

# VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY: BURLA



P.O: Engineering College Burla (Siddhi Vihar), Dist: Sambalpur

Odisha- 768018, India

Website : [www.vssut.ac.in](http://www.vssut.ac.in), E-mail: [registrar@vssut.ac.in](mailto:registrar@vssut.ac.in), Ph:(0663)2430573,Fax-2430592

**Ref: No: VSSUT/MME/6012/2016**

**Date: 17/03/2016**

## TENDER CALL NOTICE

Sealed Bids (properly stitched separately) in two separate covers (**Technical Bid and Price Bid**) are invited by the “**The Registrar, Veer Surendra Sai University of Technology, Odisha**” from the manufacturers/authorized distributors/ dealers for supply of Instrument, equipment, machineries etc. of reputed make (National/ International) for the Department of Metallurgical & Materials Engineering, VSSUT Burla, Odisha. The list of equipments and their technical specifications are mentioned in the different annexures.

### The list of equipments

Sl. No	Description	Quantity	Remarks
1.	Universal Hardness tester (Rockwell, Brinell, Vickers (macro & micro)	1 No.	Annexure -VI
2.	Differential Scanning Calorimetry	1 No.	Annexure -VII
3.	Induction melting furnace	1 No.	Annexure -VIII
4.	Jominy Quench Hardenability Tester	1 No.	Annexure -IX
5.	Pin on Disc Wear Testing Machine	1 No.	Annexure -X
6.	Impact testing Machine	1 No.	Annexure -XI
7.	Rolling mill	1 No.	Annexure -XII
8.	Polishing set (2 disks)	1 No.	Annexure -XIII

The Bidders may download the **Tender Documents** directly from the website available at <http://www.vssut.ac.in> and the Tender cost fee of Rs.2000/- (Non-refundable) by way of separate Demand Draft drawn in favour of “**The Registrar, Veer Surendra Sai University of Technology, Burla**” payable at **SBI, Burla** should be enclosed along with the Bid. The Tender cost fee and the EMD amount should be submitted separately in separate demand drafts. In case

of any bid clarification, responsibility lies with the bidders to collect the same from the website and the purchaser shall have no responsibility for any delay/ omission on part of the bidder.

**TIME SCHEDULE:**

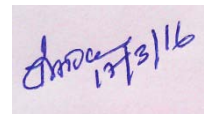
- a) Price of bidding document: Rs.2000/- (Non-refundable)
- b) Date of commencement of downloading bidding document 20.03.2016 at 11.00 AM
- c) Last date and time for Receipt of bids 20.04.2016 up to 5.00PM
- d) Time and date of opening of Tender & technical bid 21.04.2016 at 11.30 AM
- e) PLACE OF OPENING OF TENDER AND ADDRESS FOR COMMUNICATION AND RECEIPT OF BID DOCUMENTS

**THE REGISTRAR**

**VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, ODISHA**

**At- Burla, Po-Burla Engineering College, Dist-Sambalpur-768018,**

**Tel. No-0663-2430211 Fax No-0663-2430204**



**REGISTRAR**

**VSSUT Burla**

## General Terms and Conditions

### **GENERAL TERMS & CONDITIONS OF CONTRACT FOR SUPPLY, INSTALLATION AND DEMONSTRATION OF THE INSTRUMENTS, EQUIPMENT, MACHINERIES REQUIRED FOR DEPARTMENT OF METALLURGICAL & MATERIALS ENGINEERING, VSSUT, BURLA, ODISHA.**

#### **1. Document Establishing Bidder's Eligibility & Qualification**

The Bidders shall furnish as part of the Bid the following Documents establishing Bidder's eligibility and qualification to the Purchaser's satisfaction.

1.1 Manufacturer / Authorized Distributor / Dealer having valid license / certificates for the quoted item and the direct Importers holding valid Import License Manufacturer / Authorized Distributor / Dealer of the product are eligible to participate in the Bid.

1.2 Bidders should have **ISI or equivalent** certification for quoted instruments and equipment. However, the Purchaser shall have the right to consider the items where ISI or equivalent certification is not applicable.

1.3 The Bidder whether manufacturer/ distributor/ dealer must have experience of supply and installation of the quoted items in reputed Government Institutions / Public Undertakings / reputed Private Institutions within India during last preceding 3(Three) years reckoned from the date of bid opening and the details must be submitted along with documentary proof.

1.4 The Bidders shall have to produce document in support of their service associates **nearest to Bhubaneswar/ Sambalpur**, Odisha.

1.5 Bidder shall have to provide operational Training for **Machineries** to one Official of each consignee at Suppliers Plant or Consignee site **at least for 7 days whichever is suitable to Purchaser.**

1.6 The Bidder shall quote items of one reputed Brand/model with all accessories in complete to perform functionality of Equipment/Machinery.

1.7 Manufacturer has to submit copy of Industry Registration of quoted products and Tax Registration Certificate issued from Competent authority. In case of Authorized Distributor / Dealer/Suppliers have to submit Manufacture authorization along with copy of above documents of Manufacture Industry.

## **2. Document Establishing Goods Eligibility**

The instruments and equipment offered against the schedule of requirement of instruments, equipment and Machineries should be in accordance with the stipulated specifications and of one reputed brand/model (**N.B: Variation in specification is allowed upto±5% in case of Machineries/Equipments**)

2.1 The documentary evidence establishing the brand and the model may be in the form of literature, pamphlets, manuals, drawing, circuit diagram etc.

2.2 Detailed description of instruments and equipment with essential technical and performance characteristics may also be furnished.

2.3 The Bidders should clearly mention in their bid regarding the compatibility of the various equipment or the individual units.

2.4 The quantity shown in the bid can be increased or decreased to any extent depending upon the actual requirement.

2.5 The instruments and equipment should have testing certificate for its satisfactory functioning.

## **3. Technical Bid (COVER - A)**

The following document should be submitted in cover-A.

3.1 Earnest Money Deposit

3.2 Technical details of the equipment and machineries as per **Annexure-V**

3.3 Copy of the manufacturing license/ import license/ Authorized Distributor/ Dealer certificates

- 3.4 Copy of the authorization from the Manufacturing Company in case of Authorized Distributor /Dealer.in **Annexure-III** along with Manufacturer Industry Registration and Tax Registration Certificate.
- 3.5 VAT/ST clearance certificate up to **date** where applicable.
- 3.6 Performance/ Market standing certificate establishing that the Bidders have executed supply of similar items as mentioned in Schedule of Requirement of instruments and equipment to different Govt. Organizations/ Government PSUs / reputed Private Institutions.(proof of documents)
- 3.7 Copy of the IT PAN Card.
- 3.8 Detail name, address, telephone no. fax, e-mail of the firm and of the Director/ Managing Director/ Proprietor of the firm (As per **Annexure IV**)
- 3.9 Address, Telephone No., e-mail, Fax of the Branch Office/ Contact Person/ Liaisoning Office in Odisha. (As per **Annexure IV**)
- 3.10 Power of Attorney/ Authorization to a person for liaisoning and monitoring the business on behalf of the manufacturer / bidder but not entitled to raise the bills.
- 3.11 Document if any to establish the recognition of the manufacturing unit in respect of ISO or equivalent.
- 3.12 **The original bid document signed & sealed by authorized person in each page as a token of acceptance of all terms and conditions of the tender with original receipt.**
- 3.13 Documentary evidence establishing that the instruments & equipment and ancillary services to be supplied by the Bidders shall confirm to the Bidding Document
- 3.14 Any deviation in the specification of the item including standard accessories / optional accessories in complete for functionality of Machine should be marked in **bold letters.**( **N.B: Variation in specification is allowed upto±5% in case of Machineries/Equipments**)

3.15 Details of foundation drawing for instruments and equipment, if any, should be provided.

3.16 The details of the service station / service associates nearest to Bhubaneswar/Sambalpur shall have to be submitted to qualify in the technical bid.

3.17 Willingness to provide operational Training for Machineries to one Official of each consignee at Suppliers Plant or Consignee site **at least for 7 days whichever is suitable to Purchaser**

#### 4. **Price Bid (COVER – B)**

4.1 The hard copy of price bid giving the rates for various instruments & equipment and other items should be submitted along with sealed soft copy of **price bid in Excel format through CD/Pen drive** both in separate sealed cover here in after called **Cover B (Price Bid). Price Bid (Cover - B)** of the bidders who qualify in **Technical Bid (Cover – A)** will only be opened and will be communicated through **E-mail/Fax**.

4.2 The price of the each item shall be quoted as per the prescribed Price Schedule Format at **Annexure-I** along with price break up of custom duty, Excise Duty, CST, Packing, Forwarding and Handling charges, Insurance charges, ET, Freight up to destination including unloading, VAT, commissioning including testing and training with total price per item at **FOR** destination. The bidders are required to submit the individual price of each instrument(s) and equipment(s) as indicated in the schedule of requirements.

4.3 Each quoted item and all accessories should cover the warranty / guarantee for **2(two)** year from the date of commissioning (**Annexure-II**).

4.4 The **Cover B** of the technically qualifying bidders shall be only opened at the Office of the **“The Registrar, Veer Surendra Sai University of Technology, Burla”** on the date and time to be communicated to them after technical evaluation of **Cover A by E-mail/Fax**.

4.5 The cost of standard accessories shall be included in basic price and optional accessories shall have to be quoted separately.

4.6 The bidders are required to submit the list of the spare parts required for the machine as well as the list of the dealers/ Distributors of the spare parts nearest to Bhubaneswar, Odisha for its availability.

## 5 BID CONDITIONS

5.1 The bidders should verify the sites of existing laboratories of Department of Metallurgical & Materials Engineering, VSSUT, Burla and the proposed lay out Plan indicating the location of each unit for necessary Technical Evaluation. The scope of Supply as mentioned in the schedule of requirements if not sufficient for full function of the Equipment/Machinery should be intimated in writing with the technical bid.

5.2 The quoted rate shall not vary with the quantum of order placed or destination point.

5.3 A copy of the original bid conditions and the schedules should be signed by the bidder at the bottom of each page with the office seal duly affixed and returned along with the bid. Bid schedule should be duly filled in with an **index** and **page number** for the documents, enclosures & EMD etc. **Paging** must be done for all the documents submitted.

5.4 Bids should be type written or Computerized and every correction/ over writing in the bid should invariably be attested with signature of the bidder with date before submission of the bids to the authorities concerned. No revision of price upward or downward will be allowed once the bid is opened. However the purchaser shall have the right for considering the exchange rate of foreign currencies on verification of documents.

### 5.5 Language of Bid

The Bid prepared by the bidders and all correspondence and document relating to the bid exchanged by the Bidders and the *Purchaser*, shall be written in the English language. Supporting document and printed literature furnished by the Bidders may be written in another language provided they are accompanied by an accurate translation of the relevant passages in the English language in which case, for purposes of interpretation of the Bid, the English translation shall govern.

## 5.6 Bid Price

- The contract shall be for the full quantity as described above. Corrections, if any, shall be made by crossing out, initialing, dating and re-writing.
- All duties, taxes, and other levies payable on the raw materials and components, job contract shall be included in the total price.
- VAT in connection with the sale shall be shown separately.
- The rates quoted by the bidders shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
- The price shall be quoted in Indian Rupees only.

## 5.7 VAT/ST clearance

Copies of valid VAT clearance Certificates shall be furnished by the Bidders and the originals of the above certificates shall be produced to the purchaser before placement of notification of award if asked for by the Purchaser.

## 5.8 EMD

All bidders are required to submit EMD **not less than 2% of the quoted amount** in shape of **Demand draft** drawn in favour of **“The Registrar, Veer Surendra Sai University of Technology, Burla” payable at SBI, Burla** only. The EMD shall be in Indian Rupees.

**NOTE:** Non-submission of EMD or submission of less EMD than the desired one shall result in rejection of Bid. The EMD deposited against other Bids cannot be adjusted or considered for this Bid. No interest is payable on EMD.

## 5.9 SUBMISSION OF BIDS

### Sealing and Marking of Bids

Bid should be submitted in two Bid system containing two parts as detailed below.

### Sealed Cover-A: Technical Bid.

### Sealed Cover-B: Price Bid (hardcopy & sealed soft copy in CD/pen drive)

Both the sealed envelopes should then be put in one outer cover and each cover should have the following indication:



- i) Name of Dept.: \_\_\_\_\_
- ii) Reference No of Bid \_\_\_\_\_
- iii) Bid regarding \_\_\_\_\_
- iv) Due date & time for submission of the Bid \_\_\_\_\_
- v) Due date & time for opening of the Bid \_\_\_\_\_
- vi) Name of the Firm \_\_\_\_\_

**NOTE:**

**A. Bids submitted without following two Bid system procedures as mentioned above will be summarily rejected.**

**B.** Please Note that **prices should not be indicated in the Technical Bid.** The Prequalification document including EMD as required in the Bid document should invariable be accompanied with the Technical Bid (**Cover A**).

The outer envelope shall indicate the name and address of the bidders to enable the bid to be returned unopened in case it is declared “**late**”. If the cover containing the outer envelope is not sealed and marked as required, **Purchaser** will assume no responsibility for the bid’s misplacement or premature opening.

The above procedure shall be adopted both for the Technical bid and price bid separately. Telex, cable, email or facsimile bids will be rejected.

#### **5.10 Deadline for Submission of Bids**

Bids must be received by the **Purchaser** at the address specified not later than the time and date specified in the Invitation of Bids. In the event of the specified date for the submission of bids being declared a holiday for the **Purchaser**, the bids will be received up to the appointed time on the next working day.

The **Purchaser** may, at its discretion, extend this deadline for submission of bids by amending the bid document, in which case all previous rights and obligations of the purchasers and bidders will remain same till the extended date.

### 5.11 Modification and Withdrawal of Bids

No Modification and Withdrawal of Bids is allowed between the interval of time of submission and the last date and time of the bids.

No bid may be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the bidders on the bid form.

### 5.12 BID OPENING

5.13 The *Purchaser* will open all bids, in the presence of bidder's representatives who choose to attend at **11.30 AM on dated 21.04.2016** at the Office of the **“The Registrar, Veer Surendra Sai University of Technology, Burla”**.

5.14 The bidder's representatives who are present shall sign a register evidencing their attendance. In the event of the specified date of bid opening being declared a holiday for the *Purchaser*, the bids shall be opened at the appointed time and location on the next working day.

5.15 The bidder's names, and the presence or absence of the requisite EMD and such other details as the *Purchaser*, at its discretion, may consider appropriate will be announced at the opening. No bid shall be rejected at bid opening, except for late bids, which shall be returned unopened to the bidders.

### 5.16 Acceptance of the Bid

- Bidders submitting bids would be considered who have considered and accepted all terms and conditions. No enquiries, verbal or written, shall be entertained in respect of acceptance or rejection of the bid.
- Genuine equipment and instrument etc. should be supplied. Bidders should indicate the source of supply i.e. name and address of the manufacturers from whom the items are to be sourced.
- Supply of equipment means – Installation and Commissioning (except civil works), Demonstration as well as Training at site. **No separate charges will be paid on this account.**

### 5.17 Rejection of the Bid

The Bid document shall be out-rightly rejected under following stipulation and no correspondence will be entertained whatsoever.

- If the Bidders has not furnished the required **Tender paper cost** and **EMD** or EMD exemption certificate from competent authority.
- If the Bidders has not submitted the Price as per the prescribed format **Annexure-I**
- **Manufacturing Authorization Annexure-III and in case of Authorized Distributor / Dealer/Suppliers have to submit Manufacture authorization along with copy of above documents of Manufacture Industry.**
- If the bid is not supplemented with breakup of standard accessories / Optional accessories & cost of AMC separately for three years after completion of warranty period (**In case of major machinery only**).
- Photo copy of the up-to-date valid manufacturing license/ import license (if it is imported) /dealership certificate/Distributor certificate of the product along with Tax registration Certificate of Manufacturer issued from competent authority.
- If the bidders, whether manufacturer or authorized distributor/ dealer have not supplied the required quantity for qualification as per the eligibility criteria and not submitted the performance statement at **Annexure-IV with supporting documents**.
- If the quoted product of the bidders not confirms to technical specification with complete accessories for functional Equipment/Machinery and standard of workmanship required by the Purchaser.
- If the bidder has not furnished technical details of the equipments and machinery with **one make & model** as per **Annexure-V**.
- **If bidder will quote items of more than one make/model.**
- If the bidder has not furnished detailed mandatory drawings, **catalogue**/, Foundation drawings & schedule of supply of items, if required.
- If the bidders have not agreed to give **bid validity**.
- If Bidder is not willing to provide operational Training for Machineries to one Official of each consignee at Suppliers Plant or Consignee site **at least for 7 days in case of major machineries whichever is suitable to Purchaser**.

### 5.18 Purchaser's Right to Accept any Bid and to Reject any Bid

The Purchaser reserves the right to accept or reject any bid and to annul the bidding process and reject all the bids without assigning any reason thereof at any time prior to award of Contract, without thereby incurring any liability to the affected Bidders or Bidders on the grounds of such action of the purchaser. In case no bidder qualifies as per qualifying criteria and standards, purchaser may at his discretion relax qualification criteria for award of contract.

### 5.19 Evaluation and Comparison of Bids

The comparison shall be of FOR destination price basis including the price of all costs wherever applicable as well as duties and taxes (**but excluding VAT**) paid or payable on Machineries, instruments & equipment incorporated or to be incorporated in the items including the warrantee/guarantee period from the date of installation.

- The Purchaser's evaluation of a bid will take into account, in addition to the bid price and the price of incidental services.
- The purpose of bid evaluation is to determine substantially responsive bid with the lowest evaluated cost, but not necessarily the lowest submitted price, which should be recommended for award.
- Evaluation of bids should be made strictly in terms of the provisions in the bid document to ensure compliance with the commercial and technical aspects.
- The past performance of the suppliers will be taken into account while evaluating the bids.
- Cost of the inland transportation, insurance and other costs within the Purchaser's Country incidental to delivery of the goods to their final destination;
- Delivery schedule offered in the bid;
- Deviations in payment schedule from that specified in the General Terms & Conditions of Contract;
- The availability in the Purchaser's country of spare parts and after-sales services for the goods offered in the bid;
- The projected operating and maintenance costs during the life of the equipment/ goods.
- The performance and productivity of the equipment/ goods offered;

- The quality and adaptability of the equipment/ goods offered.
- Any other point as deemed proper to be incorporated by the evaluation committee.
- **Alternative options of offer shall not be allowed.**
- Each Bidder shall submit only one quotation with one make & model.
- The quotation would be evaluated separately for each item
- Sales Tax in connection with sale of goods shall not be taken into account in evaluation.
- Negotiation shall be made with the lowest evaluated bidder.
- Lowest evaluated price shall be taken in to consideration, but not the lowest quoted price.
- Willingness to provide operational Training to one Official of each consignee at consignee site for at least **7 days whichever is suitable to Purchaser.**

## **6.0 Supply Conditions**

### **6.1 Delivery of Goods**

The delivery of goods shall be made by the supplier to the Consignee in accordance to the order placed as shall be detailed in the Schedule of requirements & technical specifications.

### **6.2 Instruments, Equipment & Machineries Demonstration cum Inspection**

Purchaser reserves the right to ask for demonstration cum inspection of the instruments & equipment where ever applicable.

### **6.3 Inspection/ Test/Training**

The supplier shall get each equipment inspected in manufacturer's works and submit a test certificate (New & Unused) and also guarantee/warranty certificate that the equipment confirms to laid down specifications.

The supplier shall invite the purchaser for pre-dispatch inspection. The Purchaser or his representative shall have the right to inspect/ examine/ test the goods in conformity with the contract awarded/supply order during the production or before dispatch from the manufacturer's premises. Such inspection and clearance will not prejudice the right of the consignee to inspect and test the equipment on receipt at destination.

The inspection/examination/ test may be conducted in the premises of the Supplier or at the goods final destination or at the premises of the consignee, as will be decided by the Purchaser.

The purchaser's right to inspect/ examine/test & where necessary to reject the instruments & equipment after the arrival of the goods at the final destination, shall in no way be limited or waived by the reason of the goods having been inspected and tested by the manufacturer previously. In case of rejection of the goods at the final destination after inspection and test as stipulated above and in case any inspected/ tested goods fail to confirm to the specification/ working condition, the purchaser may reject them and the supplier shall replace/ repair the same free of cost.

#### **6.4 Warrantee Period (comprehensive)**

The Bidders must quote for a minimum period of **2 (Two) years** of comprehensive **warranty** from the date of completion of the satisfactory commissioning as per (**Annexure-II**). This also includes all accessories related to instruments & equipment quoted for.

#### **6.5 Up time Warrantee**

The Bidders should provide uptime guarantee of 95%.

#### **6.6 Downtime Penalty Clause**

During the warranty period, desired uptime of 95% of 365 days (24 hours) if downtime exceeds 5%, penalty in the form of extended warranty, double the number of days or more will be applied for which the equipment goes out of service.

In no case the machineries should remain in non-working condition for more than 30 days beyond which a penalty of 0.2% of machine cost will be charged per day.

#### **6.7 Payment Terms**

No advance payment will be made by the Purchaser to the supplier for performance of the contract. 100% of the contract price shall be paid within 30 (thirty) days after satisfactory

supply, installation, demonstration, Commissioning & training and stock entry of bills of the goods within due date of delivery.

#### **6.8 Transportation**

The Supplier shall be required to meet all transport and storage expenses until commissioning of the instrument(s) / equipment covered in the contract.

#### **6.9 Taxes and Duties**

The Supplier shall be entirely responsible for payment of all Taxes, Duties etc. incurred until delivery of the contract goods to the Consignee subject to recovery afterwards in the bill as claimed in the Bid offer.

VAT as applicable is payable, to the suppliers of the State of Odisha if claimed in the Bid offer.

VAT/ CST will be paid to the Suppliers of the outside State other than Odisha, if claimed in the Bid offer. Any revision of VAT/ CST shall automatically be taken into account.

**Entry Tax**, if paid by the Supplier, at the local (destination head) Corporation/ Municipality/ NAC is allowed once only on production of money receipt for such payment, if claimed in the Bid offer. Any other statutory levy imposed by the Govt. of India/ Govt. of Odisha from time to time will be considered extra on demand with adequate proof thereof. The service tax and the work contract tax shall be levied (Wherever applicable). Income Tax as applicable shall be deducted at source.

#### **6.10 Incidental Services**

The Supplier shall be required to provide any or all of the following services : (The cost should be included in the quoted Price)

- Furnishing of detailed literature/pamphlets/ circuit diagram/ operation & maintenance manual / drawings (as applicable) for each appropriate unit of supplied goods.
- Furnishing of tools required for assembly and / or maintenance of the supplied goods.
- Performance or supervision of on-site assembly and the supplied goods.

- Performance or supervision or maintenance and/ or repair of the supplied goods, for a period of time agreed by the parties, provided that this service shall not relieve the supplier of any warranty/ guarantee obligations under the contract.
- **Training of the Purchaser's personnel at the Supplier's plant and / or on site, in assembly, start up, operation, maintenance and/ or repair of the supplied goods is Mandatory** .A maintenance contract for the goods supplied, if required by the user beyond the warranty period shall be on mutually agreed upon terms between the user and supplier. The cost of such maintenance contract shall not be included in the Bid cost.

#### 6.11 Period of Validity of Bids

- The bid rates should be kept open/ valid for a period of **180** days from the date the Bids are opened.
- A bid valid for a shorter period i.e less than **180** days shall be rejected, as nonresponsive.
- In absence of any indication of the date of validity in the bid, it will be presumed that the offer will remain valid for the minimum period i.e. **180** days as prescribed above.
- In exceptional circumstances the purchaser may solicit the bidders consent for extension of the period of validity. If agreed upon, the bid security so deposited shall also be suitably extended.

#### 6.12 Commissioning Period

Maximum commissioning period is **30 days** from the date of supply OR **120 days from the date of issue of Purchase Order** failing which the purchaser will have the right to impose penalty for the delay period @ **0.5% per week of the contract value of item/items excluding taxes from the bill amount subject to maximum of 10%**. However Registrar has right to extend the delivery period/commissioning period in special cases.

#### 6.13 Penalty against Non Supply

In case of non supply of Stores within the due date i.e. within the date of delivery the EMD deposited by the bidder shall be forfeited.



#### 6.14 Rejected items

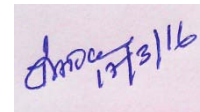
No payment shall be made for rejected supplied items. Rejected items must be removed by the bidders within two weeks of the date of rejection at their own cost and replace immediately. In case these are not removed these will be auctioned by the purchaser (at the risk and responsibility of the suppliers) without any further notice.

#### 6.15 Annual Maintenance Contract

The Cost of Annual maintenance contract for next 3 years after warranty period shall be submitted as per the **Annexure at I(b)** . The after sales service during and after the warranty / guarantee period should be available from companies own engineers.

#### 6.16 Jurisdiction of the Court

The Purchaser and the Supplier shall agree that the competent Court at Sambalpur shall have the jurisdiction to try and decide anything between the parties and they may approach the Competent Court at Sambalpur if required at any time.

A rectangular stamp containing a handwritten signature in blue ink and the date '17/3/16' written below it.

**REGISTRAR  
VSSUT, Burla**

**ANNEXURE-I (a)**

**PRICE SCHEDULE (ITEM WISE) PRICE SCHEDULE (ITEM WISE)**

Item Serial No	Item Description	Country of origin with make & model	Quantity & Unit								
				Exwarehouse/ Ex-showroom/ Off-the-shelf (a)	Excise duty/Custom duty, if any (b)	Packing & Forwarding (c)	Inland transportation, insurance and other local costs incidental to delivery (d)	CST/Entry tax, if any (e)	Unit price (a+b+c+d+e)	VAT (f)	Total Price (a+b+c+d+e+f)

**ANNEXURE-I (b)**

**PRICE SCHEDULE (ITEM WISE) - B**  
**PRICE SCHEDULE FOR ANNUAL MAINTANCE CONTRACT AFTER COMPLETION OF WARRANTY PERIOD.**

Sl.No	Brief description of Goods Total annual	Quantity in nos.				Annual Maintenance Contract cost 3 years i.e. 3x (4a+4b+4c)	
1	2	3	4			5	
			1st yr.	2nd yr.	3rd yr.		
			(a)	(b)	(c)		

\*\* After Completion of warranty period

**Note:-**

1. In case of discrepancy between unit price and total prices, THE UNIT PRICE shall prevail.
2. The cost of Annual Maintenance Contract ( AMC) which includes preventive maintenance including testing & calibration as per technical/ service/ operational manual, labour and spares, after satisfactory completion of warranty period may be quoted for next 3 years on yearly basis for complete equipment and turnkey (if any).
3. The cost of AMC may be quoted along with taxes applicable on the date of bid opening. The taxes to be paid extra, to be specifically stated. In absence of any such stipulation the price will be taken inclusive of such taxes and no claim for the same will be entertained later.
4. Cost of AMC will not be added for Ranking/Evaluation purpose. However, the cost of AMC for lowest evaluated bidder is subject to negotiation.
5. The payment of AMC will be made as per payment terms of the bid document.
6. The uptime warranty and down time penalty shall be as per the bid document.
7. All software update should be provided free of cost during AMC period.
8. The stipulations in Technical Specification will supersede above provisions.
9. The supplier shall keep sufficient stock of spares require during Annual comprehensive Maintenance Contract period. In case the spares are required to be imported, it would be the responsibility of the supplier to import and get them custom cleared and pay all necessary duties.

Place:

Date:

Signature of Bidder  
Business Address  
Seal of the Bidder

**ANNEXURE - II**

**WARRANTY MAINTENANCE CONTRACT AGREEMENT.**

THIS AGREEMENT made the.....day of ....., 20\_\_ between the “**The Registrar, Veer Surendra Sai University of Technology, Burla**” (hereinafter "the Purchaser") of the one part and M/s..... (here in after called "the Supplier") of the other part:

WHEREAS the Purchaser invited bids for certain Goods & ancillary services viz, supply and commissioning of the instruments & equipment at Bhubaneswar including Comprehensive Warranty Maintenance Services and has accepted a bid by the Supplier for the instruments & equipment specified below at the Consignee site including Comprehensive Warranty maintenance Services for a period of 2 (Two) year from the date of installation & commissioning of the instruments & equipment as per award of Contract No..... dated

**Name of the Equipment & machineries Qty**

(To be filled in as per details of goods in the award of Contract)

**NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:**

1. Maintenance Services shall consist of Preventive and Corrective maintenance of equipment specified above & will include repair and replacement of parts free of cost.
2. Preventive maintenance, monthly once, which includes:
  - 2.1 Check-up to ensure that device connection is proper, cabling is at proper condition etc.
  - 2.2 Cleaning of the above instruments & equipments and checking the System Performance.
3. The Supplier is to furnish the tentative schedule of the preventive maintenance of Warranty Maintenance Contract (WMC) to be carried out.
- 4 The parts replaced must be new parts or equivalent in performance to new parts.
5. The Supplier will also provide the same maintenance service in case of the movement of equipment from the place of original installation to a different place or location, if the equipment is shifted by the Purchaser to another place or location at the cost and risk of the purchaser.
6. Any complaint informed through telephone must be acknowledged with a Complaint No. by the Supplier which will be noted by Consignee. All further contact with the Supplier on such complaint will be initiated through that Complaint No. Once rectification done, that No. will be cancelled by both parties. A register is to be maintained by the Supplier where complaints are to be noted along with Complaint No.
7. The maintenance shall normally be done at the earliest.
8. The Service Engineer of the Supplier will be allowed to handle the respective plant & machineries only in presence of the officer in charge at the Consignee site.

9. The Supplier should ensure that maintenance job is not hampered/delayed due to paucity of spares/inadequate manpower etc.
10. The Supplier should submit the services call report, to the Consignee for each and every service call without fail.
11. The Supplier evaluation data format for the WMC of Consignee systems may be filled up for necessary action.
12. All formats after filled up should be signed at the end of each page by the Supplier.
13. After completion of the work/repair/maintenance, the Purchaser shall issue a certificate of completion to the supplier to that effect.

Signature

For the Purchaser

Name:

Designation:

Address:

Telephone No:

Signature

For the Supplier

Name:

Designation:

Address:

Telephone No:

**ANNEXURE-III**

**MANUFACTURES' AUTHORISATION FORM**

No. \_\_\_\_\_ / Date \_\_\_\_\_ /

To

The Registrar,  
VSSUT Odisha  
Burla, Sambalpur.

Dear Sir, Bid No. \_\_\_\_\_

We \_\_\_\_\_ who are established and reputable manufacturers of \_\_\_\_\_ having factories at \_\_\_\_\_ (Address of Factory) do thereby authorize M/s. \_\_\_\_\_ (Name and address of Agent) to submit a bid and sign the contract with you against the above bid.

\* No company or firm or individual other than M/s. \_\_\_\_\_ are authorized to bid and conclude the contract in regard to this business against this specific invitation for bid.

We hereby extend our full guaranty and warranty as per general conditions of contract for the goods and services offered by the above firm against this bid.

Yours faithfully,  
(Signature for and on behalf of Manufacturers)

Note: This letter of authority should be on the letterhead of the manufacturer and should be signed by a person, competent and having the power of attorney to bind the manufacturer. It should be included original by the Bidders in its bid.

- This para should be deleted for simple items where manufacturers sell the product through different stockiest.
- The Supplier/Managing Director of the Company (if the supplier is a Company) or the Power of Attorney Holder having specific power to sign the contract can only sign the contract/execute the agreement.

**ANNEXURE-IV**

**DETAILS OF THE BIDDERS**

Bid Reference No.

Name and address of the Bidder:

01 Name of the bidder

- a) Full postal address
- b) Full address of the premises
- c) Telegraphic address
- d) Telephone number
- e) Fax number
- f) E mail:
- g) PAN No
- h) TIN No

02 Total annual turn-over (value in Rupees)

03 Quality control arrangement details

04 Test certificate held

- a) Type test
- b) BIS/ISO certification
- c) Any other

05 Details of staff

- a) Technical
- b) Skilled
- c) Unskilled

06 Branch Office/ Contact Person/ Liaisoning Office in Odisha.

- a) Address
- b) Telephone No.
- c) e-mail,
- d) Fax

Signature and seal of the Bidder

**ANNEXURE-V**

**Technical details of the Machineries & Equipments to be supplied by the bidder**

<b>Bid SI No. of the item</b>	<b>Tender specification</b>	<b>Bidders Specification with make and model no (Enclose manufactures catalogue / brochure for each item)</b>	<b>Deviation if any With university specification</b>

Signature and seal of the Bidder



# VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY: BURLA



P.O: Engineering College Burla (Siddhi Vihar), Dist: Sambalpur  
Odisha– 768018, India

Ref: VSSUT/MME/ 6012 /2016

Date: 17/03/2016

## TENDER CALL NOTICE

Sealed tenders are invited from original manufacturers/authorized dealers for the supply of instruments/equipments for the **Dept. of Metallurgical & Materials Engineering**”, VSSUT, Burla, Sambalpur, Odisha. The tenders shall reach the office of the undersigned through **Speed/Registered** post only **on or before 20.04.2016 up to 5.00PM**.

For more details, please visit our university website [www.vssut.ac.in](http://www.vssut.ac.in). The authority the reserve right to accept or reject all the tenders without assigning any reason thereof.

**REGISTRAR**

No. VSSUT/MME/ 6013(5) /2016

Date: 17/03/2016

### Copy to:-

1. M/s Display Lines, 219, Saheed Nagar, Bhubaneswar – 751007 with request to publish the above advertisement in one issue of the “all Odisha daily edition of The Samaja” and “all India edition of The Times of India” at the I & PR approved/lowest rate. The bill may be sent in triplicate along with a copy of the paper in which the publication is made.
2. University Notice Board of VSSUT, Burl a.
3. Dean F & P, with a request to upload the notice & documents in the university.
4. PA to Registrar for information & record. This is issued based on University Committee for Perspective Planning (UCPP), Letter No: VSSUT/F&P – 113/1288/ 2016 Dated: 04.03.2016 and subsequent approval of Hon’ble Vice-Chancellor in *Note Page No:1/ File No: VSSUT/MME/317/2016* of Dept. of MME.
5. PA to Vice – Chancellor for kind information to Hon’ble Vice – Chancellor.

**REGISTRAR**

**UNIVERSAL HARDNESS TESTER**  
**Technical Specifications**

Sl No.	Parameters	Specification
1.	General specifications	<ul style="list-style-type: none"> <li>• Brinell, Vickers, and Rockwell</li> <li>• Wide load range</li> <li>• Motorized stage</li> <li>• Multiple measurements</li> <li>• Automatic hardness evaluation</li> <li>• Easy clamping and grips for various sized samples</li> </ul>
2.	Power Requirements	<ul style="list-style-type: none"> <li>• 220V/ 50Hz</li> </ul>
3.	Supporting software	<ul style="list-style-type: none"> <li>• The instrument should be installed with latest available version of software for control, operation and analysis.</li> <li>• The supplier should upgrade the software as and when the up gradations become available for at least five years from installation</li> <li>• Should have intelligent calibration logic</li> <li>• Continuous automatic hardware diagnosis</li> </ul>
4.	Computer and Printer	<ul style="list-style-type: none"> <li>• The equipment should come with a high performance computer with all the requisite software installed on it</li> <li>• Minimum Configuration: Intel dual core processor, 4 GB RAM, 500Gb Hard Disk, 24” Display with other essential peripherals</li> <li>• Laser printer should be provided with the computer</li> </ul>
5.	Safety Norms	<ul style="list-style-type: none"> <li>• The instrument should include safety devices for protection against vacuum, water , power etc</li> <li>• The instrument should be compliant with international norms for safety and environment</li> </ul>
6.	Installation, Commissioning and Training	<ul style="list-style-type: none"> <li>• The delivery of the equipment should be considered complete only after successful commissioning of the instrument</li> <li>• The pre-installation requirements should be communicated to VSSUT Burla well in advance of the installation</li> <li>• The Installation, commissioning and training should be done only by well trained factory engineers</li> <li>• The supplier should provide training to at least three candidates at the installation site to make them familiar with smooth operation of the instrument</li> </ul>
7.	Guarantee	<ul style="list-style-type: none"> <li>• Preferably 3 years</li> </ul>
8.	After-sales Service	<ul style="list-style-type: none"> <li>• The supplier should provide a prompt after-sales service such as regular instrument maintenance,</li> </ul>

		<p>troubleshooting and fixing</p> <ul style="list-style-type: none"> <li>• The list of service centers in India should be included.</li> </ul>
<b>9.</b>	Spares	<ul style="list-style-type: none"> <li>• List of standard spares to be provided for each year starting from 1st to 5th year along with cost and discounted rates</li> <li>• An undertaking that the vendor will supply all the spares and services for the equipment for at least 5 years from the date of commissioning</li> </ul>
<b>10.</b>	Annual Maintenance Cost	<ul style="list-style-type: none"> <li>• Include the cost of annual maintenance for each year for five years after the guarantee/ warranty period. Provide the amount and the terms, Note that those providing better after sales service and support with written evidence will be given preference</li> </ul>
<b>11.</b>	The supplier	<ul style="list-style-type: none"> <li>• Supplier should have commissioned at least 10 no. machines to reputed research/ government establishments</li> <li>• At least 3 user performance certificate for similar type of machines to be attached to the quotation.</li> <li>• Supplier Will provide certificate of calibration and inspection</li> <li>• Manufacturer of machine should provide certificate on their letter head for “Spares and parts can be supplied up to 10 years from date of supply.</li> </ul>
<b>12</b>	Warranty	<ul style="list-style-type: none"> <li>• 3 years</li> </ul>
<p>*Additional optional accessories should be indicated separately along with their price. The above specs are desirable and the actual numbers achievable for your system should be indicated.</p>		

**DIFFERENTIAL SCANNING CALORIMETER (DSC)**  
**Technical Specifications**

Sl No.	Parameters	Specification
1.	Operating temperature range. The temperature should cover full range in one measurement	<ul style="list-style-type: none"> <li>• RT to 700<sup>0</sup>C and above</li> </ul>
2.	Heating rate	<ul style="list-style-type: none"> <li>• 0.02 - 250°C/min or better (continuous)</li> </ul>
3.	Controlled Cooling rate	<ul style="list-style-type: none"> <li>• 0.02 - 50°C/min or better (continuous)</li> </ul>
4.	Temp. Accuracy	<ul style="list-style-type: none"> <li>• +/-0.5°C or better</li> </ul>
5.	Temp. Precision	<ul style="list-style-type: none"> <li>• +/-0.05°C or better</li> </ul>
6.	Furnace temperature resolution	<ul style="list-style-type: none"> <li>• 0.0001°C or similar</li> </ul>
7.	DSC measuring range	<ul style="list-style-type: none"> <li>• +/- 150mW or similar</li> </ul>
8.	Accuracy of Enthalpy measurement	<ul style="list-style-type: none"> <li>• &lt;1% Indium</li> </ul>
9.	Sensor	<ul style="list-style-type: none"> <li>• Made of Ceramic with 120 thermo couples. The sensor should not be an integral part of the furnace and sensor alone should be easily replaceable at site. Sensor replacement does not require replacement of entire cell.</li> <li>• Should offer Signal time constant of 4.0s or better</li> <li>• Resolution: 0.01 μW or better</li> <li>• Sensitivity i.e. peak Height/Noise: 55.0 or better.</li> <li>• Calorimetric sensitivity: 95μV/mW or better</li> </ul>
10.	Crucibles	<ul style="list-style-type: none"> <li>• Should offer wide choice viz. 20μl, 40μl, 160μl with or without lids to analyze different types of samples.</li> <li>• Sealing Press and at least 100 Nos of Al 40 μl and 160 μl capacity crucibles should be supplied along with the system.</li> </ul>
11.	Calibration standards	<ul style="list-style-type: none"> <li>• Should be provided with tool kit for both temp &amp; Heat flow</li> </ul>
12.	Calibration	<ul style="list-style-type: none"> <li>• Possible with both Manual &amp; Auto calibration as standard.</li> <li>• Should have capability that the Change of experimental conditions like change of Crucible, use/switching of different gases or heating rates within the program should not demand recalibration of the system. System should have the built-in adjustment capability for the change of parameters by itself.</li> </ul>

13.	Analytical capabilities	<ul style="list-style-type: none"> <li>• Enthalpy, Melting point, Melting range, Glass Transition Temperature, Heat capacity, Crystallinity, Phase Transition, Purity, Isothermal studies</li> </ul>
14.	Software	<ul style="list-style-type: none"> <li>• Necessary Software for DSC operation should be provided.</li> <li>• Instrument must include operating software which allows for the instrument to be fully calibrated and verified and also have analyzing capabilities like smoothing of curves, curve subtraction, divide/multiply, 1<sup>st</sup> and 2<sup>nd</sup> derivatives, drift correction, peak area calculation, DSC purity, heat flow measurement, heat capacity measurement etc.</li> </ul>
15.	Computer and peripherals	<ul style="list-style-type: none"> <li>• The equipment should come with a high performance computer with all the requisite software installed on it</li> <li>• Minimum Configuration: Intel dual core processor, 4 GB RAM, 500Gb Hard Disk, 24" Display with other essential peripherals</li> <li>• Laser printer should be provided with the computer</li> </ul>
<p>*Additional optional accessories should be indicated separately along with their price. The above specs are desirable and the actual numbers achievable for your system should be indicated.</p>		

**INDUCTION MELTING FURNACE**  
**Technical Specifications**

Sl No.	Parameters	Specification
1.	Scope	<ul style="list-style-type: none"> <li>The scope will be to supply, install, commission and on-load test run the supplied equipment with all accessories and hand over the same as ready to use condition as per mutually agreed time schedule. The scope will also include all works /electrics/items/materials/consumables /tools and tackles needed to carry out the job in totality &amp; successfully at single point</li> </ul>
2.	Application	<ul style="list-style-type: none"> <li>The equipment will be used for research/laboratory purposes in VSSUT, Burla and materials to be melted are primarily plain carbon and alloy steels of different compositions. But it may also be used for other ferrous and nonferrous materials (Al,Ni,Ti, Cu etc.).</li> </ul>
3.	Furnace	<ul style="list-style-type: none"> <li>Capacity 20 kg of steel (maximum)</li> <li>Temperature 1700<sup>0</sup>C</li> <li>Pouring system Manual and Hydraulic</li> <li>Suggested lining MgO</li> </ul>
4.	Hydraulic system	<ul style="list-style-type: none"> <li>The hydraulic pouring system is to be complete with adequately protected actuators, necessary pumping unit complete with pump, motor, starter, reservoir, piping etc with electrics and consumables with control in Control &amp; Monitor unit.</li> </ul>
5.	Cooling water system:	<ul style="list-style-type: none"> <li>The cooling water system to cool down the water to 25<sup>0</sup>C –30<sup>0</sup>C is to be complete with pre-treatment, if required, and Cooling Tower. Maximum outside ambient temperature at site is 50<sup>0</sup>C. The system has to be complete in all respects with control in the Control &amp; Monitor unit. Water tank of 500 L capacity with pump and one standby pump in the circuit. Non returnable valve for emergency supply of water</li> </ul>
6.	Power	<ul style="list-style-type: none"> <li>415V, 50 Hz, 3 phase</li> <li>Melting rate 10 kg/hr</li> </ul>
7.	Control & Monitor:	<ul style="list-style-type: none"> <li>Direct reading digital and Analog instruments for frequency, KWH meter, voltage, current, temperature etc (for furnace)</li> <li>Power control knob</li> </ul>

		<ul style="list-style-type: none"> <li>• On/Off push button switch / emergency switch</li> <li>• Selector switch (to select either of the furnaces for energising)</li> <li>• Circuit monitoring &amp; indicating other parameters e.g. water pressure, temperature, leaks etc. Optical radiation pyrometer for measurement of temperature of the melt.</li> </ul>
8.	Cabinet	<ul style="list-style-type: none"> <li>• Closed, painted &amp; aesthetically pleasing metal cabinet with doors and seals should have proper safety and interlocking features with provisions for easy connection and maintenance of electrical power, water and pressurised fluid system.</li> </ul>
9.	Accessories and Spares (for free of cost)	<ul style="list-style-type: none"> <li>• Magnesite crucible for 10 kg furnace - 50 nos</li> <li>• Water cooled led with SS clamps 2 nos</li> <li>• Pressure pipe tube for hydraulic system</li> <li>• Hydraulic oil - 50 L</li> <li>• Temperature sensors - 6 nos each</li> <li>• Water pressure sensors - 6 nos each</li> <li>• Tools and Tackles</li> <li>• Spare parts required for panels</li> <li>• External thermocouple should be provide (3 No.s) <b>max 1300<sup>0</sup>C</b></li> </ul>
<p>*Additional optional accessories should be indicated separately along with their price. The above specs are desirable and the actual numbers achievable for your system should be indicated.</p>		

**JOMINY END QUENCH HARDENABILITY TESTER**  
**Technical Specifications**

Sl No.	Particulars	Specification
1.	Description	<ul style="list-style-type: none"> <li>Supply and Installation of Jominy End Quench Hardenability Test Apparatus – Complete setup</li> </ul>
2.	Standards conforms to	<ul style="list-style-type: none"> <li>SAE J406 /IS 3848 and BS 4437 1969</li> </ul>
3.	Standard test piece dimensions	<ul style="list-style-type: none"> <li>dia. 25mm <math>\pm</math> 0.5 X length 100 <math>\pm</math> 0.5 mm</li> </ul>
4.	Height of free water jet (without test piece in position)	<ul style="list-style-type: none"> <li>65<math>\pm</math>10 mm</li> </ul>
5.	Distance from tip of nozzle to the bottom of test piece	<ul style="list-style-type: none"> <li>12.5 <math>\pm</math> 0.5mm approx.</li> </ul>
6.	Power supply	<ul style="list-style-type: none"> <li>Single phase 230 volts 50Hz A.C</li> </ul>
7.	Quenching Fixture	<ul style="list-style-type: none"> <li>As per ASTM A 255 specification like 45 degrees angle of top plate, quenching distance, jet stopper release just before quenching etc.</li> </ul>
8.	Water circulation	<ul style="list-style-type: none"> <li>Motorized water circulation through water pump with storage and test tank.</li> </ul>
9.	Special Tong	<ul style="list-style-type: none"> <li>Quick transfer of specimen to quenching fixture with in specific time with special tong (2 No.s)</li> </ul>
10.	Jominy test at a time	<ul style="list-style-type: none"> <li>Two or better</li> </ul>
11.	Hardening the sample	<ul style="list-style-type: none"> <li>Bench top laboratory muffle furnace up to 1050°C, thyristor controlled with safety features.</li> <li>Heating Chamber – 150 X 150 X 300 mm</li> <li>Thermo couple and control panel should provide for proper operation</li> </ul>
12.	Hardness testing fixture	<ul style="list-style-type: none"> <li>Hardness testing fixture for progressive hardness indentation. Preferably Rockwell and Vickers's hardness tester. (progression marking in inch or mm)</li> </ul>
13.	Standard Accessories must supplied with this furnace	<ul style="list-style-type: none"> <li>S.S. Fixture for Jominy moulds - 2 No.s</li> <li>S.S. Jominy moulds - 4 No.s</li> <li>Dummy specimen for setting initial height of water jet -2 No.s</li> <li>Standard insert for checking jet alignment with top hole – 2 No.</li> <li>Ceramic muffle 6"X6"X12"</li> </ul>
14.	The Supplier	<ul style="list-style-type: none"> <li>Supplier should have commissioned at least 5 no. machines to reputed research/ government establishments</li> </ul>



		<ul style="list-style-type: none"><li>• At least 3 user performance certificate for similar type of machines to be attached to the quotation.</li><li>• Manufacturer of machine should provide certificate on their letter head for “Spares and parts can be supplied up to 10 years from date of supply.</li><li>• Supplier Will provide certificate of calibration and inspection.</li></ul>
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**PIN ON DISC WEAR TESTING MACHINE**  
**Technical Specifications**

Sl No.	Particulars	Specification
1.	Description	<ul style="list-style-type: none"> <li>To study friction and wear characteristics of sliding contact, able to vary load, rotational speed, and wear tract diameter.</li> </ul>
2.	Standards conforms to	<ul style="list-style-type: none"> <li>ASTM G99</li> </ul>
3.	Wear Disc	<ul style="list-style-type: none"> <li>Diameter - 160 mm, Thickness – 6 to 8 mm</li> </ul>
4.	Pin	<ul style="list-style-type: none"> <li>Diameter – 4 to 8 mm</li> </ul>
5.	Ball diameter	<ul style="list-style-type: none"> <li>10 mm</li> </ul>
6.	Wear track diameter	<ul style="list-style-type: none"> <li>50-80 mm (adjustable)</li> </ul>
7.	Disc speed	<ul style="list-style-type: none"> <li>100-1500 rpm</li> </ul>
8.	Normal load	<ul style="list-style-type: none"> <li>0-100 N</li> </ul>
9.	Frictional Force	<ul style="list-style-type: none"> <li>0-100 N</li> </ul>
10.	Wear	<ul style="list-style-type: none"> <li>0-3 mm</li> </ul>
11.	Sliding speed range	<ul style="list-style-type: none"> <li>0.26 m/sec to 10 m/sec</li> </ul>
12.	Power	<ul style="list-style-type: none"> <li>230 V, Single phase, 50 Hz</li> </ul>
13.	Lubricant recirculation system	<ul style="list-style-type: none"> <li>It contains lubricant pump, nozzle, splash guard and recollector</li> <li>The position of nozzle must be adjustable to pour on rotating disc</li> <li>Adjustable flow rate</li> <li>Discharge rate 0-1 L/min</li> <li>Viscosity range: 90 SAE maximum</li> <li>Capacity : 3 L of lubricant</li> </ul>
14.	Environmental chamber	<p>An environmental chamber for creating required condition such as</p> <ul style="list-style-type: none"> <li>Temperature: 60°C</li> <li>Fog lubrication</li> <li>Humidity controlled atmosphere</li> <li>Atmosphere of gaseous product of combustion</li> <li>Inert gas atmosphere</li> <li>Spray of powders or liquids applied through external system</li> </ul>
15.	Other required features	<ul style="list-style-type: none"> <li>Continuously variable wear track</li> <li>Display of wear and frictional force</li> <li>Data acquisition software for windows 7/8 PC</li> </ul>
16.	Recording & Processing software	<ul style="list-style-type: none"> <li>Provision for storage of data</li> <li>Ability to compute co-efficient of friction</li> <li>Compatible with Windows 7/8</li> </ul>

		<ul style="list-style-type: none"> <li>• Ability to export data and report</li> </ul>
<b>17.</b>	Standard Accessories must supplied with this furnace	<ul style="list-style-type: none"> <li>• Electronic controller</li> <li>• Connecting cables</li> <li>• Fuses – 2 No.s (spare)</li> <li>• Data Acquisition software</li> <li>• Set of weights</li> <li>• Set of Hand tools</li> <li>• Set of Pins</li> </ul>
<b>18.</b>	The Supplier	<ul style="list-style-type: none"> <li>• Supplier should have commissioned at least 5 no. machines to reputed research/ government establishments</li> <li>• At least 3 user performance certificate for similar type of machines to be attached to the quotation.</li> <li>• Manufacturer of machine should provide certificate on their letter head for “Spares and parts can be supplied up to 10 years from date of supply.</li> <li>• Supplier will provide certificate of calibration and inspection.</li> </ul>

**IMPACT TESTING MACHINE**  
**Technical Specifications**

Sl No.	Parameters	Specification
1.	Objective	<ul style="list-style-type: none"> <li>Determine the Impact toughness (strain energy) through Izod test and Charpy test</li> </ul>
2.	Charpy Test	<ul style="list-style-type: none"> <li>Pendulum Drop Angle: <math>140^{\circ}</math></li> <li>Pendulum Effective Weight: 20.59 Kgs</li> <li>Pendulum Impact Energy: 30 Kg-m</li> <li>Minimum Graduation: 0.2 Kg-m</li> <li>Least Count: 0.1 Kg-m</li> <li>Distance of Axis of Hammer Rotation and Center: 825 mm</li> <li>Striking Edge Angle: <math>30^{\circ} \pm 1</math></li> <li>Radius of Curvature: 2.25 mm</li> <li>Width: 18 mm</li> <li>Support Distance Between Arms: 40 mm</li> <li>Sloping Angle: <math>0^{\circ}</math></li> <li>Relief Angle: <math>10^{\circ}</math></li> </ul>
3.	Izod test	<ul style="list-style-type: none"> <li>Radius of Curvature: 0.75 mm</li> <li>Pendulum Drop Angle: <math>85^{\circ}</math></li> <li>Pendulum Effective Weight: 21.79 Kgs</li> <li>Pendulum Effective Energy: 16.52 Kg-m</li> <li>Minimum Graduation: 0.14 Kg-m</li> <li>Least Count: 0.1 Kg-m</li> <li>Distance of axis of Hammer Rotation and center: 825 mm Striking Edge Angle: <math>75^{\circ}</math></li> <li>Width Horizontal: <math>10^{\circ}</math></li> <li>Vertical Relief: <math>5^{\circ}</math></li> </ul>
4.	Standard Accessories	<ul style="list-style-type: none"> <li>Caliper gauge for checking V notch for Izod &amp; Charpy</li> <li>Templates for checking 10 x 10 mm cross section of Izod/Charpy test specimen</li> <li>Depth notch gauge including V &amp; U notch gauges for checking depth below V/U notch angle and radius</li> <li>Izod support for 0.450" dia Izod round specimen</li> <li>Self-centering tong for quick and accurate setting of Charpy test specimen</li> <li>V notch milling cutter</li> </ul>
5.	Desirable Specifications	<ul style="list-style-type: none"> <li>For Gripping Specimen with dimension 10 mm x 10</li> </ul>

		mm <ul style="list-style-type: none"> <li>Machine should conform to E – 23 ASTM standard</li> <li>Accuracy should conform to IS:3766-2003, IS:1598-1977, IS:1499-2003, IS:131-Part-I, II, III, IV &amp; BS EN-10045-1993 (for Charpy)</li> </ul>
<b>6.</b>	Display	<ul style="list-style-type: none"> <li>Digital LED/LCD display</li> </ul>
<b>7.</b>	Power supply	<ul style="list-style-type: none"> <li>Standard 220V 50Hz AC</li> </ul>
<b>8.</b>	Warranty	<ul style="list-style-type: none"> <li>Minimum 2 years</li> </ul>
*Additional optional accessories should be indicated separately along with their price. The above specs are desirable and the actual numbers achievable for your system should be indicated.		

**ROLLING MILL**  
**Technical Specifications**

Sl No.	Parameters	Specification
1.	Type of machine	<ul style="list-style-type: none"> <li>Compact laboratory purpose metal strip rolling mill</li> </ul>
2.	Materials	<ul style="list-style-type: none"> <li>Should be able to roll/clad strips and ingots of different metals and alloys such as iron, steel, noble metals and alloys, aluminium and its alloys, magnesium and its alloys, all non-ferrous alloys, Ni, Ti etc</li> </ul>
3.	Rolling mill material	<ul style="list-style-type: none"> <li>The rolling mill with reversible rollers made of hard materials or materials with hardened surface, so that it is non-corroding under ambient condition and non-contaminating during room temperature rolling.</li> </ul>
4.	Roll Dimesions	<ul style="list-style-type: none"> <li>The rollers can be in 2-HI or 4-HI configuration. Work roll diameter between 30 110 mm and work roll width between 100 150 mm. Back up roll diameter 100 110 mm and width 100 150mm. Hardness of the rolls should be greater than 60 HRC.</li> </ul>
5.	Entry thickness	<ul style="list-style-type: none"> <li>Initial entry thickness of strip 1-6 mm and width maximum 100 mm. Initial entry thickness of ingot 5 mm to 20 mm diameter.</li> </ul>
6.	Final thickness	<ul style="list-style-type: none"> <li>The achievable finish thickness should be between 0.05-0.1 mm. Please mention the material in which case this can be achievable. Manual or automatic roll gap adjustment with scale resolution better than 0.05 mm.</li> </ul>
7.	The parts, controls and facilities should be part of the complete equipment:	<ul style="list-style-type: none"> <li>Strong mill housing and machine base to withstand rolling stresses.</li> <li>Chocks for the all rolls equipped with precision roller bearings, labyrinth- and shaft sealing</li> <li>All bearings should be antifriction bearings.</li> <li>Roll post for easy feed of sample.</li> <li>Roll inner cooling facility</li> <li>Electrical controls and regulators. Control for changing rolling direction. Relays and motor breaker.</li> <li>A DC motor with variable speed controller to drive the mill.</li> <li>Supplier must mention the net footprint area of the equipment</li> </ul>
8.	Safety	<ul style="list-style-type: none"> <li>Machine must comply with relevant safety and</li> </ul>

		health regulations in accordance with CE /FCC guidelines
9.	Additional details	<ul style="list-style-type: none"> <li>• Warranty for at least one year for metal strip rolling/cladding mill and spare parts support for 10 years</li> <li>• Supplier should provide a list of customers/users with address, particularly in India, where similar equipment has been supplied. We expect supplier would have supplied at least 3 of such units in India</li> <li>• Any deviation from the specifications mentioned above shall be pointed out. There shall be supporting documents (pamphlets/brochure) for technical compliance</li> </ul>
*Additional optional accessories should be indicated separately along with their price. The above specs are desirable and the actual numbers achievable for your system should be indicated.		

**POLISHING MACHINE**  
**Technical Specifications**

Sl No.	Parameters	Specification
1.	Type of machine	<ul style="list-style-type: none"> <li>• Table top double wheel (8 inch disc) polishing machine with suitable drainage facility for each disc with suitable water jet for each wheel.</li> </ul>
2.	Polishing disc	<ul style="list-style-type: none"> <li>• Two aluminium discs of 8 inch diameter with one paper holding ring and one cloth holding ring for each disc. Additional set of one aluminium disc, one paper ring and one cloth holding ring should be provided</li> </ul>
3.	Wheel control	<ul style="list-style-type: none"> <li>• Different for both wheels</li> </ul>
4.	Speed control	<ul style="list-style-type: none"> <li>• Continuous 200-1200 rpm. No step variation. No wobbling of discs.</li> </ul>
5.	Wash bowl	<ul style="list-style-type: none"> <li>• Made of corrosion resistant material.</li> </ul>
6.	Control panel	<ul style="list-style-type: none"> <li>• LED/LCD display</li> </ul>
7.	Consumables	<ul style="list-style-type: none"> <li>• One set of startup consumables including 10 set of polishing cloths should be provided</li> </ul>
8.	Power supply	<ul style="list-style-type: none"> <li>• Standard 220V 50Hz AC</li> </ul>
9.	Warranty	<ul style="list-style-type: none"> <li>• Minimum 2 years</li> </ul>
<p>*Additional optional accessories should be indicated separately along with their price. The above specs are desirable and the actual numbers achievable for your system should be indicated.</p>		