

# 2020

**BHARAT HEAVY ELECTRICALS LIMITED  
SOLAR BUSINESS DIVISION, BENGALURU  
TENDER DOCUMENT**

**Name: Navit Mahajan  
Designation: Dy. Manager  
BHEL SBD Bangalore**



**NOTICE INVITING TENDER**

1. BHEL/ SBD (A Govt. of India Enterprise) invites Tender for engaging a contractor for Assembly and Brazing of Electrode
2. Sealed Bids are invited under single stage two part bid system from the competent agencies with sound technical and financial capabilities, fulfilling the qualifying requirements stated in the tender documents.
3. Interested and eligible parties may study the tender documents carefully visit the works to understand the scope and nature of work, discuss and clarify doubts if any and offer their bids.
4. The salient features of tender documents are as follows:
5. The complete Tender documents consists of the following: Tender document- Part 'A'(Consists of Volume-I, Volume-II) and Part 'B'.
6. A set of tender documents(Non-transferable) may be purchased on any working day(Monday-Saturday) between 09:00hrs to 15:30hrs from issue of tender documents date onwards at work contract department, BHEL-SBD, Professor CNR Rao circle, Malleswaram, Bengaluru-560012, by paying the prescribed tender fees of Rs200 only in the form of cash in the cash counter (Finance dept.) or cross Demand Draft only in favor of "BHEL-SBD, Bengaluru" payable at Bengaluru.
7. The tender documents are also available in the website of BHEL [www.bhel.com](http://www.bhel.com). Those who wish to download the same may do so. While submitting the tender documents, a DD/ Cash paid at BHEL-SBD cash office towards cost of tender documents should be enclosed. The tender documents downloaded from the website without DD for the specific value will be summarily rejected. Corrigendum if any will be published in BHEL web site only.
8. In case, tender documents are requested by post, BHEL-SBD shall not be responsible for any delay due to any reasons(including postal delay) either in receiving the agencies request or receipt of tender documents by the agency.

For all clarifications/ issues related to the tender, please contact:

**(i) Commercial:**

Mr. Navit Mahajan, Dy. Manager / Works Engineering Contract, BHEL-SBD,

Prof CNR Rao Circle, IISc Post, Malleswaram, Bangalore- 560 012

E-MAIL: [navit@bhel.in](mailto:navit@bhel.in)

Ph. No. +91-080-22182216

or

Mr. BM Hiremani, AGM / WEX & Works Contract Cell, BHEL-SBD,

Prof CNR Rao Circle, IISc Post, Malleswaram, Bangalore- 560 012

E-MAIL: [hiremani@bhel.in](mailto:hiremani@bhel.in)

Ph. No. +91-080-22182204

**(ii) Technical:**

Mrs. Antara Baral / Dy. Manager – New Products

BHEL-SBD, Prof CNR Rao Circle, IISc Post, Malleswaram, Bangalore- 560 012

E-MAIL: [antara@bhel.in](mailto:antara@bhel.in)

Ph. No. +91-080-2218-2360



# **TENDER DOCUMENT**

## **PART - A**

### **VOLUME - I**

1.	GENERAL INFORMATION
2.	SCOPE OF WORK
3.	ELIGIBILITY CRITERIA
4.	PRICE VARIATION CLAUSE
5.	PAYMENT TERMS
6.	ANNEXURES



<b>1. General Information</b>		
1.1.	Tender Reference Number :	<b>52976</b>
1.2.	Tender Name:	Works Contract for Assembly and Brazing of Electrode
1.3.	Tender System	Single Stage, Two Part Bid Part – A: Techno-Commercial & PQR Part – B: Price Bid
1.4.	Tender Type	Works Contract
1.5.	Estimated Value of Contract	Not Applicable
1.6.	Duration of Contract	6 months
1.7.	Qualifying Requirement	As per NIT Terms & Conditions
1.8.	Cost of Tender documents	Rs.200/-, Not Applicable if downloaded from <a href="http://www.bhel.com">www.bhel.com</a>
1.9.	Issue of tender documents	As per Enquiry / RFQ / Notification on <a href="http://www.bhel.com">www.bhel.com</a>
1.10.	Pre- BID Meeting	As per Enquiry / RFQ / Notification on <a href="http://www.bhel.com">www.bhel.com</a>
1.11.	Last date for Issue of tender documents	As per Enquiry / RFQ / Notification on <a href="http://www.bhel.com">www.bhel.com</a>
1.12.	Last date for submission of tender doc	As per Enquiry / RFQ / Notification on <a href="http://www.bhel.com">www.bhel.com</a>
1.13.	Date and time of opening of Tender (Part-A)	As per Enquiry / RFQ / Notification on <a href="http://www.bhel.com">www.bhel.com</a>
1.14.	Tender Submission Place	BHEL-SBD WEX TENDER BOX kept outside tender room(Bidder to ensure to put tender bids in specified place & box, BHEL-SBD will not be responsible if bids submitted in other than specified place and tender box
1.15.	Tender Opening Place	BHEL-SBD, Tender room, opposite to IISC, Prof. CNR Rao circle, Malleshwaram, Bengaluru-560012
1.16.	EMD	Rs. 2930/- in the form of a crossed Demand Draft/EFT favoring BHEL-SBD, Bengaluru. If submitted through DD, the DD in original should reach to the office of undersigned within 7 days of Part A bid opening
1.17.	Security deposit	5% of contract value
1.18.	Dealing Officer (For any Clarifications)	Navit Mahajan, Dy. Manager – Works Contract Cell Contact No.: 080-2218-2216 Email: <a href="mailto:navit@bhel.in">navit@bhel.in</a>  Hiremani B.M. Addl. General Manager – Works Contract Cell Contact No.: 080-2218-2204 Email: <a href="mailto:hiremani@bhel.in">hiremani@bhel.in</a>
<b>2. SCOPE OF WORK</b>		
2.1.	Details as per Annexure I	
<b>3. ELIGIBILITY CRITERIA</b>		
3.1.	Bidder should have experience in the field of assembly and brazing of electrodes/metal and ceramic components in Vacuum furnace and should have the facility of vacuum furnace.	
3.2.	<ol style="list-style-type: none"><li>I. The qualified vendor should be capable of supplying Assembled and brazed electrodes with polishing on lathe and ensuring clean surfaces.</li><li>II. The qualified vendor should be capable of supplying 50 nos. of brazed and assembled quantity per month when BHEL is in needs.</li></ol>	
3.3.	Bidder should have independent ESI Employer code under ESI Act 1948. Photocopy of letter from ESI Corp. to establish that bidder is independently registered as an employer under ESI to be produced.	
3.4.	Bidder should have independent PF code under Employee Provident Fund and Miscellaneous Provisions Act 1952. Photocopy of letter from PF Commissioner's Office to establish that bidder is independently registered as an employer PF to be produced.	



3.5.	<p><b>Solvency Certificate:</b> A Solvency Certificate from a Nationalized Bank should be produced regarding the tenderer's financial position. The Solvency Certificate should not be older than 12 months from the due date of Techno-commercial bid opening.</p> <p><b>Not Applicable</b></p>
3.6.	<p>Average Annual Financial turnover during the last 3 years ending 31<sup>st</sup> March of the previous financial year, should be at least <b>Rs. 51,865</b></p> <p>Audited Balance sheet and profit &amp; Loss account OR Turn over Certificate from Chartered Accounted to be enclosed for the FY 2017-18, 2018-19 &amp; 2019-20.</p>
3.7.	<p>Experience of having successfully completed similar works during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following:</p> <p>a. Three similar completed works costing not less than the amount equal to <b>Rs. 69,153 each including Taxes</b> OR</p> <p>b. Two similar works costing not less than the amount equal to <b>Rs. 86,441 each including Taxes</b> OR</p> <p>c. One similar completed work costing not less than the amount equal to <b>Rs. 1,38,306 including Taxes</b></p> <p>The term "Similar works" means vendor should have successfully executed – "Assembly and brazing of electrodes/metal and ceramic components in Vacuum furnace". The term 'executed' means the bidder should have achieved the criteria specified in the PQR even if the total contract has not been completed or closed. Bidder should not have been banned by "any BHEL unit" or "Government of India" or "Government of Karnataka" or Government of other states in India</p> <p>Proof of Experience: Work Completion Certificate and Work Order Copy</p> <p>Bidder to submit following documents as proof of completion/execution of work:</p> <p>1. P.O copy.</p> <p>2. Ack. or certified note by customer.</p>
3.8.	<p>The bidder shall also mention the PAN Number issued by Income Tax Department, copy of the PAN card or PAN number allotment letter shall be submitted along with the tender documents.</p>
3.9.	<p>There should be no litigation or charge under investigation / enquiry / trial against the Tenderer, or conviction in a court of law or suspension or blacklisting by any organization on any ground. During the course of work, if any such information comes to light, the contract may be terminated.</p>
3.10.	<p>The opinion / decision of BHEL regarding the bid shall be final and conclusive. BHEL reserves the right to reject any or all the bids at any time without assigning any reason.</p>
3.11.	<p>In case the bidder has a relative employed in BHEL, the authority inviting tender shall be informed of this fact in writing at the time of submission of tender, failing which the tender may be disqualified, or if such fact comes to light subsequently, the contract may be terminated.</p>
3.12.	<p>If the bidder gives wrong information in his tender or creates conditions favorable for the acceptance of his tender, BHEL reserves the right to reject such tender at any stage.</p>
4.	<p><b>PRICE VARIATION CLAUSE</b></p> <p>The periodic increase in Basic Wages or Variable Dearness Allowance of the workmen of contractors will be reimbursed by BHEL consequent to revision of minimum wages will be done by adopting the following calculation methodology:</p> <p>1. Increase %age = <math>\frac{\text{Actual Increase in Wages i.e. (Revised Wages - Pre-revised Wages)}}{\text{Pre-revised Wages}} \times 100</math></p> <p>2. Total New wages = (Old variable comp. <math>\times</math> Increase %age) + Old variable comp. + Fixed comp.</p> <p>(Note: No increase will be compensated on the fixed components of the wages. Increase is admissible only on the variable components of wages. — NA</p>
5.	<p><b>PAYMENT TERMS</b></p>
5.1.	<p>Payment will be released after 45 days from the date of material delivery, subject to final acceptance of the work by user and Quality department of BHEL SBD. Rates are to be quoted both in words and figures. Taxes if any to be quoted separately. GST reimbursement will be done after payment of GST by vendor and submission of receipt to</p>



	BHEL.
6.	<b>Annexures</b>
6.1.	SPECIAL TERMS OF CONTRACT & Scope of Work – Annexure I
6.2.	Techno-commercial Bid Application – Annexure II
6.3.	Bidder Information – Annexure III
6.4.	Qualification Requirements– Annexure IV
6.5.	Bidder declaration-I– Annexure V
6.6.	Bidder declaration-II– Annexure VI
6.7.	Un-Priced Bid and SAC/ HSN Codes – Annexure VII
6.8.	Non-Technical deviation– Annexure VIII
6.9.	Technical deviation– Annexure IX



**ANNEXURE – I SPECIAL TERMS OF CONTRACT & SCOPE OF WORK**

**SPECIAL TERMS**

1. The contractors will transport the material from and to BHEL SBD at their own cost.
2. A 10 % variation on the total quantity may be expected.

**1.0 SCOPE OF WORK:**

**Assembly and Brazing of (i) metal to metal and (ii) metal parts to ceramic part as per BHEL drawing (drawing enclosed). Procedure for Brazing of Electrode is attached herewith.**

1. All activities are to be done in a clean dust free environment.
2. The assembled item is to undergo a heat treatment in a vacuum furnace and the heating cycle given is to be followed.
3. The straightness of the item should be as per drawing given by BHEL.
4. The items are to be packed suitably to ensure that there is no damage to the item.
5. The items will be tested at BHEL premises and for items which do not qualify the test will not be considered for payment if attributable to bad workmanship on brazing.
6. BHEL will issue the following materials for the brazing activity for which a Bank Guarantee or Security Deposit of 5% of total value will be executed by the contractor
  - a) Titanium Tip
  - b) Titanium Adapter
  - c) SS Body
  - d) Alumina Ceramic tube
  - e) Brazing foil and wire
7. As and when material is required a work order will be issued for a minimum quantity of 75nos. at a time.

**PROCEDURE FOR BRAZING**

It covers the procedure for assembly of the components for brazing and the brazing procedure for the electrode Probe comprising of the following components viz. Electrode insulant, electrode body, electrode tip and electrode adopter.

**1.1 METHOD:**

The following method for cleaning shell be followed:

- I. Rinse all the components in kerosene/thinner and clean with cotton waste.
- II. After words dip the component in soap water to decrease contaminant.
- III. Further clean the components in clean water to remove trace of soap.
- IV. Dry the cleaned components in the oven 50+/-5 Deg. C.
- V. After drying dip the components in acetone and further clean in ultrasonic cleaner for 10 minutes.

1.1.1 Final cleaning of all components including the preformed brazing foils in AR grade acetone before commencing assembly.

1.1.2 Do not touch the components with bare hands. Use surgical gloves while assembling and loading.

1.1.3 Assemble in the components in the following sequence.

- I. Electrode body and electrode adapt
- II. Electrode adopter and Electrode ceramic insulant
- III. Electrode insulant and electrode tip

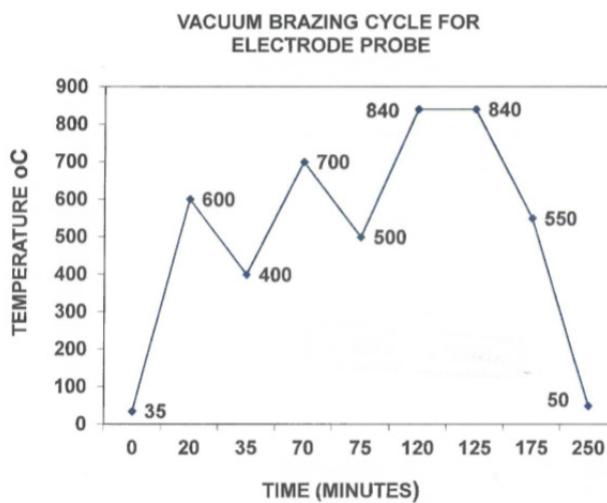
To assemble each of the above set of components, first place the circular brazing perform at the bottom at the joint to be brazes in the first component and then place the circumferential brazing preform around the around the circumference of the joint to be brazed and then press in the second component using a toggle press. This procedure is to be Repeated in the sequence of assembly as listed above.

- 1.1.4 Check for straightness of assembly using the given gauge. If found not passing the gauge remove and reassemble and repeat check.
- 1.1.5 Rinse the assembly in AR grade acetone in 1 minute.
- 1.1.6 Place the assembled electrodes onto the graphite fixtures.
- 1.1.7 Keep the assembled electrodes in an oven till the furnace is ready for loading.
- 1.1.8 When the furnace is ready load the assembled electrodes on the graphite fixtures into the furnace taking care to ensure that the electrodes do not touch the walls of the furnace.
- 1.1.9 Evaluate the furnace up to  $1 \times 10^{-5}$  Torr.
- 1.1.10 Carry out firing as per the firing cycle in page 3 of 3.
- 1.1.11 Record the details of vacuum and time-temperature of the firing cycle at the periodic interval. Also record the firing cycle number and date and time of commencement and completion of the firing cycle and the electrode batch details.
- 1.1.12 Unload the brazed electrode assemblies after the furnace is cooled at the 5C.
- 1.1.13 Check for visual defects in the brazing such as bend, improper brazing (voids, blackened brazed surface etc.) and record the same .
- 1.1.14 Pack the accepted brazed assemblies in sponge or air packed polythene bags and place in the thermocole casing.

## **1.2 CALIBRATION**

- 1.2.1 The instruments, gauges and indicators used for the process of brazing shell be under valid calibration. The copies of the valid calibration certificate shell be submitted to BHEL before commencement of work and renewed as per defined schedule there after

### **VACUUM BRAZING CYCLE FOR ELECTRODE PROBE**



**DRAWING**

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

TEST: JOINT IS TESTED FOR LEAK AT 300 BAR.

REV. DATE	ALTERED	REV. DATE	ALTERED
CODE	CHECKED	CODE	CHECKED
REV. DATE	ALTERED	REV. DATE	ALTERED
CODE	CHECKED	CODE	CHECKED

<b>BHARAT HEAVY ELECTRICALS LTD. ELECTROPORCELAINS DIVISION BANGALORE - 560 012</b>				NAME <input type="text"/> SIGN <input type="text"/> DATE <input type="text"/> DRN <input type="text"/> 5 - 01 - 97 CHD <input type="text"/> APD <input type="text"/> V- VENKATESAN <input type="text"/> 5 - 01 - 97 REF. TO ASSY. DRG. <input type="text"/> ITEM NO. <input type="text"/> NO. OF ITEMS <input type="text"/>	
DEPL	GRADE OF TOL. DIM.	SCALE	WEIGHT (kg)		
CODE		NTS	—	(APPROX.)	
TITLE <b>BRAZE JOINT ASSEMBLY</b>				CARD CODE	
				DRAWING NO. <input type="text"/> 4 987 99 00034	
				REV. 00	
				SHEET NO. <input type="text"/> NO. OF SHEETS <input type="text"/>	
SUPERSEDES DRG. NO. <input type="text"/>					
SHT. 23, SIZE - A4 - 297 x 210 mm					



**ANNEXURE – II TECHNO-COMMERCIAL BID APPLICATION**

To,

Dy. Manager / WC  
Bharat Heavy Electricals Limited  
Solar Business Division,  
IISc Post, Malleswaram,  
Bengaluru – 560 012

Dear Sir,

I / We hereby offer to carry out the work  
**Works Contract for Assembly and Brazing of Electrode**

I / We have carefully perused the all the clauses mentioned in NIT and agree to abide with the same.

1. Notice Inviting Tender – Part A Volume 1
2. Notice Inviting Tender – Part A Volume 2
3. Price Bid Format - Part – B

I / We further agree to execute all the works referred to in the said documents.

I declare that, there was never / is no litigation or charge under investigation / enquiry / trial against me / us, nor conviction in a court of law or suspended or blacklisted by any organization on any grounds.

Signature of Tenderer  
Date:

**ANNEXURE – III Bidder information**



S. No.	DETAILS REQUIRED	Requirement fulfilled (Yes / No / NA/ Value)
1	Name of the Company	
2	Name of Authorized Signatory	
3	Name of Contact person for this tender	
4	Email-id of contact person	
5	Contact number	
6	Bank Account Details (Name of Bank, Branch and Account Number). Cancelled Cheque to be enclosed	
7	Details of Relatives employed in BHEL, Name Designation and Unit - Clause 3.11	
	Relative 1	
	Relative 2	
	Relative 3	

**ANNEXURE – IV Qualification requirements**



S. No.	DETAILS REQUIRED	Requirement fulfilled (Yes / No / NA/ Value)	Whether proof / document enclosed (YES / NO)
1	The Firm of contractor should have experience in the field of assembly and brazing of electrodes/metal and ceramic components in Vacuum furnace and should have the facility of vacuum furnace as per Clause 3.1		
2	Vendor should be capable of supplying 50 nos. of brazed and assembled quantity per month with polishing on lathe and ensuring clean surfaces as per CL.3.2		
3	ESI Registration No. Clause 3.3		
4	PF Registration No. Clause 3.4		
5	Average turnover of last 3 years - Clause 3.6		
6	Relevant Work Experience – 1- Clause 3.7		
	Relevant Work Experience – 2		
	Relevant Work Experience – 3		
7	PAN No. - Clause 3.8		
8	GST Registration Number		
9	MSME / NSIC Certificate to be enclosed (if applicable)		
10	EMD Details (DD No., Amount, Date & Bank)		

**ANNEXURE – V Bidder Declaration -I**



S. No.	DETAILS REQUIRED	Requirement fulfilled (Yes / No / NA/ Value)
1	I have carefully read the Tender Terms and Conditions and I submit my agreement for the same.	
2	I have completely understood the scope of work and submit my agreement to carry out the work as per mentioned in Tender document.	
3	I have quoted rates for the total scope of work mentioned in the tender document	
4	I have understood and accepted the payment terms of BHEL as per cl.5	
5	I am responsible for the safety of workmen deployed and agree to fulfil the requirements as per tender terms	
6	I have understood the LD clause mentioned in this tender and submit my agreement for the same	
7	I agree to participate in the tender and carry out the work (if awarded) ethically and submit my agreement to various requirements in this contract.	
8	Signed and submitted the technical deviations sheet	
9	Signed and submitted the Non-technical deviations sheet	



**ANNEXURE – VI Bidder Declaration -II**

I, -----, aged-----Yrs., S/o -----,

Residing at -----  
-----

Hereby declare as follows:

- (i) That my nationality is \_\_\_\_\_.
- (ii) That I am a major and eligible to enter into contract / my firm / my company is competent to enter into an agreement.
- (iii) I shall employ only such personnel who have not been found unfit for employment in Organizations such as Central / state / Public undertaking by the Police Authorities.
- (iv) I shall not employ persons against whom Criminal cases are pending or under investigation.
- (v) I shall also not employ persons found guilty of offences involving moral turpitude for executing work in BHEL contracts.
- (vi) That there are no Criminal cases/Civil/Labor pending or under investigation against me or my firm or company.
- (vii) I have not been found guilty of offences involving moral turpitude nor any of the company directors / partners of my firm have been found guilty of offences involving moral turpitude.
- (viii) Neither I nor my firm nor my company has been declared insolvent in the past.
- (ix) I have taken due care and efforts to furnish only information which are true in the tender document.
- (x) I shall employ labor who is more than 18 years of age and less than 58 years and having sound physical and mental health.
- (xi) I shall keep Photograph / identity proof / residential proof of the laborers to be employed against this tender and arrange for police verification.
- (xii) I shall employ and deploy suitable qualified personnel for supervision of the work in each shift and additionally as required for monitoring compliance to process requirements and compliance to contract terms & conditions.

[Signature with Name & seal of the Tenderer]

Date :  
Place :



**ANNEXURE VII Unpriced BID and HSN / SAC Codes**

Description	SAC/HSN	Unit	Quantity	Rate	Amount
Assembly and brazing of electrode body	To be filled by bidder	Nos.	130	To be quoted by bidder	To be quoted by bidder
GST (%age)					To be quoted by bidder
GST (Value)					To be quoted by bidder
Grand Total Incl. GST					To be quoted by bidder
Landed cost after GST credit					To be quoted by bidder



**ANNEXURE VIII, NON-TECHNICAL DEVIATION**

<b>SI No.</b>	<b>Volume</b>	<b>Part/Clause SI no.</b>	<b>NIT requirement</b>	<b>Bidder's Deviation</b>

**Total No. of deviations proposed by the Bidder- \_\_\_\_\_ nos.**

**BIDDER'S SIGN & SEAL:**

Note: The Offers should be in full conformity with the terms and conditions of this tender. Incorrect and incomplete tenders are liable to be rejected. Deviations, if any, should only be mentioned as per formats for Non-Technical Deviations (i.e. General Terms & Conditions, Commercial Terms etc.) & Technical Deviations (i.e. Scope of Work, Modalities of Contract etc.). BHEL at its discretion whether to give any further chance to a bidder in case of any deviation or reject the same offer.



**ANNEXURE IX, TECHNICAL DEVIATION**

SI No.	Volume	CLAUSE NO.	NIT requirement	Bidder's Deviation

Total No. of deviations proposed by the Bidder- \_\_\_\_\_ NOS.

Place:

Date:

Signature & Seal of the bidder:

Note: The Offers should be in full conformity with the terms and conditions of this tender. Incorrect and incomplete tenders are liable to be rejected. Deviations, if any, should only be mentioned as per formats for Non-Technical Deviations (i.e. General Terms & Conditions, Commercial Terms etc.) & Technical Deviations (i.e. Scope of Work, Modalities of Contract etc.). BHEL at its discretion whether to give any further chance to a bidder in case of any deviation or reject the same offer.