

# TENDER SPECIFICATION

SI No	Tender Specification Number	Unit Number & Project
1	BHE/PW/PUR/BWT-CCL/1178/OJ	Unit #4, 500 MW MSPGCL Bhusawal

FOR

CHEMICAL CLEANING OF BOILER UNIT #4 500 MW MSPGCL BHUSAWAL TPS

VOLUME – I

## CONSISTING OF:

- Notice Inviting Tender,
- Volume-IA : Technical Conditions of Contract,
- Volume-IB : Special Conditions of Contract,
- Volume-IC : General Conditions of Contract
- Volume-ID : Forms & Procedures



**Bharat Heavy Electricals Limited**  
(A Government of India Undertaking)  
Power Sector - Western Region  
345-Kingsway, Nagpur-440001

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## Tender Specification Issue Details

### TENDER SPECIFICATION

SI No	Tender Specification Number	Unit Number & Project
1	BHE/PW/PUR/BWT-CCL/1178/OJ	Unit #4, 500 MW MSPGCL Bhusawal

FOR

**CHEMICAL CLEANING OF BOILER UNIT #4 500 MW MSPGCL BHUSAWAL TPS**

EARNEST MONEY DEPOSIT: Refer Notice Inviting Tender

LAST DATE FOR                      Refer Notice Inviting Tender

THESE TENDER SPECIFICATION DOCUMENTS CONTAINING VOLUME-I AND VOLUME- II ARE ISSUED TO:

M/s. ....

.....

PLEASE NOTE:  
THESE TENDER SPECS DOCUMENTS ARE NOT TRANSFERABLE.

Bharat Heavy Electricals Limited

AGM (Purchase)

1178

# NOTICE INVITING TENDER

(Document No PS:MSX:NIT:Rev 01 dated 1<sup>st</sup>  
Jun 2012)

Bharat Heavy Electricals Limited



Ref: BHE/PW/PUR/BWT-CCL/1178/OJ

Date: 29.08.2013

**NOTICE INVITING TENDER (NIT)**  
**NOTE: BIDDER MAY DOWNLOAD FROM WEB SITES  
OR  
PURCHASE TENDERS FROM THIS OFFICE ALSO**

=====

To

Dear Sir/Madam

**Sub : NOTICE INVITING TENDER**

Sealed offers in two part bid system are invited from reputed & experienced bidders (meeting PRE QUALIFICATION CRITERIA as mentioned in Annexure-I) for the subject job by the undersigned on the behalf of BHARAT HEAVY ELECTRICALS LIMITED as per the tender document. Following points relevant to the tender may please be noted and complied with.

**1.0 Salient Features of NIT**

SL NO	ISSUE	DESCRIPTION
i	TENDER NUMBER	BHE/PW/PUR/BWT-CCL/1178/OJ
ii	Broad Scope of job	CHEMICAL CLEANING OF BOILER UNIT #4 500 MW MSPGCL BHUSAWAL TPS
iii	DETAILS OF TENDER DOCUMENT	
a	Volume-IA	<i>Technical Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc</i> <span style="float: right;">Applicable</span>
b	Volume-IB	<i>Special Conditions of Contract (SCC)</i> <span style="float: right;">Applicable</span>
c	Volume-IC	<i>General Conditions of Contract (GCC)</i> <span style="float: right;">Applicable</span>
d	Volume-ID	<i>Forms and Procedures</i> <span style="float: right;">Applicable</span>
e	Volume-II	<i>Price Schedule (Absolute value).</i> <span style="float: right;">Applicable</span>
iv	Issue of Tender Documents	<b>29.08.2013</b> <span style="float: right;">Applicable/ Not applicable</span>
v	DUE DATE & TIME OF OFFER SUBMISSION	<b>Date : 06.09.2013 , Time : 15.00 Hrs</b> <b>Place : <u>BHEL PS Regional office at :Nagpur</u></b>  Tenders being submitted through representative shall be handed over to any of the following BHEL officials after making entry/registration at the reception: Saravana Kumar/Engineer(Purchase) Nirmal P.G/ Asst.Engineer(Purchase) <span style="float: right;">Applicable</span>
vi	OPENING OF TENDER	<b>Date : 06.09.2013 , Time : 16.00 Hrs</b> Notes: <span style="float: right;">Applicable</span>

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		(1) In case the due date of opening of tender becomes a non-working day, then the due date & time of offer submission and opening of tenders get extended to the next working day. (2) Bidder may depute representative to witness the opening of tender	
vii	<b>EMD AMOUNT</b>	Rs. 1,50,000/- (Rupees One Lakh and Fifty Thousand Only)	Applicable
viii	<b>COST OF TENDER</b>	Rs.2000/-	Applicable
ix	<b>LAST DATE FOR SEEKING CLARIFICATION</b>	Atleast 3 days before the due date of offer submission Along with soft version also, addressing to undersigned & to others as per contact address given below	Applicable
x	<b>SCHEDULE OF Pre Bid Discussion (PBD)</b>	Date :	Applicable/Not applicable.
xi	<b>INTEGRITY PACT &amp; DETAILS OF INDEPENDENT EXTERNAL MONITOR (IEM)</b>	-----	Applicable/Not applicable.
xii	<b>Latest updates</b>	Latest updates on the important dates, Amendments, Correspondences, Corrigenda, Clarifications, Changes, Errata, Modifications, Revisions, etc to Tender Specifications will be intimated by Fax/E-mail. Bidders to keep themselves updated with all such information	<b><u>Applicable</u></b>

- 2.0 The offer shall be submitted as per the instructions of tender document and as detailed in this NIT. Bidders to note specifically that all pages of tender document, including these NIT pages of this particular tender together with subsequent correspondences shall be submitted by them, duly signed & stamped on each page, as part of offer. **Rates/Price including discounts/rebates, if any, mentioned anywhere/in any form in the techno-commercial offer other than the Price Bid, shall not be entertained.**
- 3.0 Unless specifically stated otherwise, bidder shall remit cost of tender and courier charges if applicable, in the form of Demand Draft drawn in favour of Bharat Heavy Electricals Ltd, payable at Power Sector Regional HQ at Nagpur issuing the Tender, along with techno-commercial offer. Bidder may also choose to deposit the Tender document cost by cash at the Cash Office as stated above against sl no iv of 1, on any working day; and in such case copy of Cash receipt is to be enclosed with the Techno Commercial offer. Sale of tender Documents shall not take place on National Holidays, holidays declared by Central or State Governments and BHEL PS HQ at Nagpur, Sundays and second/ last Saturdays
- 4.0 Unless specifically stated otherwise, bidder shall deposit EMD through Demand Draft/Pay Order in favour of Bharat Heavy Electricals Ltd, payable at Nagpur. For other details and for 'One Time EMD' please refer General Conditions of Contract.
- 5.0 **Procedure for Submission of Tenders:** The Tenderers must submit their Tenders to Officer inviting Tender, as detailed below:
- PART-I consisting of 'PART-I A (Techno Commercial Bid)' & 'PART-I B (EMD/COST of TENDER)' in two separate sealed and superscribed envelopes (ENVELOPE-I & ENVELOPE-II)
  - PART-II (Price Bid) – in sealed and superscribed envelope (ENVELOPE-III)
  - One set of tender documents shall be retained by the bidder for their reference

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6.0 The contents for ENVELOPES and the superscription for each sealed cover/Envelope are as given below.  
**(All pages to be signed and stamped)**

Sl no	Description	Remarks
	<b>Part-I A</b>	
	<b>ENVELOPE – I superscribed as :</b> PART-I (TECHNO COMMERCIAL BID) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION:  <b>CONTAINING THE FOLLOWING:-</b>	
i.	Covering letter/Offer forwarding letter of Tenderer.	
ii.	Duly filled-in 'No Deviation Certificate' as per prescribed format to be placed after document under sl no (i) above.  <b>Note:</b> <ol style="list-style-type: none"> <li>In case of any deviation, the same should be submitted separately for technical &amp; commercial parts, indicating respective clauses of tender against which deviation is taken by bidder. The list of such deviation shall be placed after document under sl no (i) above. It shall be specifically noted that deviation recorded elsewhere shall not be entertained.</li> <li>BHEL reserves the right to accept/reject the deviations without assigning any reasons, and BHEL decision is final and binding.               <ol style="list-style-type: none"> <li>In case of acceptance of the deviations, appropriate loading shall be done by BHEL</li> <li>In case of unacceptable deviations, BHEL reserves the right to reject the tender</li> </ol> </li> </ol>	
iii.	Supporting documents/ annexure/ schedules/ drawing etc as required in line with Pre-Qualification criteria.  It shall be specifically noted that all documents as per above shall be indexed properly and credential certificates issued by clients shall distinctly bear the name of organization, contact ph no, FAX no, etc.	
iv.	All Amendments/Correspondences/Corrigenda/Clarifications/Changes/ Errata etc pertinent to this NIT.	
v.	Integrity Pact Agreement (Duly signed by the authorized signatory)	If applicable
vi.	Duly filled-in annexures, formats etc as required under this Tender Specification/NIT	
vii.	Notice inviting Tender (NIT)	
viii.	Volume – I A : <u>Technical</u> Conditions of Contract (TCC) consisting of Scope of work, Technical Specification, Drawings, Procedures, Bill of Quantities, Terms of payment, etc	
ix.	Volume – I B : Special Conditions of Contract (SCC)	
x.	Volume – I C : General Conditions of Contract (GCC)	
xi.	Volume – I D : Forms & Procedures	
xii.	Volume – II (UNPRICED – without disclosing rates/price, but mentioning only 'QUOTED' or 'UNQUOTED' against each item	
xiii.	Any other details preferred by bidder with proper indexing.	

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<b>PART-I B</b>		
	<b><u>ENVELOPE – II superscribed as:</u></b> PART-I (EMD/COST of TENDER) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION:	
	<b>CONTAINING THE FOLLOWING:-</b>	
i.	1. Earnest Money Deposit (EMD) in the form as indicated in this Tender <u>OR</u> Documentary evidence for 'One Time EMD' with the Power Sector Region of BHEL floating the Tender  2. Cost of Tender ( Demand Draft or copy of Cash Receipt as the case may be)	

<b>PART-II</b>		
	<b>PRICE BID</b> consisting of the following shall be enclosed	
	<b><u>ENVELOPE-III</u></b> superscribed as: PART-II (PRICE BID) TENDER NO : NAME OF WORK : PROJECT: DUE DATE OF SUBMISSION:	
	<b>CONTAINING THE FOLLOWING</b>	
i	Covering letter/Offer forwarding letter of Tenderer enclosed in Part-I	
ii	Volume II – PRICE BID ( Duly Filled in Schedule of Rates – rate/price to be entered in words as well as figures)	

<b>OUTER COVER</b>		
	<b><u>ENVELOPE-IV</u></b> (MAIN ENVELOPE / OUTER ENVELOPE) superscribed as: TECHNO-COMMERCIAL BID, PRICE BID & EMD TENDER NO: NAME OF WORK: PROJECT: DUE DATE OF SUBMISSION:	
	<b>CONTAINING THE FOLLOWING:</b>	
i	<ul style="list-style-type: none"> <li>○ Envelopes I</li> <li>○ Envelopes II</li> <li>○ Envelopes III</li> </ul>	



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SPECIAL NOTE : All documents/ annexures submitted with the offer shall be properly annexed and placed in respective places of the offer as per enclosure list mentioned in the covering letter. BHEL shall not be responsible for any missing documents.

- 7.0 Deviation with respect to tender clauses and additional clauses/suggestions in Techno-commercial bid / Price bid shall NOT be considered by BHEL. Bidders are requested to positively comply with the same.
- 8.0 BHEL reserves the right to accept or reject any or all Offers without assigning any reasons thereof. BHEL also reserves the right to cancel the Tender wholly or partly without assigning any reason thereof. Also BHEL shall not entertain any correspondence from bidders in this matter (except for the refund of EMD).
- 9.0 Since the job shall be executed at site, bidders must visit site/ work area and study the job content, facilities available, availability of materials, prevailing site conditions including law & order situation, applicable wage structure, wage rules, etc before quoting for this tender. They may also consult this office before submitting their offers, for any clarifications regarding scope of work, facilities available at sites or on terms and conditions.
- 10.0 For any clarification on the tender document, the bidder may seek the same in writing or through e-mail, as per specified format, within the scheduled date for seeking clarification, from the office of the undersigned. BHEL shall not be responsible for receipt of queries after due date of seeking clarification due to postal delay or any other delays. Any clarification / query received after last date for seeking clarification may not be normally entertained by BHEL and no time extension will be given.
- ~~11.0 BHEL may decide holding of pre bid discussion [PBD] with all intending bidders as per date indicated in the NIT. The bidder shall ensure participation for the same at the appointed time, date and place as may be decided by BHEL. Bidders shall plan their visit accordingly. The outcome of pre bid discussion (PBD) shall also form part of tender.~~
- 12.0 In the event of any conflict between requirement of any clause of this specification/ documents/drawings/data sheets etc or requirements of different codes/standards specified, the same to be brought to the knowledge of BHEL in writing for clarification before due date of seeking clarification (whichever is applicable), otherwise, interpretation by BHEL shall prevail. Any typing error/missing pages/ other clerical errors in the tender documents, noticed must be pointed out before pre-bid meeting/submission of offer, else BHEL's interpretation shall prevail.
- 13.0 Unless specifically mentioned otherwise, bidder's quoted price shall deemed to be in compliance with tender including PBD.
- 14.0 Bidders shall submit Integrity Pact Agreement (Duly signed by authorized signatory who signs in the offer), **if applicable**, along with techno-commercial bid. This pact shall be considered as a preliminary qualification for further participation. **The names and other details of Independent External Monitor (IEM) for the subject tender is as given at point (1) above.**
- 15.0 The Bidder has to satisfy the Pre Qualifying Requirements stipulated for this Tender in order to be qualified. The Price Bids of only those bidders will be opened who will be qualified for the subject job on the basis of satisfying the Pre Qualification Criteria specified in this NIT as per Annexure-I (as applicable), past performance etc. and date of opening of price bids shall be intimated to only such bidders. BHEL reserves the right not to consider offers of parties under HOLD.
- 16.0 In case BHEL decides on a 'Public Opening', the date & time of opening of the sealed PRICE BID shall be intimated to the qualified bidders and in such a case, bidder may depute one authorised representative to witness the price bid opening. BHEL reserves the right to open 'in-camera' the 'PRICE BID' of any or all Unsuccessful/Disqualified bidders under intimation to the respective bidders.

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- 17.0 Validity of the offer shall be for **Six Months** from the latest due date of offer submission (including extension, if any) unless specified otherwise.
- 18.0 BHEL reserves the right to decide the successful bidder on the basis of Reverse Auction process. In such case all qualified bidders will be intimated regarding procedure/ modality for Reverse Auction process prior to Reverse Auction and price will be decided as per the rules for Reverse Auction. .
- However, if reverse auction process is unsuccessful as defined in the RA rules/procedures, or for whatsoever reason, then the sealed 'PRICE BIDS' will be opened for deciding the successful bidder. BHEL's decision in this regard will be final and binding on bidder.
- 19.0 On submission of offer, further consideration will be subject to compliance to tender & qualifying requirement and customer's acceptance, as applicable.
- 20.0 In case the bidder is an "Indian Agent of Foreign Principals", 'Agency agreement has to be submitted along with Bid, detailing the role of the agent along with the terms of payment for agency commission in INR, along with supporting documents.
- 21.0 The bidders shall not enter into any undisclosed M.O.U. or any understanding amongst themselves with respect to tender.
- 22.0 The bidder shall submit documents in support of possession of 'Qualifying Requirements' duly self-certified and stamped by the authorized signatory, indexed and properly linked in the format for PQR. In case BHEL requires any other documents/proofs, these shall be submitted immediately.
- 23.0 The bidder may have to produce original document for verification if so decided by BHEL.
- 24.0 Order of Precedence  
In the event of any ambiguity or conflict between the Tender Documents, the order of precedence shall be in the order below:
- a. Amendments/Clarifications/Corrigenda/Errata etc issued in respect of the tender documents by BHEL
  - b. Notice Inviting Tender (NIT)
  - c. Price Bid
  - d. Technical Conditions of Contract (TCC)—Volume-1A
  - e. Special Conditions of Contract (SCC) —Volume-1B
  - f. General Conditions of Contract (GCC) —Volume-1C
  - g. Forms and Procedures —Volume-1D

for BHARAT HEAVY ELECTRICALS LTD

AGM/Purchase

**Enclosure**

- 01. Annexure-1: Pre Qualifying criteria.
- 02. Annexure-2: Check List .
- 04. Annexure-4: Important Information
- 05. Other Tender documents as per this NIT.

**ANNEXURE - 1**

**PRE QUALIFYING REQUIREMENTS**

JOB	<b>CHEMICAL CLEANING OF BOILER UNIT #4 500 MW MSPGCL BHUSAWAL TPS</b>
TENDER NO	<b>BHE/PW/PUR/BWT-CCL/1178/OJ</b>

SL NO	PRE QUALIFICATION CRITERIA	Bidders claim in respect of fulfilling the PQR Criteria	
		Name and Description of qualifying criteria	Page no of supporting document. <b>Bidder must fill up this column as per applicability</b>
A	Submission of Integrity Pact duly signed (if applicable) (Note: To be submitted by Prime Bidder & Consortium/Technical Tie up partner jointly in case Consortium bidding is permitted, otherwise by the sole bidder)	NOT APPLICABLE	
B	<b><u>Technical</u></b> Bidder must have executed following works i.e. Bidder must meet (B.1.1 or B.1.2 ) in the last seven (7) years as on latest date of bid submission:-  B.1.1) Executed atleast <b>One Chemical Cleaning of Boiler</b> in Power Plant of value not less than <b>Rs.50 Lakhs</b> against single work order.  <b>OR</b>  B.1.2) Executed atleast <b>Two jobs of Chemical Cleaning of Boiler</b> in Power Plant each of value not less than <b>Rs.35 Lakhs</b> .	APPLICABLE	
C-1	<b><u>Financial TURNOVER</u></b> Bidders must have achieved an average annual financial turnover (Audited) of Rs 29 Lakhs or more over last three Financial Years (FY) i.e. 2010-2011, 2011-2012, 2012-2013 or for 2009-2010, 2010-2011, 2011-12 if Annual Accounts for FY 2012-2013 are not audited..	APPLICABLE	
C-2	<b><u>NETWORTH (only in case of Companies)</u></b> Net worth of the Bidder based on the latest Audited Accounts as furnished for 'C-1' above should be positive	APPLICABLE	

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C-3	<b>PROFIT</b> Bidder must have earned cash profit in any one of the three Financial Years as applicable in the last three Financial Years defined in 'C-1' above based on latest Audited Accounts.	APPLICABLE	
D	Assessment of Capacity of Bidder to execute the work as per sl no 9 of NIT (if applicable)	NOT APPLICABLE	By BHEL
E	Approval of Customer (if applicable)  <b>Note:</b> Names of bidders (including consortium/Technical Tie up partners in case consortium bidding is permitted) who stand qualified after compliance of criteria A to D shall be forwarded to customer for their approval.	NOT APPLICABLE	BY BHEL
F	Price Bid Opening <b>Note:</b> Price Bids of only those bidders shall be opened who stand qualified after compliance of criteria A to E	APPLICABLE	BY BHEL
G	Technical Tie up criteria (if applicable)	NOT APPLICABLE	
<b>Explanatory Notes for the PQR (unless otherwise specified in the PQR):</b> <ol style="list-style-type: none"> <li>1. Bidder to submit Audited Balance Sheet and Profit and Loss Account for the respective years as indicated against C-1 above along with all annexures</li> <li>2. In case audited Financial statements have not been submitted for all the three years as indicated against C-1 above, then the applicable audited statements submitted by the bidders against the requisite three years, will be averaged for three years i.e total divided by three.</li> <li>3. C-2:-NETWORTH : Shall be calculated based on the latest Audited Accounts as furnished for C-1 above. Net worth = Paid up share capital + Reserves. (Net worth is required to be evaluated in case of companies)</li> <li>4. C-3:- PROFIT : shall be NET profit (PAT + Non cash expenditure viz depreciation) earned during any one of the three financial years as in C-1 above</li> <li>5. Time period for achievement of the 'Technical' criteria of PQR (as in 'B' above) will be the last 7 years ending on the 'latest date' of Bid submission</li> <li>6. 'EXECUTED' means the Vendor should have achieved the criteria specified in the Technical criteria of PQR (as in 'B' above) even if the Contract has not been completed or closed</li> </ol>			

FOR QR: (B.1.1 OR B.1.2) BIDDER SHALL SUBMIT "WORK ORDER" COPY ALONG WITH RESPECTIVE "BILL OF QUANTITY & SCOPE OF WORK" INCLUDING "RELEVANT DOCUMENT FOR WORK COMPLETION" & "RELEVANT DOCUMENT FOR WORK EXECUTED VALUE" DOCUMENTS FOR THE RESPECTIVE WORK ORDER IN SUPPORT OF THE TECHNICAL QR.

IN ABSENCE OF ABOVE SAID DOCUMENTS, OFFER OF THE BIDDER WILL NOT BE CONSIDERED FOR EVALUATION.

BIDDER SHALL SUBMIT ABOVE PRE-QUALIFICATION CRITERIA FORMAT, DULY FILLED-IN, SPECIFYING RESPECTIVE ANNEXURE NUMBER AGAINST EACH CRITERIA AND FURNISH RELEVANT DOCUMENT IN THE RESPECTIVE ANNEXURES IN THEIR OFFER.

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**ANNEXURE - 2**

**CHECK LIST**

**NOTE:- Tenderers are required to fill in the following details and no column should be left blank**

1	Name and Address of the Tenderer		
2	Details about type of the Firm/Company		
3.a	Details of Contact person for this Tender	Name : Mr/Ms Designation: Telephone No: Mobile No: Email ID: Fax No:	
3.b	Details of alternate Contact person for this Tender	Name : Mr/Ms Designation: Telephone No: Mobile No: Email ID: Fax No:	
4	EMD DETAILS	DD No:                      Date : Bank :                      Amount: Please tick ( ✓ ) whichever applicable:- ONE TIME EMD / ONLY FOR THIS TENDER	
5	Validity of Offer	TO BE VALID FOR SIX MONTHS FROM DUE DATE	
		APPLICABILITY (BY BHEL)	ENCLOSED BY BIDDER
6	Whether the format for compliance with <b>PRE QUALIFICATION CRITERIA</b> (ANNEXURE-I) is understood and filled with proper supporting documents referenced in the specified format	Applicable	YES / NO
7	Audited profit and Loss Account for the last three years	Applicable	YES/NO
8	Copy of PAN Card	Applicable	YES/NO
9	Whether all pages of the Tender documents including annexures, appendices etc are read understood and signed	Applicable	YES/NO
10	Integrity Pact	NOT Applicable	YES/NO
11	Declaration by Authorised Signatory	Applicable	YES/NO
12	No Deviation Certificate	Applicable	YES/NO
13	Declaration confirming knowledge about Site Conditions	Applicable	YES/NO
14	Declaration for relation in BHEL	Applicable	YES/NO
15	Non Disclosure Certificate	Applicable	YES/NO
16	Bank Account Details for E-Payment	Applicable	YES/NO

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17	Capacity Evaluation of Bidder for current Tender	NOT Applicable/	YES/NO
18	Tie Ups/Consortium Agreement are submitted as per format	NOT Applicable	YES/NO
19	Power of Attorney for Submission of Tender	Applicable	YES/NO
20	Analysis of Unit rates	Applicable	YES/NO

NOTE : STRIKE OFF 'YES' OR 'NO', AS APPLICABLE. TENDER NOT ACCOMPANIED BY THE PRESCRIBED **ABOVE**  
**APPLICABLE DOCUMENTS** ARE LIABLE TO BE SUMMARILY REJECTED.

**DATE :**

**AUTHORISED SIGNATORY**  
(With Name, Designation and Company seal)

**ANNEXURE 4: IMPORTANT INFORMATION**

1. The offers of the bidders who are on the banned list as also the offer of the bidders, who engage the services of the banned firms, shall be rejected. The list of banned firms is available on BHEL web site ( [www.bhel.com](http://www.bhel.com) ---> Tender Notification -> List of Banned Firms )
2. All Statutory Requirements as applicable for this project shall be complied with.
3. Please take note of following Revised Tender Clauses:
  - i. General conditions of Contract: Clause No 1.15.13 (New), Clause No 2.8.3, 2.8.4 and 2.8.5

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

BHARAT HEAVY ELECTRICALS LIMITED





# TECHNICAL CONDITIONS OF CONTRACT (TCC)

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SI No	DESCRIPTION	Chapter	No. OF PAGES
<b>Volume-IA</b>	<b>Part-I: Contract specific details</b>		
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2	Scope of Works	Chapter-II	6
3	Lab wares & Quantities of Chemicals to be provided	Chapter-III	2
4	Time Schedule	Chapter-IV	1
5	Terms of Payment	Chapter-V	2
6	Manpower to be deployed by contractor	Chapter-VI	1
7	T&Ps and Consumables to be deployed by Contractor	Chapter-VII	3
8	Quality Requirements	Chapter-VIII	1
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# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-II Scope of Works

1.0	Project Information
	<div data-bbox="308 342 1450 432" data-label="List-Group"> <ol style="list-style-type: none"> <li>1) Purchaser : Maharashtra State Power Generation Company Limited</li> <li>2) Project Title : Chemical Cleaning of Boiler Unit #4, 500 MW MSPGCL Bhusawal</li> </ol> </div> <div data-bbox="259 537 609 569" data-label="Section-Header"> <p><b><u>LOCATION AND APPROACH :</u></b></p> </div> <div data-bbox="259 596 1500 726" data-label="Text"> <p>The plant is located at Bhusawal, which is about 8 km from the city of Bhusawal in Jalgaon district of Maharashtra. The approach road to the plant is tapped from National Highway No 6 between Nagpur and Mumbai at a distance of 8 km from Bhusawal railway station close to village Fekari.</p> </div> <div data-bbox="259 753 1140 791" data-label="Text"> <p>Nearest Railway Station: Bhusawal (Mumbai-Howrah Broad Gauge)</p> </div> <div data-bbox="259 819 1130 854" data-label="Text"> <p>Nearest Broad Gauge Railway Siding: Bhusawal Thermal Power Station</p> </div> <div data-bbox="259 882 769 917" data-label="Text"> <p>Nearest Airport: Aurangabad (Maharashtra)</p> </div>

The Bidder shall visit site and get acquainted himself with the conditions prevailing at site before submission of the bid. The information given here in under are for general guidance and shall not be contractually binding on BHEL/ Owner. All relevant site data/information as may be necessary shall have to be obtained /collected by the Bidder.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-II Scope of Works

The work under the scope of these specifications is broadly as follows.

### PRE SHUTDOWN WORK

1. Mobilization of site.
2. Arranging Gate pass & Accommodations to the contract personnel.
3. Shifting of material store and T&Ps.

### SCOPE OF WORK

1. Determination of Chemicals/consumables, solvents and their quantities and preparation of procedure for Chemical Cleaning process as per water wall tube deposit analysis report submitted by BHEL-Trichy.
2. Arrangement and installation of all equipments like Motors, Pumps, various sizes of Piping and Valves, Dissolving tank, Electric Panels etc. required for Chemical cleaning / Passivation including hook-up connections to Boiler system.
3. Fitting of Orifices on the down comers and plugging of SH coils and removal of the same after completion of cleaning process. However removal of Drum Internals and restoration of the same after completion of work is excluded from the scope.
4. Cutting/removal of Header hand holes and hooking up the temp. circuit with the boiler. However restoration after the work is excluded from the scope.
5. Carrying out complete chemical cleaning process up to 1<sup>st</sup> Stage Passivation as per procedure given by BHEL - Trichy based on the sample analysis.
6. Neutralization of spent acid and other chemicals, effluents in neutralization pit.
7. Dismantling of the equipments after the completion of Acid Cleaning / Passivation.
8. Normalization of system Post acid cleaning jobs like restoration of feed line, bottom header connection with proper welding, vents & drains, cleaning of drum, removal of SH plugs, drum safety valves, Instrument lines etc.
9. Supply of all required chemicals / consumables as specified by the Trichy for the completion of Acid Cleaning / Passivation.
10. Deputation of expert services during the chemical cleaning process.

### A: SUPPLY OF CHEMICALS:

Indicative list of chemicals /consumables required for the chemical cleaning (from Alkali Boil Out and up to 1<sup>st</sup> stage passivation) to be supplied by the contractor is as follows.

Sl. No.	Description of Chemicals	Quantity
1	Hydrochloric acid, commercial grade, 31% minimum, BIS : 265 : 1993	140 tonnes
2	Inhibitor	2100 litres
3	Ammonium bifluoride, 97 % minimum, BIS: 13119:1991	3500 kg
4	Citric acid, 95% minimum, BIS: 5464:1970	900 kg
5	Hydrazine hydrate, 80% minimum, BIS: 12086:1987	1000 litres
6	Liquor ammonia, Sp.Gr. 0.91, 25% by wt., BIS: 799:1985	2000 litres
7	Nitrogen gas cylinders, 6.3 m <sup>3</sup> capacity, BIS:1747:1972	500 Nos.

BHEL-PSWR

Tender Specification No: BHE/PW/PUR/BWT-CCL/1178/OJ

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# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-II Scope of Works

8	Lime, 80% minimum, BIS: 1540, Part II, 1990	2 tonnes
9	Bleaching powder, BIS:1065:1971	10 tonnes
10	Sodium hydroxide flakes, 98% minimum, BIS :252:1991	40 tonnes
11	Sodium carbonate, 90%,minimum,BIS:151:1972	1750 kg

Note:

1. The quantity of chemicals projected above is for 350 m<sup>3</sup> of water volume, which includes the drum, water walls, down comers, economizer, ring headers, temporary pipelines.
2. All the Chemicals except Sl. No.3 (Ammonium Bifluoride) are given extra quantity of about 20% over and above the required to take exigencies.
3. Ammonia and Hydrazine quantities are given for 2<sup>nd</sup> stage passivation also.
4. The chemical suppliers must be asked to provide "Test certificate" (to ensure the quality) for the above chemicals.

### **PART B : 1. EXECUTION OF PREPARATORY ACTIVITIES FOR THE ACID CLEANING (Pre-shutdown activities)**

1. Arrangement of Equipment / Materials required for the whole process such as dissolving tanks, circulating electric pumps, valves & piping, headers of various sizes, etc. as per requirement.
2. Deployment of adequate trained and experienced staff of various categories for the execution of work in smooth manner.
3. Necessary electrical equipments such as control panels, starters and cables for motors of circulating pumps.
4. Supply and installation of super heater plugs and orifice plates for the down comers.
5. High pressure gas regulating valve header assembly for connecting Nitrogen cylinder.
6. Execution of complete process as per the procedure and monitoring the process in the laboratory up to first and second stage passivation.
7. Erection of pump sets and control panels including preparation of foundations as required.
8. Fabrication and laying /installation of temporary piping circuit and connecting with the main boiler, which includes connecting at ring header hand holes and at economizer inlet.
9. Removal of loose debris & other impurities from the drum and manual cleaning of drum for inspection.
10. All instruments in the circuit will have to be removed /isolated to avoid damage by chemicals and re-installed after purging and restored back.
11. Laying of pipeline for taking the drains to neutralization pit for a distance up to 800 Mtrs
12. All joints, including HP Joints required to be done at site for temporary installation including piping to be done by I.B.R. approved welder.
13. Proper stacking of chemicals supplied at an identified area and transportation of same to the work spot.
14. Adequate power supply, steam, general service water and DM water will be provided free of cost by MSPGCL.
15. Any other work not listed in scope of work but required for smooth execution of work will be deemed to have been covered in the scope of work and no extra claims for the same shall be entertained.
16. The scaffolding pipes, wooden planks, scaffolding clamps, welding electrodes, industrial gases, Argon gas cylinder, etc. are to be arranged by the contractor.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-II Scope of Works

17. It shall be contractor's responsibility to provide all the safety equipments such as safety helmets, hand gloves, goggle; shoes, aprons, etc., to all the personnel engaged.
18. The work is of specialized nature and contractor should be fully conversant with latest practices and carry out the work in consultation with BHEL Site In charge.
19. Inhibitor healthiness testing with test coupon before use.
20. Assistance from safety valve seal removal and plug fixing before acid cleaning.
21. Carrying out the Chemical Cleaning process as per the procedure given below.
22. Arranging required lab ware for analytical work and reagents etc. during chemical cleaning.
23. Removal of all temporary lines and cleaning of the area.

### POST- OPERATIONAL CHEMICAL CLEANING PROCEDURE

The chemical cleaning procedure includes the following major steps.

1. ACID PICKLING ( TWO STAGES)
2. NEUTRALISATION AND PASSIVATION.

#### 1. PREPARATORY WORKS

The erection of temporary pipings, valves, fittings, chemical tank and chemical injection pumps should be completed. Orifices in all the water wall tubes in the ring header should be removed to ensure free flow of solvents and to facilitate complete removal of cruds (insoluble deposits) from water wall tubes during each stages of solvent draining.

#### 2. SUPERHEATER FILLING

Back flush the S.H. with D M water Back fill the superheaters with treated water containing 200 ppm hydrazine and ammonia to pH 10.

Suspend water wall tube sample coupons inside the drum to ascertain efficiency of cleaning and passivation.

#### 3. COLD WATER RINSE

Fill the system with DM water and establish circulation by pumps. Circulate for about 30 minutes and drain.

#### 4. HOT WATER RINSE

Fill the system with DM water with steam heating to 55-60 °C and establish circulation by pumps and drain after circulation for about 30 minutes.

#### 5. ACID PICKLING (I STAGE)

Fill the boiler system with DM water and establish circulation with the circulation pumps. Maintain a pressure of around 3 kg/sq.cm (g) inside the drum

CHEMICALS REQUIRED	CONCENTRATION	QUANTITY
(i) Hydrochloric acid (31% w/w).	5.0 % (w/v)	58 tonnes
(ii) Acid Inhibitor	0.2 % (v/v)	700 litres
(iii) Ammonium bifluoride	0.50 % (w/v)	1750 kg

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-II Scope of Works

- ◆ Admit steam into mixing tank and raise temperature of circulation water to about 60 deg.C.in the return line.
- ◆ Adequate volume to hold the required quantity of hydrochloric acid has to be made available inside the boiler.
- ◆ Cut-off steam and add required quantity inhibitor. Keep the pumps running for thorough mixing.
- ◆ Add required quantity of hydrochloric acid in controlled manner so that acid concentration as measured in the sample from pump discharge does not exceed 6.0% .Acid concentration is to be analysed every 10 minutes while the acid is being added.
- ◆ Charge calculated quantity of ammonium bifluoride into mixing tank

Analyze the samples for acid concentration and iron at frequent intervals. The circulation will be terminated once steady readings of iron are obtained in both inlet and boiler return or six hours (max.) of circulation.

Drain the system under nitrogen blanketing.

### **6. DM WATER RINSE:**

Fill the system with DM water with steam heating to about 50 deg C and establish circulation for 30 minutes.

Drain the system under N<sub>2</sub> capping.

### **7. ACID PICKLING (II STAGE)**

Fill the boiler system with DM water and establish circulation with the circulation pumps. Maintain a pressure of around 3 kg/sq.cm (g) inside the drum

CHEMICALS REQUIRED	CONCENTRATION	QUANTITY
(i) Hydrochloric acid(31%w/w ).	5.0 % (w/v)	58 tonnes
(ii) Acid Inhibitor	0.3 % (v/v)	1050 litres
(iii) Ammonium bifluoride	0.50 % (w/v)	1750 kg

- ◆ Admit steam into mixing tank and raise temperature of circulation water to about 60 deg.C.
- ◆ Adequate volume to hold the required quantity of hydrochloric acid has to be made available inside the boiler.
- ◆ Cut-off steam and add required quantity inhibitor. Keep the pumps running for thorough mixing.
- ◆ Add required quantity of hydrochloric acid in controlled manner so that acid concentration as measured in the sample from pump discharge does not exceed 6.0% .Acid concentration is to be analysed every 10 minutes while the acid is being added.
- ◆ Charge calculated quantity of ammonium bifluoride into mixing tank

Analyze the samples for acid concentration and iron at frequent intervals. The circulation will be terminated once steady readings of iron are obtained in both inlet and boiler return or six hours (max.) of circulation.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-II Scope of Works

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Drain the system under nitrogen blanketing.

### **8. DM WATER RINSE:**

Refill the boiler with D.M water heated to a temp. of 50 – 55 °C. Carefully operate the drum vent valves to maintain 0.5-kg/cm<sup>2</sup> nitrogen pressure in the drum. Further raise the level in the drum by 100 mm, by back flushing SH with treated water. This will also remove the traces of acid vapors lodged, if any, in the connecting links of the SH. Now run the same boiler circulating pump, for 30 minutes Analyze the sample for pH also. Drain the boiler under nitrogen capping.

### **9. CITRIC ACID RINSE:**

Fill the system with DM water with steam heating to 50 –55 deg.C and simultaneously inject chemicals citric acid (700 kg) and ammonia ( to get 0.2% (w/v) citric acid and the pH of the solution to 3.5 to 4.0) and establish circulation.

Circulate for 2 hours. Collect samples every hour and analyze for pH and iron content.

Drain the system under nitrogen blanketing.

### **10. FIRST DM WATER RINSE**

Fill the system with DM water with steam heating to 50 deg C and establish circulation for 30 minutes Collect samples of inlet and return and analyze for iron.

Drain the system under nitrogen blanketing.

### **11. SECOND DM WATER RINSE:**

Fill the system with DM water with steam heating to 50 deg C and establish circulation for 30 minutes Collect samples of inlet and return and analyze for iron (i.e., <50 ppm).

Drain the system under nitrogen blanketing

### **12. NEUTRALISATION:**

Fill the system with demineralised water with steam heating to about 80-85 Deg.C simultaneously charging Sodium carbonate ( 0.5% ) and circulate for about 6 Hours. Samples are to be analysed for pH. Drain the system. While draining, back flush the SH with DM water conditioned with hydrazine and ammonia. Allow the system to aerate. Prepare the boiler for passivation.

### **13. PASSIVATION STAGE-I**

Fill the system with DM water with chemical injection( Hydrazine 500 ppm as N<sub>2</sub>H<sub>4</sub> and Ammonia to pH 10.0) and steam heating to 80-90°C and establish circulation circulate for 20 hours. Samples should be tested for hydrazine concentration and pH periodically.

Drain the system hot. Open vent and drum manholes to allow the entire surface to get aerated.

### **14. EFFLUENT TREATMENT:**

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-II Scope of Works

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The effluents generated after each stage of acid pickling will be treated with caustic soda flakes and lime to a pH level between 5.5 to 8.0 before discharging. The effluent after 1st stage passivation will be treated with bleaching powder.

### **Effluent Neutralizing pit:**

A separate pit with non-corrosive lining having adequate holding capacity depending on space availability, convenient layout and further discharging and pumping capacity of the pump to be used has to be made available.

### **15. INSPECTION:**

Open the drum man-hole and the drum surface will be inspected for smooth uniform coating of magnetite. Inspect the sample coupons placed in the drum and dissolving tank for effectiveness of cleaning.

**NOTE:** Depending on cleaning process conditions and site conditions, there will be minor variations in quantity of chemical additions and end criteria for each steps of the cleaning process.



# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-III Lab wares & Quantities of Chemicals to be provided

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### 3.0 CHEMICALS / CONSUMABLES:

List of anticipated quantities of chemicals / consumables required for the chemical cleaning job is furnished in the scope of work and these are to be arranged by the contractor as per requirement. Lot of care has been taken to arrive at the required quantities of bulk chemicals, however if any extra quantities are needed depending upon deposit analysis report, same are to be arranged by the contractor without extra cost and contractor may take back any excess /left out chemicals after completion of acid cleaning.

List of general consumables required for the job is mentioned in following table.

**Note:** Test certificates are to be submitted for the chemicals supplied.

### 3.1 LAB WARES required for analytical work during chemical cleaning.

#### GLASSWARE.

Sl.No.	Description	Quantity
1.	Burette (25 ml) with stand	4 Nos.
2.	Erlenmeyer flask (125 or 250 ml)	6 Nos.
3.	Beakers (250 ml)	4 Nos.
4.	Iodine flask (125 or 250 ml)	6 Nos.
5.	Measuring cylinders (25 ml, 50 ml)	2 Nos.each
6.	Graduated Pipettes (5 ml, 10 ml)	3 Nos.each
7.	Funnel with stand	2 Nos.
8.	Polythene wash bottles, 500 ml	2 Nos.
9.	Filter paper, 12.5 cm, Whatman 541	1 Box
10.	Spatula	2 Nos.
11.	Polythene wash bottles, 500 ml	2 Nos.
12.	Demineralised water in 5 litre carboys	2 Nos.
13.	Glass marking pencil	2 Nos.
14.	Reagent storage bottles (i) Polythene bottles (250 ml) (ii) Glass bottles (250, 500 ml) (iii) Amber – coloured glass bottles (250 ml)	12 Nos. 6 Nos. each 3 Nos.
15.	pH papers (i) Range : 2 – 4 (ii) Range : 6 – 10.	

### CHEMICALS AND REAGENTS.

#### 1. Standard solutions

(i)	0.5 N Sodium hydroxide solution	2 x 500 ml
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## TECHNICAL CONDITIONS OF CONTRACT (TCC)

### Chapter-III Lab wares & Quantities of Chemicals to be provided

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(ii)	0.1 N sodium hydroxide solution	1 x 500 ml
(iii)	0.1 N sodium Thio sulphate solution	2 x 500 ml

#### 2. Indicators.

- (iv) Bromo cresol green
- (v) Methyl Red
- (vi) Phenolphthalein
- (vii) Methyl Orange

- 3. Ethyl Alcohol ... 500 ml.
- 4. Ammonium bifluoride, Crystals ... 100 g.
- 5. Hydrazine sulphate (15 g/100 ml DM water) ... 100 g.
- 6. Potassium permanganate, Crystals (10g/500 ml DM water) 250 g.
- 7. Potassium Iodide ... 250 g.
- 8. Starch indicator ... 250 ml
- 9. Potassium bromide, KBr ... 100 g.
- 10. Potassium bromate, KBrO<sub>3</sub> ... 100 g.
- 11. 1:1 hydrochloric acid ... 100 ml.

#### **REAGENTS:**

Mixed Indicator Solution: Prepare by dissolving 0.05 g of bromocresol green in 50 ml of ethanol and 0.075g of methyl red in 50 ml of ethanol. Mix the two indicator solutions.

Standard potassium bromate (0.1 N) titrant: Dissolve 1.3918 g of Potassium bromate (KBrO<sub>3</sub>) and 5 g of Potassium bromide in 500 ml of DM water.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-IV Time schedule

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### **4.0 PERIOD OF COMPLETION:**

The entire work of overhauling shall be completed within a period of 20 + 18 days (20 days for preliminary works like erection of Pumps, Piping and other mechanical works, which do not require shut down of Boiler and 18 days for connecting the piping to the system and carrying out the acid cleaning process including dismantling of Piping etc and normalizing of the system).

### **4.1 Expected date of commencement:**

The tentative shutdown of Boiler is scheduled in the first week of September' 2013. However exact date of Boiler shut down will be intimated on getting confirmation from Mahagenco, Bhusawal for starting of pre-shutdown activities, which do not require shutdown and work to start immediately thereafter.

### **4.2 Mobilization of site:**

The requisite men / material / equipment / T&P etc. have to be mobilized immediately on placement of our letter of intent and getting the confirmation from us.

### **4.3 Validity:**

Your offer should remain valid for 06 months from the date of opening of the tender.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-V Payment terms

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### 5.0 Payment Terms

Payment will be released on completion of activities as below

- 1.0 90% after the Mobilization & completion of entire Chemical cleaning process., submission of Insurance & Labour License (5% for T & P and consumables, 5% for Deployment of manpower). Penalty of 1% per day of the total contract value will be levied for improper mobilization of man power and 1% per day for T & P and consumables separately subject to maximum 10% of the contract value shall be deducted from your bill
- 2.0 Final 10% after dismantling of temp. equipment and normalization of site etc. and also on payment of all dues and submission of all the documents like No Dues certificate from Customer, EPF challan, Insurance, Labour License, Labour Payment sheets, proof of payment of service tax etc).

Note: While submitting invoices, Vendor should mention their Bank Account No. on each of their Invoices for making e-payment.

### 5.1 RATES:

Bidders should quote their lowest and most competitive lump sum rate for carrying out chemical cleaning as mentioned in the scope of work including supply of chemicals/ consumables etc. The envelope should clearly be marked as "Price Bid".

The rate quoted by the bidders shall be inclusive of all taxes, duties Sales Tax, CST, VAT, transportation of chemicals, etc. at site and insurance.

But rate quoted shall be exclusive of Service Tax. Service Tax as applicable shall be reimbursed on submission of the following documentary evidence:

- Claim for reimbursement of Service Tax.
- The claim should indicate clearly the serial number of document, date of issue, description and value of the service on which Service Tax is claimed
- The Service Tax paid along with challan copy.
- Service Tax Registration No.

### 5.2 EXTRA/ ADDITIONAL WORKS:

In case BHEL decides to do any additional work by engaging your manpower, then average man-hour rate (inclusive of your profit, overhead, supervision, normal T&P and consumables) @Rs.60/- will be paid. The same rate is applicable for overtime hours also. Alternatively BHEL may also offer to carry out the extra/additional work on lump sum rate basis, the discretion of operating the basis of man-hr rate or lump sum rates lies with BHEL. The lump sum rate will be decided on mutual agreement between the subcontractor and BHEL.

### 5.3 Retention money:

1% of the total contract value will be retained while releasing the first RA bill as a security for observing Safety measures at site and the same will be released along with final bill on certification by Site in charge after effecting recovery if any towards violation of safety norms as per tender enquiry.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-V Payment terms

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Bills due for payment shall be submitted to the Engineer in-charge of BHEL at site for necessary verification and processing through proper channel. It may be noted that payment will be released from the office of the RSM/Nagpur after minimum fifteen days from the date of receipt of the duly verified bill from site.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-VI Manpower to be deployed by contractor

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### 6.0 MAN POWER: (as per Annexure III)

- Successful bidder has to arrange manpower as required for carrying out the job and Annexure-III is only indicative of the minimum manpower requirement for the job.
- Adequate manpower along with T&P should reach the site two weeks before the shutdown of Unit. All the acid cleaning pumps shall be installed & duly tested, measuring instruments be calibrated. Valid test certificates for the electric motors & their accessories should be submitted to BHEL Site In-charge before start of the work.
- A deployment plan along with experience and name of the Site In-charge, Supervisors, Chemists and technicians to be submitted on per shift basis.

### ANNEXURE-III (LIST OF MANPOWER REQUIRED)

SL.NO	CATEGORY	No.
1)	Site In charge	01
2)	Supervisor	08
3)	Chemist	04
4)	Fitter + Jr Fitter	04 + 08
5)	Electrician	04
6)	Sarang	05
7)	Rigger	08
8)	Store keeper	04
9)	Unskilled worker	50
10)	HP welder	01
11)	LP Welder	06
12)	Grinder/Gas Gutter	05
13)	Pipe line fitter	04

This is an indicative list; the sub-contractor shall deploy adequate manpower to carry out the work round the clock and as per requirement of the site during execution.

Note :

Site in-charge should be qualified Engineer, B.E.(Mechanical) and all the supervisors should have diploma in engineering.

### 6.1 SPECIAL MAN POWER:

Successful bidder has to engage chemists / acid cleaning experts, preferably ex-BHEL personnel with more than 20 years of experience in post operational chemical cleaning of Boilers of similar capacity and to be made available at site two days before the start of process and till the end of cleaning process in consultation with BHEL.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-VII T&Ps and Consumables to be provided by Contractor

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### 7.0 TOOLS AND TACKLE:

#### **Ref. Clause 3.6 of General and Special condition of contract.**

List of anticipated tools and tackles required for the job is as indicated vide Annexure-IV of the enquiry letter. All the tools and tackles/measuring instruments shall be duly tested/calibrated and valid certificate to that effect should be submitted to our site in-charge before the start of work

Contractor is also required to arrange all equipments like acid cleaning pumps with electric panels, piping, valves, tank etc. The pumps should be in good working condition. Contractor should ensure availability of standby pumps in case of failures. Lab Hardware required for conducting the cleaning process is to be arranged by contractor.

### **7.1 LIST OF TOOLS AND PLANTS TO BE ARRANGED BY CONTRACTOR**

1. Feeler gauge sets/ feeler strips.
2. Dial indicators with magnetic bases.
3. Micrometers (inside and outside upto 300 mm, 450mm, 600mm & 1000mm).
4. Try square
5. Set of parallel blocks/ V blocks
6. Vernier calipers, (150 and 300 mm), measuring steel tapes and 5 meters steel rulers.
7. Precision spirit level (with micro head).
8. 2 sets of D.E. and Ring spanners (6-36mm).
9. 2 sets of ox spanners (6 to 20mm and 22-50mm).
10. Allen keys of various sizes (from 2mm. Onwards).
11. D.P. Test Kit (with consumables)
12. Crowbars tin cutters, pliers (cutting plier, nose plier grip plier circlip-outside and inside).
13. Screw drivers and sledge hammers – 10 lbs – 1 lbs.
14. Adjustable wrenches, pipe wrenches and heck saws.
15. Single ended spanners (36 Mm and above).
16. Flat, half round, triangular bearing scrappers-8", to 12".
17. Drilling machine with magnetic stand upto –30 mm with drill bits.
18. Flexible grinders with grinding stones and cutters of different Shapes and sizes, Angles
19. Grinders and Sander machine.
20. Steel wire brushes, wire brush wheels, nylon wire brushes and Painting bushes.
21. Lifting devices eye bolts, D-shackles, slings of various sizes Guide rods etc.
22. Chain pulley blocks upto 5 tons, 2 tons pull/lift.
23. Copper/Brass rods dia ½" to 1 ½"X450 mm.
24. Torch light/hand lamps with cables, 230/24 V transformer.
25. Hand glover-asbestos, Manila rope, asbestos cloth leather and Rubber gloves.
26. Air blower – electric.
27. Gas cutting and heating set with torches regulators, hoses and cylinder minimum two sets).
28. Arc welding generator/rectifiers with regulator, cables, Electrode holders and shields, TIG welding holders.
29. Hose pipes for compressed air.
30. Electric switchboards and flood light arrangements.
31. In addition to above T and P contractor will be required to fabricate fixtures such as pullers etc. for removal of any other equipment related to the scope of work.
32. Pedestal fans/air coolers.
33. Wooden sleepers.
34. Magnifying glass.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-VII T&Ps and Consumables to be provided by Contractor

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35. Plastic helmets, Fibre helmet.
  36. Gas cutting/welding goggles, Grinding goggles.
  37. Tarpaulin.
  38. Electric pump sets with standby arrangement having required head capacity for acid cleaning process including electric panel.
  39. Complete piping of various sizes along with valves, fittings, tanks, etc.
  40. Plugs for Super heater isolation.
  41. Safety accessories
- Any other T and P as per requirement and as per our General and special conditions of contracts.

### NOTE

The above list is only indicative and not exhaustive. Arrangement for any other T and P required for completion of the job shall be the responsibility of the contractor and shall be arranged by him.

### 7.2 **GENERAL CONSUMABLES TO BE ARRANGED BY CONTRACTOR**

1. Kerosene oil.
2. Rustolene.
3. Petrol/white Petrol/Benzylne/CRC
4. Grease/Graphite Grease.
5. Hacksaw Blades.
6. Waste cloth/Cotton.
7. Marking/lint free cloth/Muslin.
8. Asbestos cloth/Asbestos cord.
9. Prussian blue.
10. Graphite (flaked) powder/Molycote/Mosil.
11. Cardiom compound.
12. Holdtite/shellac/Gasket sealing compound.
13. Cutoff wheels.
14. Grinding wheels.
15. D. P. test chemicals.
16. Gas Cylinders for cutting/welding.
17. Chalk pieces, marking pens, thermo chalks up to 400 deg c
18. Insulation tape, Johnson Tapes.
19. Sander discs and wheels.
20. Polythelene sheets.
21. Araldite, M. Seal, Instabond, Dendrite.
22. CRC 2-26, white spirit.
23. Electric fuse wire, cables for the connections.
24. Material for Blast cleaning purposes. (A1203, Sand or Ash etc.
25. Oxy –Acetylene, Argon gases, welding electrodes

### NOTE

The above list is only indicative & not exhaustive. Arrangement for any other consumables required for completion of the job shall be the responsibility of the contractor & shall be arranged by him.



# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## ChapterVIII- QUALITY REQUIREMENT

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### 8.0 QUALITY REQUIREMENT:

- 1.0 Various inspection/ quality control / quality assurance procedure/ methods at various stages will be as per BHEL/ customer quality control procedure/ codes/ IBR and other statutory provisions and as per BHEL Engineer's instructions.
- 2.0 Preparation of quality assurance log sheets and protocols with customer's engineers, welding logs, other quality control and quality assurance documentation as per BHEL Engineer's instructions, is within the scope of work/ specification.
- 3.0 A daily log book should be maintained by Area In-charge of contractor on the job incorporating erection / alignment / welding clearance/ progress of work etc. and the same shall be submitted to BHEL. Also, daily reports shall be submitted to BHEL.
- 4.0 All the important measurements like pre-assembly checking of alignment leveling/ centering work etc. shall be recorded in the daily log book with sketches based on BHEL drawings indicating readings/ measurements actually taken and signed by BHEL/ Customer/ Contractor representatives.
- 5.0 All the lifting, electrical equipment and the inspection/measuring and testing equipments should be of brand, quality and accuracy, as specified by BHEL engineer and should have valid calibration certificates traceable to national/international standards.
- 6.0 Total quality is the watchword of the work and contractor shall strive to achieve the quality standards, procedures laid down by BHEL. He will follow the instructions as per BHEL drawings and quality standards.
- 7.0 The welders' performance will be reviewed from time to time as per the BHEL/ IBR standards and any welder not performing to the standards set by BHEL/ IBR standards will be removed from working, Contractor shall arrange for the alternate welders immediately.
- 8.0 All the welders including HP welders shall carry identity cards. Only welders duly authorized by BHEL/ Boiler inspector/ customer / consultant shall be engaged on the work.
- 9.0 **STAGE INSPECTION BY BHEL / CUSTOMERS ENGINEERS**  
Apart from day-to-day inspection/ stage inspection of equipments by BHEL engineers, the equipments may be checked at various stages by customer's engineers and quality assurance teams. Contractor shall arrange all labour, tools/tackles etc. for such inspections free of cost.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-IX General

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### 9.0. LAISON WITH ALL STATUTORY AUTHORITIES :

- a) Compliance of IBR & other statutory provisions as required at site, whether mentioned in this contract or not shall be binding on the contractor.
- b) If there is any change in labour laws after the contract has been awarded, then the new law shall automatically be binding on the contractor.
- c) No additional financial compensation shall be paid by BHEL to the contractor on account of increased expenditure caused by a) and b) above.

### 9.1. SUBMISSION OF DOCUMENTS :

The contractor shall submit following documents at appropriate time either before or during the execution of the work and as directed by Site In-Charge.

- 1.0 Test certificates of Pulling and Lifting machines / appliances.
- 2.0 Details of workers to be deployed with name, address and category.
- 3.0 Details of supervisory staff to be deployed.
- 4.0 Authorization for receipt of materials and for signing of Measurement Books etc,
- 5.0 Details of approved HP Welders with certificate copies.
- 6.0 Labour license specific to the contract.
- 7.0 List of T&P brought into plant premises along with their serial numbers and dates/years of purchase.
- 8.0 List of consumables brought into plant premises along with their serial numbers and dates/years of purchase, along with test certificates wherever applicable.
- 9.0 Insurance policy for the workers to be deployed in this contract.
- 10.0 Safety undertaking.

The contractor shall submit following documents in report form within 15 days from commissioning of unit after erection work is completed

- 1.0 Details of work executed.
- 2.0 Measurements against different schedules in compiled form.
- 3.0 Material issue details.
- 4.0 Material consumption details.
- 5.0 Material return details.
- 6.0 Copies of pay sheets to workmen.
- 7.0 Details and proof of remittance of PF to workmen (before final bill).
- 8.0 No dues clearance from MPPGCL

### 9.2 Statutory Inspection

Please refer cl. 2.8.3 of 'General and Special Conditions of Contract'. In addition to it the scope includes getting the approvals from the statutory authorities (like IBR, smoke nuisance inspector, anti-pollution authorities, labour officials).

### 9.3 Quality:

Please refer to annexure – VIII enclosed herewith.

### 9.4 Safety:

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-IX General

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Strict Safety measures have to be followed at Site.

Ref. Annexure VII, Contractor shall also adhere to all the safety provisions of our customer. In case violation of any provision at site fine of Rs.500/- to Rs.2000/- at the discretion of our site in-charge shall be imposed for each of such occasion and shall be recoverable from the contractor's bill.

### 9.5 Defect liability period:

**Six months** from the date of commissioning of the unit. Clause 2.13 of general and special conditions of contract stands modified to that effect, keeping remaining portion of the clause unchanged.

### 9.6 Security Deposit

Please refer Clause no. 1.8 to 1.8.9 of our "General and special conditions of contracts".

### 9.7 Other terms and conditions

- 1.0 A copy of tender document with each page duly signed and stamped shall be submitted along with your offer as a token of your unconditional acceptance to this tender condition. Also any deviation to the tender conditions shall be submitted in a separate paper duly signed by the bidder, any overwriting / correction by the bidder on the tender will not be recognized and the offer may be rejected on this ground.
- 2.0 'General and special conditions of contract' enclosed herewith will be fully applicable, except otherwise stated in this enquiry. In case of any conflict, the conditions specified in this enquiry letter will prevail over that of the 'General and special conditions of contract'.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-X- SPECIAL TERMS AND OTHER CONDITIONS

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### 10.0 TERMS AND CONDITIONS:

- 1.0. Subcontractor should assure that the repair of the equipment covered in the scope of this offer will be conducted with the best of skills and know how available with Subcontractor and in conformance with the clearances and adjustments set forth in manufacture's drawing instruments and other information's furnished to Subcontractor.
- 2.0. The various setting, clearances, adjustments and benchmarks will be restored to the extent possible during rectification to the condition as per the erection and commissioning log sheets available with customer. If however we are not able to produce erection / commissioning log sheets, efforts will be made to attend the best possible parameter or the conditions as observed at the time of dismantling of the equipment in consultation with us.
- 3.0. Subcontractor must prepare PERT CHART/BAR CHART. Daily monitoring will be done jointly and log sheets of important activities should be noted down and signed jointly.
- 4.0. All the works shall be carried out as per the instructions and to the satisfaction of the Engineer In-charge.
- 5.0. The contractor will attend contributory to faulty and poor workmanship during commissioning and trial run of the equipment.
- 6.0. Guarantee / Warrantee: The work carried out shall be guaranteed for the **Twelve months** from date of commissioning towards performance of the machine. Subcontractor will have to give guarantee for the work carried out under the scope of work. Subcontractor will attend any failure on account of poor workmanship free of cost on priority. The sub-contractor has to mobilize and attend the work as per customer shutdown programme.
- 7.0. Round the clock working under expert supervision shall be ensured by the contractor deploying two equal parallel strength of groups in 12 hrs. Shift with equal T&P for all the jobs so as to complete the work in stipulated period or earlier.
- 8.0. It is the responsibility of contractor to keep the plant, equipment, machinery and surrounding area clean.
- 9.0. The names of working persons like Site in-charge, supervisors, foreman, main fitters to be deployed during the job with full details has to be submitted stating their area of work and experience and specialization of the work to site in-charge before the start of work. BHEL may ask to change/delete the person not found suitable for the work at any point of time during execution of job. For any addition and deletion of the working person prior permission from BHEL shall be taken.
- 10.0. Subcontractor have to ensure that all the key persons must continue till completion of job i.e. machine comes on load. Subcontractor manpower should remain at site for a period of **3 days** after the commissioning of boiler.
- 11.0. Subcontractor should get registered under relevant sales tax and or work contract Act (VAT) where the jobs are executed.
- 12.0 Scrap and insulation etc. is to be shifted to scrap disposal area as indicated by the Engineer-in-charge on regular basis.

## TECHNICAL CONDITIONS OF CONTRACT (TCC)

### Chapter-X- SPECIAL TERMS AND OTHER CONDITIONS

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- 13.0 Adequate quantities of consumables like Argon, Oxy- Acetylene gases and welding electrodes as required along with cutting/welding set / argon welding sets shall be arranged by the contractor.
- 14.0 If the duration of work continues beyond stipulated period due to any reason, no claim for compensation will be entertained.
- 15.0 The contractor will be responsible to pay the damages to the property of Board or individual caused by his worker during the course of contract. If the contractor fails to pay the same it will be recovered from his bill.
- 16.0 No compensation claimed for idle labor for any reason will be entertained by BHEL.
- 17.0 Successful bidder is to obtain necessary "No Dues" certificate before de-mobilization from site.
- 18 Successful bidder has to arrange 05 copies of report which will include various protocols with necessary data/ MOMs / important correspondences / log sheets ect. and the book shall be spiral bound with thick acetate papers in front and back along with BHEL logo printed suitably on thick art paper at the front.
- 19.0Accommodation for the sub-contractor's manpower will be provided if made available by the customer as per the applicable charges.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-XI- Taxes & Duties

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### 11.0 TAXES, DUTIES, LEVIES (Consolidated Rev 03 dated 09/04/2013)

#### 11.1. For All types of works excepting works covered under sl no 11.2

##### 11.1.1

The contractor shall pay all (save the specific exclusions as enumerated in this contract) taxes, fees, license charges, deposits, duties, tools, royalty, commissions or other charges which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit.

**However, provisions regarding Service Tax and Value Added Tax (VAT) on output services and goods shall be as per following clauses.**

##### 11.1.2 Service Tax & Cess on Service Tax

**Contractor's price/rates shall be exclusive of Service Tax and Cess on Services.** In case, it becomes mandatory for the contractor under provisions of relevant act/law to collect the Service Tax & Cess from BHEL and pay the same to the concerned tax authorities, such applicable amount will be paid by BHEL at the prevailing Service Tax Rate (presently 12.36 %) on the admitted bill value.

**Contractor shall submit to BHEL documentary evidence of Service Tax registration certificate specifying name of services covered under this contract. Contractor shall submit serially numbered Service Tax and Cess Invoice, signed by him or a person authorized by him in respect of taxable service provided, and shall contain the following, namely,**

1. The name, address and the registration number of the contractor,
2. The name and address of the party receiving taxable service,
3. Description, classification and value of taxable service provided and,
4. The service tax payable thereon.

**All the Four conditions shall be fulfilled in the invoice before release of service tax payment.**

**Wherever, more than one route/option are available for discharge of service tax liability under a particular service, (e.g. "works contract Service"), contractor shall obtain prior written consent from BHEL site before billing the amount towards Service Tax.**

##### 11.1.3 VAT (Sales Tax /WCT)

As regards Value Added Tax (VAT)/CST on transfer of property in goods involved in Works Contract (previously known as Works Contract Tax) applicable as per local laws, the price quoted by the contractor shall be inclusive of the same and in no case input or output VAT/CST will be reimbursed extra.

In any case the Contractor shall register himself with the respective Sales Tax authorities of the state and submit proof of such registration to BHEL along with the first RA bill. Contractor will submit all the details of VAT/CST paid for the contract in the prescribed format of the respective state VAT laws. Also, the contractor will issue the tax Invoices to BHEL as per the Tax laws of respective state on monthly basis. Contractor shall also be required to furnish to BHEL necessary proof of VAT remittance on monthly basis.

Deduction of tax at source shall be made as per the provisions of law and is to be construed as an advance tax paid by the contractor and no reimbursement thereof will be made.

# TECHNICAL CONDITIONS OF CONTRACT (TCC)

## Chapter-XI- Taxes & Duties

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Further, if BHEL, at the instance of customer or otherwise adopts the specific route for discharging output VAT liability itself, benefit of the reduction in liability of the contractor will be passed on to BHEL.

In case, BHEL is forced to pay any VAT liability on behalf of contractor, the same will be recovered from contractor's bill or otherwise as deemed fit.

### 11.2 'Enabling Works'

The contractor shall pay all (save the specific exclusions as enumerated in this contract) taxes, fees, license charges, deposits, duties, tools, royalty, commissions or other charges which may be levied on the input goods & services consumed and output goods & services delivered in course of his operations in executing the contract. In case BHEL is forced to pay any of such taxes, BHEL shall have the right to recover the same from his bills or otherwise as deemed fit. ~~( i.e. rates quoted by bidder shall be inclusive of Service Tax, VAT/WCT and all other taxes and duties )~~

~~However, Since the proposed work is in the nature of 'Works Contract service' as per Service tax law, Hence, For non-corporate contractors being Individual, HUF, Proprietary Firm, Partnership Firm or Association of Persons (AOP), BHEL shall recover the applicable Service Tax under reverse charge mechanism from the contractor and remit the same with the Government as per the provisions of Law. Necessary advice/confirmation of remittance shall be issued to the contractor. The contractor shall not be eligible for any refund/reimbursement of such service tax from BHEL. It shall be the responsibility of the contractor to submit proper invoice giving all the requisite details as per Service Tax Law for the determination of the service tax liability of BHEL under reverse charge mechanism. BHEL reserves the right to determine such liability based on the invoice submitted by the contractor or otherwise independently and remittance of the same with the Government.~~

### 11.3 New Taxes/Levies

In case the Government imposes any new levy/tax on the output service/ goods/work after award of the contract, the same shall be reimbursed by BHEL at actual.

In case any new tax/levy/duty etc. becomes applicable after the date of Bidder's offer, the Bidder/Contractor must convey its impact on his price duly substantiated by documentary evidence in support of the same **before opening of Price Bid**. Claim for any such impact after opening the Price Bid will not be considered by BHEL for reimbursement of tax or reassessment of offer.

No reimbursement/recovery on account of increase/reduction in the rate of taxes, levies, duties etc. on input goods/services/work shall be made. Such impact shall be taken care of by the Price Variation/Adjustment Clause (PVC) if any. In case PVC is not applicable for the contract, Bidder has to make his own assessment of the impact of future variation if any, in rates of taxes/duties/ levies etc. in his price bid.