call to BHEL-PEM for arranging Customer participation (if applicable) in inspection / Joint inspection on the proposed date with an advance notice of 15 working days. Inspection charges shall be paid by BHEL-PEM.



**BHEL / PEM / CMM**  
**SPECIAL CONDITIONS OF CONTRACT OF FRAMEWORK AGREEMENT (RATE CONTRACT)**

Items have to be manufactured as per specification and supplied strictly in accordance with the approved BHEL/ Customer's Drawings & Quality Plan. The items/ test certificate of items, which for any reason are not acceptable to BHEL/ Customer, shall be required to be retested. No extra charge shall be payable on those account by BHEL.

10. Other terms and conditions shall be as per Standard Technical specification no. PE-TS-20-145-H105B REV No. 00, GCC Rev 07, Corrigenda 01 to GCC Rev 07 and Enquiry letter.
11. This Enquiry is subject to Conditions/ limits if any imposed in PMD/ Vendor registration.
12. Tentative quantity is given in Enquiry.
13. Bidders to submit offer for RC of said items ONLINE via BHEL-GePNIC Portal only. Bidders to upload tender documents complete in all respects duly signed & stamped on each and every page by the authorized signatory of the bidder as a token of acceptance of all the terms and conditions of tender.
14. The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendor/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL web site <http://www.bhel.com> and shall immediately bring to the notice of BHEL Management about any fraud as soon as it comes to their notice.



**Make In India certification**

Letter head of Company/Cost Auditor/Statutory Auditor

Ref.

Date.....

To,  
Bharat Heavy Electricals Limited  
PEM, PPEI Building, Plot No 25,  
Sector -16A, Noida (U.P)-201301

Subject: - Certification regarding Local Content

Reference: Enquiry No.

Name of Package: FRAMEWORK AGREEMENT (RATE CONTRACT) OF FLOW  
ELEMENT- NOZZLE

Dear Sir,

We hereby certify that items offered by M/s \_\_\_\_\_  
For “FRAMEWORK AGREEMENT (RATE CONTRACT) OF FLOW ELEMENT-  
NOZZLE” meets the requirement in line with NIT and Public Procurement  
(Preference to Make in India), Order 2017 dated-15.06.2017, 28.05.2018 &  
29.05.2019, 04.06.20 & 16.09.20, 19.07.2024 and subsequent orders if any.

Local Content: \_\_\_\_\_ %

We further confirm that details of location at which the local value addition will be  
done at our works located at

.....  
..... (complete address of the works)

Yours truly

..... (authorized signatory of company)

..... (firm name)

## Land Border Certificate

**Dated:**

**Tender Title:**

This has reference to order no. F.No.7/10/2021-PPD, Ministry of Finance, Department of Expenditure, Public Procurement Division. We, M/s \_\_\_\_\_, confirm the following:

*I have read the clause regarding restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries; I certify that this M/s \_\_\_\_\_ is not from such a country.*

*I hereby certify that this M/s \_\_\_\_\_ fulfills all requirements in this regard and is eligible to be considered.*

**Signature with Company seal**

## Annexure-1

**INTEGRITY PACT****Between**

Bharat Heavy Electricals Ltd. (BHEL), a company registered under the Companies Act 1956 and having its registered office at "BHEL House", Siri Fort, New Delhi - 110049 (India) hereinafter referred to as "The Principal", which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the ONE PART

**and**

\_\_\_\_\_, (description of the party along with address), hereinafter referred to as "The Bidder/ Contractor" which expression unless repugnant to the context or meaning hereof shall include its successors or assigns of the OTHER PART

**Preamble**

The Principal intends to award, under laid-down organizational procedures, contract/s for \_\_\_\_\_

\_\_\_\_\_ (hereinafter referred to as "Contract"). The Principal values full compliance with all relevant laws of the land, rules and regulations, and the principles of economic use of resources, and of fairness and transparency in its relations with its Bidder(s)/ Contractor(s).

In order to achieve these goals, the Principal will appoint panel of Independent External Monitor(s) (IEMs), who will monitor the tender process and the execution of the contract for compliance with the principles mentioned above.

**Section 1- Commitments of the Principal**

- 1.1 The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -
  - 1.1.1 No employee of the Principal, personally or through family members, will in connection with the tender for, or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
  - 1.1.2 The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential/ additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
  - 1.1.3 The Principal will exclude from the process all known prejudiced persons.
- 1.2 If the Principal obtains information on the conduct of any of its employees which is a penal offence under the Indian Penal Code 1860 and Prevention of Corruption Act 1988 or any other statutory penal enactment, or if there be a substantive suspicion in this regard, the Principal will inform its Vigilance Office and in addition can initiate disciplinary actions.

**Section 2 - Commitments of the Bidder(s)/ Contractor(s)**

- 2.1 The Bidder(s)/ Contractor(s) commit himself to take all measures necessary to prevent corruption. The Bidder(s)/ Contractor(s) commits himself to observe the following principles during participation in the tender process and during the contract execution.

- 2.1.1 The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to the Principal or to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material, immaterial or any other benefit which he/ she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
- 2.1.2 The Bidder(s)/ Contractor(s) will not enter with other Bidder(s) into any illegal or undisclosed agreement or understanding, whether formal or informal. 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.
- 2.1.3 The Bidder(s)/ Contractor(s) will not commit any penal offence under the relevant Indian Penal Code (IPC) and Prevention of Corruption Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
- 2.1.4 Foreign Bidder(s)/ Contractor(s) shall disclose the name and address of agents and representatives in India and Indian Bidder(s)/ Contractor(s) to disclose their foreign principals or associates. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, and is committed to or intends to make to agents, brokers or any other intermediaries in connection with the award of the contract.
- 2.2 The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.
- 2.3 The Bidder(s)/ Contractor(s) shall not approach the Courts while representing the matters to IEMs and shall await their decision in the matter.

### **Section 3 - Disqualification from tender process and exclusion from future contracts**

If the Bidder(s)/ Contractor(s), before award or during execution has committed a transgression through a violation of Section 2 above, or acts in any other manner such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/ Contractor(s) from the tender process, terminate the contract, if already awarded, exclude from future business dealings and/ or take action as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

### **Section 4 - Compensation for Damages**

- 4.1 If the Principal has disqualified the Bidder (s) from the tender process before award / order acceptance according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.
- 4.2 If the Principal is entitled to terminate the Contract according to Section 3, or terminates the Contract in application of Section 3 above, the Bidder(s)/ Contractor (s) transgression through a violation of Section 2 above shall be construed breach of contract and the Principal shall be entitled to demand and recover from the Contractor an amount equal to 5% of the contract value or the amount equivalent to Security Deposit/ Performance Bank Guarantee, whichever is higher, as damages, in addition to and without prejudice to its right to demand and recover compensation for any other loss or damages specified elsewhere in the contract.

**Section 5 - Previous Transgression**

- 5.1 The Bidder declares that no previous transgressions occurred in the last 3 (three) years with any other company in any country conforming to the anti-corruption approach or with any other Public Sector Enterprise in India that could justify his exclusion from the tender process.
- 5.2 If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or the contract, if already awarded, can be terminated for such reason or action can be taken as per the separate "Guidelines on Banning of Business dealings with Suppliers/ Contractors", framed by the Principal.

**Section 6 - Equal treatment of all Bidder (s)/ Contractor (s) / Sub-contractor (s)**

- 6.1 The Principal will enter into Integrity Pacts with identical conditions as this Integrity Pact with all Bidders and Contractors.
- 6.2 In case of Sub-contracting, the Principal Contractor shall take the responsibility of the adoption of Integrity Pact by the Sub-contractor(s) and ensure that all Sub-contractors also sign the Integrity Pact.
- 6.3 The Principal will disqualify from the tender process all Bidders who do not sign this Integrity Pact or violate its provisions.

**Section 7 - Criminal Charges against violating Bidders/ Contractors /Subcontractors**

If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the Vigilance Office.

**Section 8 -Independent External Monitor(s)**

- 8.1 The Principal appoints competent and credible panel of Independent External Monitor (s) (IEMs) for this Integrity Pact. The task of the IEMs is to review independently and objectively, whether and to what extent the parties comply with the obligations under this Integrity Pact.
- 8.2 The IEMs are not subject to instructions by the representatives of the parties and performs his functions neutrally and independently. He reports to the CMD, BHEL.
- 8.3 The IEMs shall be provided access to all documents/ records pertaining to the Contract, for which a complaint or issue is raised before them as and when warranted. However, the documents/records/information having National Security implications and those documents which have been classified as Secret/Top Secret are not to be disclosed.
- 8.4 The Principal will provide to the IEMs sufficient information about all meetings among the parties related to the Contract provided such meetings could have an impact on the contractual relations between the Principal and the Contractor. The parties offer to the IEMs the option to participate in such meetings.

- 8.5 The advisory role of IEMs is envisaged as that of a friend, philosopher and guide. The advice of IEMs would not be legally binding and it is restricted to resolving issues raised by a Bidder regarding any aspect of the tender which allegedly restricts competition or bias towards some Bidders. At the same time, it must be understood that IEMs are not consultants to the Management. Their role is independent in nature and the advice once tendered would not be subject to review at the request of the organization.
- 8.6 For ensuring the desired transparency and objectivity in dealing with the complaints arising out of any tendering process or during execution of Contract, the matter should be examined by the full panel of IEMs jointly, who would look into the records, conduct an investigation, and submit their joint recommendations to the Management.
- 8.7 The IEMs would examine all complaints received by them and give their recommendations/ views to the CMD, BHEL at the earliest. They may also send their report directly to the CVO, in case of suspicion of serious irregularities requiring legal/ administrative action. Only in case of very serious issue having a specific, verifiable Vigilance angle, the matter should be reported directly to the Commission. IEMs will tender their advice on the complaints within 30 days.
- 8.8 The CMD, BHEL shall decide the compensation to be paid to the IEMs and its terms and conditions.
- 8.9 IEMs should examine the process integrity, they are not expected to concern themselves with fixing of responsibility of officers. Complaints alleging mala fide on the part of any officer of the Principal should be looked into by the CVO of the Principal.
- 8.10 If the IEMs have reported to the CMD, BHEL, a substantiated suspicion of an offence under relevant Indian Penal Code / Prevention of Corruption Act, and the CMD, BHEL has not, within reasonable time, taken visible action to proceed against such offence or reported it to the Vigilance Office, the IEMs may also transmit this information directly to the Central Vigilance Commissioner, Government of India.
- 8.11 After award of work, the IEMs shall look into any issue relating to execution of Contract, if specifically raised before them. As an illustrative example, if a Contractor who has been awarded the Contract, during the execution of Contract, raises issue of delayed payment etc. before the IEMs, the same shall be examined by the panel of IEMs. Issues like warranty/ guarantee etc. shall be outside the purview of IEMs.
- 8.12 However, the IEMs may suggest systemic improvements to the management of the Principal, if considered necessary, to bring about transparency, equity and fairness in the system of procurement.
- 8.13 The word 'Monitor' would include both singular and plural.

## **Section 9 - Pact Duration**

- 9.1 This Integrity Pact shall be operative from the date this Integrity Pact is signed by both the parties till the final completion of contract for successful Bidder, and for all other Bidders 6 months after the Contract has been awarded. Any violation of the same would entail disqualification of the bidders and exclusion from future business dealings.
- 9.2 If any claim is made/ lodged during currency of this Integrity Pact, the same shall be binding and continue to be valid despite the lapse of this Pact as specified above, unless it is discharged/ determined by the CMD, BHEL.

**Section 10 - Other Provisions**

- 10.1 This Integrity Pact is subject to Indian Laws and exclusive jurisdiction shall be of the competent Courts as indicated in the Tender or Contract, as the case may be.
- 10.2 Changes and supplements as well as termination notices need to be made in writing.
- 10.3 If the Bidder(s)/ Contractor(s) is a partnership or a consortium or a joint venture, this Integrity Pact shall be signed by all partners of the partnership or joint venture or all consortium members.
- 10.4 Should one or several provisions of this Integrity Pact turn out to be invalid, the remainder of this Integrity Pact remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
- 10.5 Only those bidders / contractors who have entered into this Integrity Pact with the Principal would be competent to participate in the bidding. In other words, entering into this Integrity Pact would be a preliminary qualification.
- 10.6 In the event of any dispute between the Principal and Bidder(s)/ Contractor(s) relating to the Contract, in case, both the parties are agreeable, they may try to settle dispute through Mediation before the panel of IEMs in a time bound manner. In case, the dispute remains unresolved even after mediation by the panel of IEMs, either party may take further action as the terms & conditions of the Contract. The fees/expenses on dispute resolution through mediation shall be shared by both the parties. Further, the mediation proceedings shall be confidential in nature and the parties shall keep confidential all matters relating to the mediation proceedings including any settlement agreement arrived at between the parties as outcome of mediation. Any views expressed, suggestions, admissions or proposals etc. made by either party in the course of mediation shall not be relied upon or introduced as evidence in any further arbitral or judicial proceedings, whether or not such proceedings relate to the dispute that is the subject of mediation proceedings. Neither of the parties shall present IEMs as witness in any Alternative Dispute Resolution or judicial proceedings in respect of the dispute that was subject of mediation.

**KUMAR**  
**SUMAN**  
**SAURABH**

Digitally signed by KUMAR SUMAN SAURABH  
 DN: c=IN, postalCode=201301, st=UTTAR  
 PRADESH, street=GAUTAM BUDDHA NAGAR,  
 l=GAUTAM BUDDHA NAGAR, o=BHARAT  
 PEEM, serialNumber=5ee389b2a515dd679b11a248e8  
 701c13094538d4c9004d00048fd1fa2ec42,  
 pseudonymity=1, s=5a3286c103a03f1ae79564  
 5ebb5,  
 c=IN, o=1201e39a18dd603c55b055d223fb86  
 301c306189abd0e3846a5e6642d243477,  
 email=SUMANSAURABH@BHEL.IN, cn=KUMAR  
 SUMAN SAURABH  
 Date: 2024.10.11 12:08:26 +05'30'

Place \_\_\_\_\_

Date \_\_\_\_\_

Witness: \_\_\_\_\_

(Name & Address) \_\_\_\_\_

\_\_\_\_\_

For & On behalf of the Bidder/ Contractor  
 (Office Seal)

Witness: \_\_\_\_\_

(Name & Address) \_\_\_\_\_

\_\_\_\_\_

### Clause on IP in the tender

#### **Integrity Pact (IP)**

- (a) IP is a tool to ensure that activities and transactions between the Company and its Bidders/ Contractors are handled in a fair, transparent and corruption free manner. Following Independent External Monitors (IEMs) on the present panel have been appointed by BHEL with the approval of CVC to oversee implementation of IP in BHEL.

SI	IEM	Email
1.	Shri Otem Dai, IAS (Retd.)	<a href="mailto:iem1@bhel.in">iem1@bhel.in</a>
2.	Shri Bishwamitra Pandey, IRAS (Retd.)	<a href="mailto:iem2@bhel.in">iem2@bhel.in</a>
3.	Shri Mukesh Mittal, IRS (Retd.)	<a href="mailto:iem3@bhel.in">iem3@bhel.in</a>

- (b) The IP as enclosed with the tender is to be submitted (duly signed by authorized signatory) along with techno-commercial bid (Part-I, in case of two/ three part bid). Only those bidders who have entered into such an IP with BHEL would be competent to participate in the bidding. In other words, entering into this Pact would be a preliminary qualification.
- (c) Please refer Section-8 of IP for Role and Responsibilities of IEMs. In case of any complaint arising out of the tendering process, the matter may be referred to any of the above IEM(s). All correspondence with the IEMs shall be done through email only.

#### Note:

*No routine correspondence shall be addressed to the IEM (phone/ post/ email) regarding the clarifications, time extensions or any other administrative queries, etc on the tender issued. All such clarification/ issues shall be addressed directly to the tender issuing (procurement) department's officials whose contact details are provided below:*

#### Details of contact person(s):

(1)  
Name: \_\_\_\_\_  
Deptt: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: (Landline/ Mobile) \_\_\_\_\_  
Email: \_\_\_\_\_  
Fax: \_\_\_\_\_

(2)  
Name: \_\_\_\_\_  
Deptt: \_\_\_\_\_  
Address: \_\_\_\_\_  
Phone: (Landline/ Mobile) \_\_\_\_\_  
Email: \_\_\_\_\_  
Fax: \_\_\_\_\_



### **Conflict of Interest among Bidders/ Agents**

A bidder shall not have conflict of interest with other bidders. Such conflict of interest can lead to anti-competitive practices to the detriment of Procuring Entity's interests. The bidder: found to have a conflict of interest shall be disqualified. A bidder may be considered to have a conflict of interest with one or more parties in this bidding process, if:

- a) they have controlling partner (s) in common; **or**
- b) they receive or have received any direct or indirect subsidy/ financial stake from any of them; **or**
- c) they have the same legal representative/agent for purposes of this bid; **or**
- d) they have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another Bidder; **or**
- e) Bidder participates in more than one bid in this bidding process. Participation by a Bidder in more than one Bid will result in the disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components/ sub-assembly/ Assemblies from. one bidding manufacturer in more than one bid; **or**
- f) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tender enquiry. One manufacturer can also authorise only one agent/dealer. There can be only one bid from the following:
  - 1. The principal manufacturer directly or through one Indian agent on his behalf; and
  - 2. Indian/foreign agent on behalf of only one principal,·

**or**
- g) A Bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid;· **or**
- h) In case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sister/ common business/ management units in same/ similar line of business.