National Institute of Technology Mizoram
Chaltlang, Aizawl-796012.
Mizoram, India.

Tel:- 0389-2391236 (O)

Ref: No. NIT-MZ/D-14/M.E/2015/7757 Date: 19th February, 2016

NOTICE INVITING TENDER (NIT)

FOR SUPPLY & INSTALLATION OF EQUIPMENTS FOR MANUFACTURING LAB –I OF MECHANICAL ENGINEERING DEPARTMENT AT NIT MIZORAM, AIZAWL

 The Dy. Registrar, NIT Mizoram invites quotation for supply & Installation of Equipments as per details at **ANNEXURE-V**, **in Two Bids** to reach the undersigned on or before.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sl No. | Reference No. | Items | Qty | **EMD (Rs.)****in the form****of** DD | **Tender****Document****Fee (Rs.)****in the****form of**DD only. |
| 01. | As given above | **Supply & Installation of Equipments for Manufacturing Lab- I to be installed at NIT, Mizoram, Aizawl** | **One****Package** | Rs. 5,00,000.00 | 1,000.00(Non-refundable) |

**1. Last date & Time for Submission: 28 -03-2016 (04.00 PM)**

**2. Date/Time for Opening of Tech. Bids: 28 -03-2016 (04.30 PM)**

**3. Date of notifying the technically qualified bidders by Email: 01 -04-2016**

**4. Evaluation of Financial bids for technically qualified bidders: 07-04-2016**

***VENUE OF BID OPENING AT NIT, MIZORAM, AIZAWL***

**BID INSTRUCTION:**

**01.** Quotations will have to be submitted in TWO Bids. The address of the firm submitting the quotation and the Officer to whom the quotation is addressed must appear distinctly on sealed covers. Further, on sealed cover, the following are to be written:

**QUOTATION FOR SUPPLY & INSTALLATION OF EQUIPMENTS FOR MANUFACTURING LABORATORY -I OF MECHANICAL ENGINEERING DEPARTMENT AT NIT MIZORAM, AIZAWL**.

**REF NO\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE:-\_\_\_\_\_\_\_\_\_\_\_\_\_**

02. Submission of Compliance Certificate: Duly filled and signed Compliance Certificates (as per formats at Annexure I (A& B) are must with the Technical bid.

03. Bid not transferable: The bid documents are not transferable and the seal and signature of the authorized official of the firm’s must appear on all the papers and envelopes submitted.

**QUALIFICATION REQUIREMENTS**

1. The Bidder should be an Original Equipment Manufacturer (OEM) or anauthorized dealer/Distributor & a firm of reputation having sufficient expertise and experience in the subject tender with sound warranty / service support capability and authorization from Manufacturer/Distributor.
2. The Bidder should have experience of executing at least One Purchase Order of equipments/Machines/IT Products of value of Rupee Fifty Lacs or Higher within the last 3 Years from any IIT /NITs/ Central Govt. Institutions of North East Region of India.
3. The Bidder has to quote for all the items in the Manufacture Lab -I, Bidders who do not quote for all the items are subject to be disqualified.
4. The Bidder must have facility for maintenance of Instruments in the NE region for last 1 (One) year.

**NIT TERMS & CONDITIONS:**

1. **Rates:** Rates quoted in the **Price Bid** should be **on DOOR DELIVERY NIT Mizoram basis,** as per details below:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Particulars** | **Rate** |
| **1.** | Basic Price (per unit) |  |
|  | Total |  |
|  | Taxes(pl. give break up) |  |
|  | Grand Total for the item on door delivery at NIT Mizoram |  |

Bidders shall indicate their rates in clear/visible figures as well as in words and shall not alter/overwrite/make cutting in the quotation. In case of a mismatch, the rates written in words will prevail.

1. **Validity of Quotation:** Quoted rates must be valid for **90 days** from the date of quotation.
2. **Warranty:**  The quoted equipment and components must be warranted for a minimum of 1(One)year after satisfactory installation.
3. **Literature a must**: All the quotations must be supported by the printed technical leaflet/literature and the specifications mentioned in the quotation must be reflected/ supported by such printed technical leaflet/literature. The model and specifications quoted should **invariably be highlighted** in the leaflet/literature for easy reference.
4. **After Sales Service:** Vendors should clearly state the available nearest after sales service facilities in the region, without which their offers will be rejected.
5. **Dealership Certificate:**  Dealers or Agents quoting on behalf of Manufacturer/Distributor must enclose valid dealership certificate.
6. **Earnest Money:**Refundable earnest money deposit (EMD) of the Quoted Value through demand draft drawn in favor of “**The Director, National Institute of Technology Mizoram**”, payable at Aizawl, will have to accompany the technical Bid. The EMD of unsuccessful bidders shall be returned after award of contract. EMD of the successful bidder will be released on submission of the Performance Bank Guarantee. Offers received without Earnest Money or valid Certificate shall be summarily rejected.
7. **Performance Bank Guarantee (PBG):** In case of items with order value of Rupees five lakhs (INR 5,00,000/-) and above, the successful bidder shall furnish an unconditional PBG (as per format at **Annexure II**) for 5% of the Purchase Order value from a scheduled Bank of India, after receiving the purchase order**.** Where the PBG is obtained by a foreign bank, it shall be got confirmed by a Schedule Indian bank and shall be governed by Indian Laws and be subject to the jurisdiction of courts at Aizawl. The PBG will be kept till the Warranty Period and The PBG shall guarantee that,
	* The Vendor guarantees satisfactory operation of the Equipment & components against poor workmanship, bad quality of materials used, faulty designs and poor performance.
	* The Vendor shall, at his own cost, rectify the defects/replace the items supplied, for defects identified during the period of guarantee.
	* This guarantee shall be operative from the date of installation till 120 days after the warranty period.
	* The proceeds of the performance security shall be payable to the Purchaser as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.
	* The Performance Security shall be denominated in the currency of the contract.
	* PS may be submitted either by the principal or by the Indian agent
8. **Delivery:**
* **Time Limit:** Maximum within 12-16Weeks from the date of issue of this purchase order.
* **Safe Delivery:** All aspects of safe delivery shall be the exclusive responsibility of the vendor.At the destination site, the package will be opened only in the presence of NIT user/representative and vendor's representative. The intact condition of the package and the seal/indicators for not being tempered with shall form the basis for certifying the receipt in good condition.
* **Insurance:** The supplier is to establish ‘All Risk Transit Insurance’ coverage till door delivery at NIT Mizoram.

###### Part Delivery: Acceptance ofpart delivery shall be a prerogative of the institute.

* **Penalty for delay in delivery:** The date of delivery should be strictly adhered to otherwise the Director, NIT Mizoram reserves the right not to accept delivery in part or full.
1. **Genuine Pricing**: Vendor is to ensure that quoted price for the particular item is not more than the price quoted to any other customer in India, particularly to IITs/NITs and other Government Organization.
2. **Conditional tenders not acceptable:** All the terms and conditions mentioned herein must be strictly adhered to by all the vendors. Conditional tenders shall not be accepted on any ground and shall be rejected straightway. Conditions mentioned in the tender bids submitted by vendors will not be binding on NIT Mizoram.
3. **Road Permit:** NIT, Mizoram will provide Road Permit to the Vendors of outside Mizoram.
4. **VAT deduction at source:** In case of supply within Mizoram, VAT deduction at source, as per Order/ notification of the Govt. of Mizoram will be applicable.
5. **Late and delayed tender**: Late and delayed tender will not be considered. In case any unscheduled holiday occurs on the prescribed closing/opening date the next working day shall be the prescribed date of closing/opening.
6. **Payment**: 100% payment within 30(thirty) days from date of delivery, Satisfactory installation, acceptance and Training.
7. **Payment for Imported Goods:** By an irrevocable letter of Credit at CIF/CIP Kolkata value negotiable through any overseas branch of State Bank of India/any Schedule Bank of India.

**Note**: Please note LoC will not be opened unless and until Letter of Acknowledgement in original is received at NIT, Aizawl, Mizoram, directly from the principal (Even in case of firms having subsidiary office in India).

1. **Additional term for imported goods:** Following term besides the fore mentioned terms will be applicable in case of foreign purchases. Prices quoted must be for destination including freight and insurance charges inclusive of free delivery up to the door of department/centre NIT, Mizoram premises, as per details below:

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **Particulars** | **Rate** |
| **(a)** | **Item** |  |
| I | Basic Price (per unit) |  |
| II | Total |  |
| III | Custom Duty (Approximate) |  |
| IV | Grand Total for the item on door delivery at NIT Mizoram |  |

1. **Free Maintenance & Service for 20 Years**: An agreement is to be executed between the Institute & the **Manufacturer/Distributor/Dealer** for providing **Free Maintenance & Service for 20 Years** after expiry of the Warranty Period of the equipment by the Manufacturer/Distributor/Dealer (Preferably from the Manufacturer) within 30 Days from the day of Complain. The cost of the Spare parts required for the service and maintenance will be paid by the Institute along with the To & Fro charges (The cheapest mode of Travel).
2. **Evaluation of Tender:** Unless specifically mentioned, the overall lowest bid meeting the technical specifications will be selected for placement of purchase order.
3. **Grounds for summary rejection of bid / offer without any further clarification at preliminary evaluation stage:**
4. Unsigned bid
5. Late or delayed bid
6. Bid validity is shorter than the required period
7. The bid is not accompanied by Earnest Money Deposit (EMD) if EMD is required
8. The bidder is not eligible
9. No authorization letter from the manufacturer
10. If there is no mention of packing, forwarding, freight, transportation and insurance charge in the offer
11. Not willing to provide performance security if it is requirement of tender
12. **Grounds to be considered as material deviation for summary rejection of bid / offer without any further clarification at the discretion of the NIT Mizoram authority during intensive technical evaluation stage:** The good(s) quoted which are not meeting the major / essential technical specifications.
13. **Enquiry during the course of evaluation not allowed**: No enquiry from the bidder(s) shall be entertained during the course of evaluation of the tender till final decision is conveyed to the successful bidder(s). However, the Purchase Committee or its authorized representative may make enquiries/seek clarification from the bidders. In such a case, the bidder must extend full co-operation.  The bidders may also be asked to arrange demonstration of the offered items, in a short period of notice.
14. The acceptance of the quotation will rest solely with the Director, NIT Mizoram, who in the interest of the Institute is not bound to accept the lowest quotation and reserves the right to himself to reject or partially accept any or all the quotations received without assigning any reasons.
15. **Applicable Law**:
* The contract shall be governed by the laws and procedures established by Govt. of India and subject to exclusive jurisdiction of Competent Court and Forum in Aizawl / India only.
* Any dispute arising out of this purchase shall be referred to the Director NIT Mizoram, and if either of the parties hereto is dissatisfied with the decision, the dispute shall be referred to the decision of an Arbitrator, who should be acceptable to both the parties, to be appointed by the Director of the Institute. The decision of such Arbitrator shall be final and binding on both the parties.
1. **Cost of Bidding:**The Bidder shall bear all costs associated with the preparation and submission of its bid, and “the Purchaser", will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.
2. **Clarification of bidding documents:**A prospective bidder requiring any clarification of the bidding documents shall contact the Purchaser in writing at the Purchaser’s address. The Purchaser will respond in writing to any request for clarification, provided that such request is received not later than ten (10) days prior to the dead line for submission of bids. Should the Purchaser deem it necessary to amend the Bidding Documents as a result of a clarification, it shall do so

Enclosure:**GENERAL CONDITIONS OF CONTRACT, ANNEXURE-I, ANNEXURE-II, ANNEXURE-III, ANNEXURE-IV&ANNEXURE-V**

**DY. REGISTRAR (F& A)**

**NATIONAL INSTITUTE OF TECHNOLOGY MIZORAM**

**GENERAL CONDITIONS OF CONTRACT**

* 1. **Definitions**

In this Contract, the following terms shall be interpreted as indicated:-

The following words and expressions shall have the meanings hereby assigned to them

“Contract” means the Contract Agreement entered into between the Purchaser and the Supplier, together with the Contract Documents referred to therein, including all attachments, appendices, and all documents incorporated by reference therein.

“Contract Documents” means the documents listed in the Contract Agreement, including any amendments thereto.

“Contract Price” means the price payable to the Supplier as specified in the Contract Agreement, subject to such additions and adjustments thereto or deductions there from, as may be made pursuant to the Contract.

“Day” means calendar day.

“Completion” means the fulfilment of the Related Services by the Supplier in accordance with the terms and conditions set forth in the Contract. “GCC” means the General Conditions of Contract.

“Goods” means all of the commodities, raw material, machinery and equipment, and/or other materials that the Supplier is required to supply to the Purchaser under the Contract.

“Related Services” means the services incidental to the supply of the goods, such as transportation, insurance, installation, training and initial maintenance and other such obligations of the Supplier under the Contract.

“Subcontractor” means any natural person, private or government entity, or a combination of the above, to whom any part of the Goods to be supplied or execution of any part of the Related Services is subcontracted by the Supplier.

“Supplier” means the natural person, private or government entity, or a combination of the above, whose bid to perform the Contract has been accepted by the Purchaser and is named as such in the Contract Agreement.

The final destination, where applicable, means the place named in the “National Institute of Technology Mizoram, Aizawl-796012”

* 1. **Contract Documents:** Subject to the order of precedence set forth in the Contract Agreement, all documents forming the Contract (and all parts thereof) are intended to be correlative, complementary, and mutually explanatory. The Contract Agreement shall be read as a whole.
	2. **Fraud and Corruption:** The purchaser requires that bidders, suppliers, contractors and consultants, if any, observe the highest standard of ethics during the procurement and execution of such contracts. In pursuit of this policy,
1. The terms set forth below are defined as follows:
* “Corrupt practice” means the offering, giving, receiving, or soliciting, directly or indirectly, of anything of value to influence the action of a public official in the procurement process or in contract execution;
* “Fraudulent practice” means a misrepresentation or omission of facts in order to influence a procurement process or the execution of a contract;
* “Collusive practice” means a scheme or arrangement between two or more bidders, with or without the knowledge of the Borrower, designed to establish bid prices at artificial, non-competitive levels; and
* “Coercive practice” means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in the procurement process or affect the execution of a contract;
1. The purchaser will reject a proposal for award if it determines that the Bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive or coercive practices in competing for the Contract in question.
2. **Joint Venture, Consortium or Association:** If the Supplier is a joint venture, consortium, or association, all of the parties shall be jointly and severally liable to the Purchaser for the fulfilment of the provisions of the Contract and shall designate one party to act as a leader with authority to bind the joint venture, consortium, or association. The composition or the constitution of the joint venture, consortium, or association shall not be altered without the prior consent of the Purchaser.
3. **Scope of Supply:** The Goods and Related Services to be supplied shall be as specified in the Schedule of requirements.
4. **Suppliers’ Responsibilities:** The Supplier shall supply all the Goods and Related Services included in the Scope of Supply in accordance with Scope of Supply Clause of the GCC, and the Delivery and Completion Schedule, as per GCC Clause relating to delivery and document.
5. **Contract price:** Prices charged by the Supplier for the Goods supplied and the Related Services performed under the Contract shall not vary from the prices quoted by the Supplier in its bid.
6. **Copy Right:** The copyright in all drawings, documents, and other materials containing data and information furnished to the Purchaser by the Supplier herein shall remain vested in the Supplier, or, if they are furnished to the Purchaser directly or through the Supplier by any third party, including suppliers of materials, the copyright in such materials shall remain vested in such third party.
7. **Application:** These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the Contract.
8. **Standards:** The Goods supplied and services rendered under this Contract shall conform to the standards mentioned in the Technical Specifications and Schedule of Requirements, and, when no applicable standard is mentioned, to the authoritative standard appropriate to the Goods' country of origin and such standards shall be the latest issued by the concerned institution.
9. **Patent Indemnity**
10. The Supplier shall, subject to the Purchaser’s compliance with GCC Sub- Clause 11.2, indemnify and hold harmless the Purchaser and its employees and officers from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, costs, and expenses of any nature, including attorney’s fees and expenses, which the Purchaser may suffer as a result of any infringement or alleged infringement of any patent, utility model, registered design, trademark, copyright, or other intellectual property right registered or otherwise existing at the date of the Contract by reason of: The installation of the Goods by the Supplier or the use of the Goods in India; and (b) The sale in any country of the products produced by the Goods.
11. If any proceedings are brought or any claim is made against the Purchaser, the Purchaser shall promptly give the Supplier a notice thereof and the Supplier may at its own expense and in the Purchaser’s name conduct such proceedings or claim and any negotiations for the settlement of any such proceedings or claims.
12. **Inspections and Tests**
13. The Supplier shall at its own expense and at no cost to the Purchaser carry out all such tests and/or inspections of the Goods and Related Services.
14. The Purchaser or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract specifications at no extra cost to the Purchaser. The Technical Specifications shall specify what inspections and tests the Purchaser requires and where they are to be conducted. The Purchaser shall notify the Supplier in writing in a timely manner of the identity of any representatives retained for these purposes.
15. Whenever the Supplier is ready to carry out any such test and inspection, it shall give a reasonable advance notice, including the place and time, to the Purchaser. The Supplier shall obtain from any relevant third party or manufacturer any necessary permission or consent to enable the Purchaser or its designated representative to attend the test and/or inspection.
16. Should any inspected or tested Goods fail to conform to the specifications, the Purchaser may reject the goods and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Purchaser.
17. The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival at final destination shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative prior to the Goods shipment.
18. **Packing**
19. The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.
20. The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be provided for in the Contract and in any subsequent instructions ordered by the Purchaser.
21. **Delivery:**Delivery of the Goods and completion and related services shall be made by the Supplier maximum within 12-16 Weeks from the date of issue of this purchase order
22. **Transportation** The Supplier is required under the Contract to transport the Goods to a specified destination in India, defined as the Final Destination, transport to such destination, including insurance, unloading and storage, as specified in the Contract, shall be arranged by the Supplier, and the related costs shall be included in the Contract Price.
23. **Incidental Services:** The supplier may be required to provide any or all of the services, if any.
24. **Spare Parts:** The Supplier shall be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:
25. Such spare parts as the Purchaser may elect to purchase from the Supplier, providing that this election shall not relieve the Supplier of any warranty obligations under the Contract; and
26. In the event of termination of production of the spare parts:
* Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and
* Following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested.
1. **Warranty**
2. The Supplier warrants that all the Goods are new, unused, and of the most recent or current models, and that they incorporate all recent improvements in design and materials, unless provided otherwise in the Contract.
3. The Supplier further warrants that the Goods shall be free from defects arising from any act or omission of the Supplier or arising from design, materials, and workmanship, under normal use in the conditions prevailing in India.
4. The warranty shall remain valid for twelve months (1 Year) after the Goods, or any portion thereof as the case may be, have been delivered to and accepted at the final destination.
5. The Purchaser shall give notice to the Supplier stating the nature of any such defects together with all available evidence thereof, promptly following the discovery thereof. The Purchaser shall afford all reasonable opportunity for the Supplier to inspect such defects.
6. Upon receipt of such notice, the Supplier shall, within a period of 30 days, expeditiously repair or replace the defective Goods or parts thereof, at no cost to the Purchaser.
7. If having been notified, the Supplier fails to remedy the defect within the period specified above, the Purchaser may proceed to take within a reasonable period such remedial action as may be necessary, at the Supplier’s risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.
8. **Change Orders and Contract Amendments.**
9. The Purchaser may at any time, by written order given to the Supplier pursuant to Clause on Notices of the GCC make changes within the general scope of the Contract in any one or more of the following:
* Drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
* The place of delivery; and/or
* The Services to be provided by the Supplier.
* The delivery schedule.
1. If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or delivery schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this clause must be asserted within fifteen (15) days from the date of the Supplier's receipt of the Purchaser's change order.
2. No variation or modification in the terms of the contract shall be made except by written amendment signed by the parties.
3. **Assignment:** The Supplier shall not assign, in whole or in part, its obligations to perform under the Contract, except with the Purchaser's prior written consent.
4. **Subcontracts:** The Supplier shall notify the Purchaser in writing of all subcontracts awarded under this Contract if not already specified in the bid. Such notification, in the original bid or later, shall not relieve the Supplier from any liability or duties or obligation under the Contract.
5. **Extension of time**
6. Delivery of the Goods and performance of the Services shall be made by the Supplier in accordance with the time schedule specified by the Purchaser.
7. If at any time during performance of the Contract, the Supplier or its subcontractor(s) should encounter conditions impeding timely delivery of the Goods and performance of Services, the Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier’s notice, the Purchaser shall evaluate the situation and may, at its discretion, extend the Supplier’s time for performance with or without penalty, in which case the extension shall be ratified by the parties by amendment of the Contract.
8. Except as provided under the Force Majeure clause of the GCC, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of penalty pursuant to Penalty Clause of the GCC unless an extension of time is agreed upon pursuant to above clause without the application of penalty clause.
9. **Penalty clause:** Subject to GCC Clause on Force Majeure, if the Supplier fails to deliver any or all of the Goods or to perform the Services within the period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contractreserves the right not to accept delivery in part or full.
10. **Termination for Default**
11. The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or part:
* If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the contract, or within any extension thereof granted by the Purchaser pursuant to GCC Clause on Extension of Time; or
* If the Supplier fails to perform any other obligation(s) under the Contract.
* If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent or collusive or coercive practices as defined in GCC Clause on Fraud or Corruption in competing for or in executing the Contract.
1. In the event the purchaser terminates the contract in whole or in part, he may take recourse to any one or more of the following action: a) The Performance Security is to be forfeited; b) The purchaser may procure, upon such terms and in such manner as it deems appropriate, stores similar to those undelivered, and the supplier shall be liable for all available actions against it in terms of the contract. c) However, the supplier shall continue to perform the contract to the extent not terminated.
2. **Force Majeure**
3. Notwithstanding the provisions of GCC Clauses relating to extension of time, penalty and Termination for Default the Supplier shall not be liable for forfeiture of its performance security, liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.
4. For purposes of this Clause, “Force Majeure” means an event or situation beyond the control of the Supplier that is not foreseeable, is unavoidable, and its origin is not due to negligence or lack of care on the part of the Supplier. Such events may include, but not be limited to, acts of the Purchaser in its sovereign capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions, and freight embargoes.
5. If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof within 21 days of its occurrence. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.
6. If the performance in whole or in part or any obligations under the contract is prevented or delayed by any reason of force majeure for a period exceeding 60 days, either party may at its option terminate the contract without any financial repercussions on either side.
7. **Termination for Insolvency:** The Purchaser may at any time terminate the Contract by giving written notice to the Supplier, if the Supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to the Purchaser.
8. **Settlement of Disputes**
9. The Purchaser and the supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.
10. If, after twenty-one (21) days, the parties have failed to resolve their dispute or difference by such mutual consultation, then either the Purchaser or the Supplier may give notice to the other party of its intention to commence arbitration, as hereinafter provided, as to the matter in dispute, and no arbitration in respect of this matter may be commenced unless such notice is given. Any dispute or difference in respect of which a notice of intention to commence arbitration has been given in accordance with this Clause shall be finally settled by arbitration. Arbitration may be commenced prior to or after delivery of the Goods under the Contract.
11. The dispute settlement mechanism/arbitration proceedings shall be concluded as under: In case of Dispute or difference arising between the Purchaser and a domestic supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996, the rules there under and any statutory modifications or re-enactments thereof shall apply to the arbitration proceedings. The dispute shall be referred to the Director, NIT Mizoram, Aizawl and if he is unable or unwilling to act, to the sole arbitration of some other person appointed by him willing to act as such Arbitrator. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to this order.

In the case of a dispute between the purchaser and a Foreign Supplier, the dispute shall be settled by arbitration In accordance with provision of sub clause (a) above. But if this is not acceptable to the supplier then the dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules.

1. The venue of the arbitration shall be the place from where the order is issued.
2. Notwithstanding any reference to arbitration herein, the parties shall continue to perform their respective obligations under the Contract unless they otherwise agree; and the Purchaser shall pay the Supplier any monies due the Supplier.
3. **Governing Language:** The contract shall be written in English language, which shall govern its interpretation. All correspondence and other documents pertaining to the Contract, which are exchanged by the parties, shall be written in the English language only.
4. **Applicable Law:** The Contract shall be interpreted in accordance with the laws of the Union of India and all disputes shall be subject to place of jurisdiction of Aizawl, Mizoram, India.
5. **Notices**
6. Any notice given by one party to the other pursuant to this contract/order shall be sent to the other party in writing or by cable, telex, FAX or e mail and confirmed in writing to the other party’s address.
7. A notice shall be effective when delivered or on the notice’s effective date, whichever is later.
8. **Taxes and Duties**
9. For goods manufactured outside India, the Supplier shall be entirely responsible for all taxes, stamp duties, license fees, and other such levies imposed outside India.
10. For goods Manufactured within India, the Supplier shall be entirely responsible for all taxes, duties, license fees, etc., incurred till its final manufacture/production.
11. If any tax exemptions, reductions, allowances or privileges may be available to the Supplier in India, the Purchaser shall make its best efforts to enable the Supplier to benefit from any such tax savings to the maximum allowable extent.
12. **Right to use Defective Goods:** If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the goods proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such goods until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the Purchaser’s operation.
13. **Protection against Damage:** The system shall not be prone to damage during power failures and trip outs.
14. **Site preparation and installation:** The Purchaser is solely responsible for the construction of the equipment sites in Compliance with the technical and environmental specifications defined by the Supplier. The Purchaser will designate the installation sites before the scheduled installation date to allow the Supplier to perform a site inspection to verify the appropriateness of the sites before the installation of the Equipment, if required. The supplier shall inform the purchaser about the site preparation, if any, needed for installation, of the goods at the purchaser’s site immediately after notification of award.

**Annexure -I**

1. **COMPLIANCE CERTIFICATE FOR NIT TERMS**

**(To be enclosed in the Technical bid)**

|  |  |  |
| --- | --- | --- |
| **Sl. No.** | **NIT Terms and Conditions**  | **Yes/No** |
| **01** | **Rate** quoted as per instruction |  |
| **02** | **AMC rate**  after warranty provided |  |
| **03** | **Validity** of quoted rate for 90 days agreed |  |
| **04** | **EMD** submitted (appropriate certificate enclosed) |  |
| **05** | **PBG** term agreed |  |
| **06** | **Payment** term agreed |  |
| **07** | **Delivery terms** agreed |  |
| **08** | **Warranty period** agreed |  |
| **09** | **Literature:** Printed Literature provided |  |
| **10** | **Dealership** / distributorship certificate (in case of dealers/agents) provided |  |
| **11** | **Sales Service**: address of after Sales Service centre in India (for imported goods)/ in the region provided |  |
| **12** | **Applicable law** terms agreed |  |

Signature with Seal:……………….

Vendor: M/s………………………

1. **COMPLIANCE CERTIFICATE FOR SPECIFICATIONS**

**(One for each item must to be enclosed in the Technical bid)**

|  |
| --- |
|  **Item Sl. No.:**  |
| **Specifications as per Annexure-IV** | **Quoted Item Specs.\*** | **Complied** **(Yes/No)** |
|  |  |  |

Signature with Seal:..…..………….

Vendor: M/s………………………

**\* Vendor must quote the parameter specification of the quoted product in this column and not just copy the specification from the tender call document. Failure to do so will lead to rejection of the tender.**

##### **Annexure –II**

##### ***PERFORMANCE BANK GUARANTEE***

To:

The Director

National Institute of Technology

Aizawl-796012, Mizoram

**WHEREAS**..................................................................................................................... (Name of Supplier)

hereinafter called "the Supplier" has undertaken, in pursuance of Contract No................. dated,......... 20... to supply...................... ................................................. (Description of Goods and Services) hereinafter called "the order".

**AND WHEREAS** it has been stipulated by you in the said order that the Supplier shall furnish you with a Bank Guarantee by a recognized bank for the sum specified therein as security for compliance with the Supplier's performance obligations in accordance with the order.

**AND WHEREAS** we have agreed to give the Supplier a Guarantee:

**THEREFORE WE** hereby affirm that we are Guarantors and responsible to you, on behalf of the Supplier, up to a total of........................................................................... (Amount of the Guarantee in Words and Figures) and we undertake to pay you, upon your first written demand declaring the Supplier to be in default under the order and without cavil or argument, any sum or sums within the limit of ................................ (Amount of Guarantee) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the ........day of...................20......

 Signature and Seal of Guarantors

 ................................

 ................................

 ................................

 Date......................20....

 Address………….........

 ......................................

 ......................................

All correspondence with reference to this guarantee shall be made at the following address: National Institute of Technology Mizoram

**Annexure -III**

***MANUFACTURERS'/ DISTRIBUTOR’S AUTHORIZATION FORM***

No. Dated \_\_\_\_\_\_\_\_\_\_

The Director

National Institute of Technology

Aizawl-796012, Mizoram

Dear Sir:

We**……………………………………………………………………….** who are established and reputable

Manufacturers/distributors of **……………………………………………………………………**having factories/office at----------------------------------------------------------------------------------------------------------

--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------(address of factory/office) do hereby certify that**…………………………………………………………………………………………………………………………………………………………………………………………………………………………………………**(Name of the Authorized Dealer)is our authorized dealer to quote against your tender enquiry no **…………………………………………………………………………………………………………..., Last Date of Submission is:**

Yours faithfully,

(Name)

(Name of Manufacturer/Distributor)

**ANNEXURE-IV**

***CONTRACT FORM***

Contract No. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

THIS CONTRACT AGREEMENT is made

The[insert:number] day of [insert:month], [insert:year].

BETWEEN

1. National Institute of Technology, Mizoram, Chaltlang, Aizawl represented by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ [insert complete name and address] of Purchaser (hereinafter called “the Purchaser”), and
2. [ insert name of Supplier ], a corporation incorporated under the laws of [ country of Supplier ] and having its principal place of business at [ insert: address of Supplier ] (hereinafter called “the Supplier”)

WHEREAS the Purchaser invited bids for certain Goods and ancillary services, viz.,[insert brief description of Goods and Services] and has accepted a Bid by the Supplierfor the supply of those Goods and Services in the sum of [insert Contract Price in wordsand figures, expressed in the Contract currency] (hereinafter called “the ContractPrice”).

**NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:**

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.
2. The following documents shall constitute the Contract between the Purchaser and the Supplier, and each shall be read and construed as an integral part of the Contract:
3. This Contract Agreement
4. General Conditions of Contract
5. Technical Requirements (including Schedule of Requirements and Technical Specifications)
6. The Supplier’s Bid and original Price Schedules
7. The Purchaser’s Notification of Award
8. [Add here any other document(s)]
9. This Contract shall prevail over all other Contract documents. In the event of any discrepancy or inconsistency within the Contract documents, then the documents shall prevail in the order listed above.
10. In consideration of the payments to be made by the Purchaser to the Supplier as hereinafter mentioned, the Supplier hereby covenants with the Purchaser to provide the Goods and Services and to remedy defects therein in conformity in all respects with the provisions of the Contract.
11. The Purchaser hereby covenants to pay the Supplier in consideration of the provision of the Goods and Services and the remedying of defects therein, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

IN WITNESS whereof the parties hereto have caused this Agreement to be executed in accordance with the laws of Union of India on the day, month and year indicated above.

For and on behalf of the National Institute of Technology, Mizoram

Signed: [insert signature] in the capacity of [insert title or other appropriate designation] in the presence of [insert identification of official witness]

Signed: [insert signature] in the capacity of [insert title or other appropriate designation] in the presence of [insert identification of official witness]

For and on behalf of the Supplier

Signed: [insert signature of authorized representative(s) of the Supplier] in the capacity of [insert title or other appropriate designation] in the presence of [insert identification of official witness]

**ANNEXURE-V**

**LIST OF EQUIPMENTS & SPECIFICATION FOR MANUFACTURING LABORATORY-\_01**

|  |  |  |
| --- | --- | --- |
| Sl No. | Item Description | Qty |
| 01. | **WELDING FUME EXTRACTION TABLE****TECHNICAL SPECIFICATIONS:**1. **Should be fitted with a backdraft kit for optimum division of the extraction capacity (approx. 70% backdraft, 30% downdraft).**
2. **Dimensions (L x W x H) 1380 x 1005 x 920 mm**
3. **Dimensions work grid (L x W) 1366 x 750 mm**
4. **Material:**

 A. Housing - epoxy-coated sheet metal B. Work grid- galvanized steel. C. Weight (net) – Approx 250 kg  D. Motor design IEC B3.1. **FILTERS**

**A.** Material main filter cartridges - cellulose/polyester fibres**B**. Shape - oval**C.** Number of pleats - 300**D.** Filter surface area - 2 x 26 m2 **E.** Height of pleats - 70-75 mm **F.** Distance between pleats - 3-4 mm **G.** Surface weight - 85-90 g/m2 **H.** Efficiency > 99 -99,9% **I.** Filter class -M according to  DIN EN 60335-2-69 \* at particle size 0,3-5 μm \* at filtration speed 0,056  (11ft/min) **J.** Treatment - SurfacePlus precoat  (synthetic amorphous silica)  (4,6 g/m2)1. **PERFORMANCE**

A. Fan type - Air volume 50HzB. Radial - 2400 - 2500 m3/h .C. Noise level (without option- 50 Hz) - 72-74 dB(A) according to ISO 37461. **The Welding Fume extraction Table should be intended to be used for the following applications**:

I. MIG-MAG/GMAW welding¹II. TIG welding¹III. FCAW welding¹IV. Stick/MMAW welding¹V. Grinding¹VI. Cutting¹VII. Polishing¹ | 01 |
| 02. | **MULTI PROCESS INVERTER BASE DC WELDING MACHINE****TECHNICAL SPECIFICATIONS:**1. Mains voltage (tolerances): 3 x 400 V (-25 % - +20 %)
2. Mains fuses (slow-blow) [A] : 3 x 35
3. Setting range for welding current [A]: 5 - 400
4. Duty cycle 40 °C : 400 A / 60 %
5. Duty cycle 40 °C : 360 A / 100 %
6. Dimensions L x W x H [mm]: 624 x 298 x 535
7. Weight [kg] : 41
8. Wire speed [m/min]: 0.5 – 24
9. Dimensions, wire feed unit L x W x H [mm]: 690 x 300 x 410
10. Weight, wire feed unit [kg] : 15.1
11. Dimensions cooling module in mm : 610 x 298 x 330
12. Weight, cooling module [kg] : 16.5
13. Transport vehicle dimensions L x W x H [mm]: 1013 x 505 x 1103
14. Transport vehicle weight [kg] : 36.8.
15. With the following accessories. + wire feeder + mig torch (gas cooled) + Earthing cable + interconnection cable 5M
 | 02 |
| 03. | **SUMMERGED ARC WELDING MACHINE****TECHNICAL SPECIFICATIONS:**1. Input Voltage 415± 15% (3PH/ 50-60 Hz),
2. Input current(max) 100 A,
3. Rated Input Capacity 65 KVA
4. Open circuit Voltage 71V
5. Open circuit instant current 0.3A
6. Open circuit consumption 200 W , Voltage adjusting range 20-50 V, Current adjusting range A/V 120/25-1250/44
7. Rated duty cycle- 60%1250/44
8. Wire-feed rate range 0.5-2.5 m/min
9. Welding rate range 6-72 m/h
10. Suitable welding wire dia 3-5 mm
11. Power factor 0.9, Efficiency 85%, Insulation F Class
12. Cooling mode – fan cooling
13. Protection Type IP21S.
14. Alternation of characteristic of constant voltage / current.
15. Wide range of output current.
16. Welding current and welding voltage as well as travel speed of welding tractor can all be present and displayed digitally
17. Adjustable arc force
18. Welding current and welding voltage
19. Remote/panel control selection
20. MMA welding and air carbon arc gouging with suitable carbon electrode Protective functions: over-current
21. Under-voltage and over-load
22. Tractor traveling mode and direction control function
23. Welding head site adjustment function.
24. IGBT TECHNOLOGY

 **25. Standard Accessories:-** **I.** Arc welding power source,  II. Welding tractor,  III. Earthing cable**,** Guide rail | 01 |
| 04.  | **SPOT & PROJECTION WELDING MACHINE** **TECHNICAL SPECIFICATIONS:**1. Single phase input 50/60 Hz 400 V,
2. Rated power at 50% 50 KVA,
3. Short circuit power 142 KVA,
4. Max. welding power 113 KVA,
5. Installed power 38 KVA,
6. Cross section connecting cables 35 mm²,
7. Delayed Fuse 100 A, Open Circuit Voltage 5.9 V,
8. Short circuit current 24 kA,
9. Max. welding current 19 kA,
10. Thermal secondary current at 100% 6 kA,
11. Work stroke 65 mm,
12. Electrode force max 600 kPa (6 bar) 470 daN
13. Water consumption a 300 kPa (3 bar) 7 Ltr/min
14. Suitable for both spot and projection welding,
15. Equipped with microprocessor control,
16. Safety concomitant side buttons and solenoid valve,
17. Excellent welding on all weldable metals ,
18. Synchronous ignition SCR group with phase shift welding current adjustment to eliminate switching transistors,
19. Thermostatic protection on the SCR group,
20. High welding currents with low consumption,
21. Set up time reduction thanks to quick and easy modification of electrode holders platens opening without any intervention on the secondary circuit (patent pending),
22. Self-lubricated pneumatic components to eliminate oil deposits and to safeguard the environment from contaminants,
23. Water cooled secondary circuit, i.e. electrodes, electrodeholders, platens and transformer, to avoid any overheating,
24. Water cooled copper electrode holders with adjustable height,
25. Electrode force adjustable by pressure reducer group equipped with a manometer and filter for automatic air impurity expulsion
26. Upper electrode movement by self-lubricated double effect pneumatic cylinder fitted with speed regulator
27. End stroke shock-absorber and silencer for compressed air discharge,
28. Solenoid valve to control welding cylinder,
29. Safety cycle start by means of the concomitant side buttons or, as alternative
30. Cycle stop emergency button.
 | 01 |
| 05. | **AUTOMATIC HIGH AND LOW SPEED LINEAR PRECISION DIAMOND SAW****TECHNICAL SPECIFICATIONS:**1. Diamond sectioning machine for Slicing / cutting of metals, hard alloys, ceramics hard & brittle materials.
2. Motor Power : 2 HP.
3. Feed Rate : 1 - 10 mm / min. ( Settable )
4. Cutting motion : Motor (blade) movement to the job (Motorized)
5. Coolant systems: Suitable system should be provided
6. Main Power: - 240V, AC, Single Phase.
7. Safety Features - Emergency Stop, Door limit switch for safety interlock.
8. Cutting wheel speed : Up to 4000 R.P.M. max, variable from 250 RPM.

(Continuously variable speed setting, Online and off-line setting)1. Sample size : Up to 40 mm. Dia.
2. Bulk sample cutting : With fixed sturdy vice
3. Thin sectioning : With flexible arm, sample holder, and micrometer positioning
4. Operation Panel : PLC based panel providing speed variation and indication, cutting (wheel)

feed setting and indication, Online and off-line cutting feed setting for wheel damage protection etc. 1. Enclosure Close chamber

**Std. Accessories supplied with machine:**1. Flanges for cutting blade: To hold blade.

(Flanges should be made out of S. S. and each in pair set should be supplied with machine )1. Sample holders : For holding circular moulded job of 25, 32, dia.,
2. Cooling: Built-in-coolant recirculation system.
3. Blade : Wafering blade diameters 5" - 1 No
4. **Should have the following Consumables Along with the Machine:**
* High / Low Concentration, continues rim Diamond Wafering Blades. Sintered (metal bonded)
* **Dia x Thickness x Central hole**
* 5" x 0.014" x 1/2" : 1 No.
* 6" x 0.014" x 1/2" : 1 No.
* 7" x 0.025" x 1/2": 1 No.
 | 01 |
| 06. | **JOMINEY HARDENABILITY SETUP WITH SPECIAL VERTICAL FURNACE****ALONG WITH ALL THE ACCESSORIES:** **TECHNICAL SPECIFICATIONS:**It Should be designed as per **SAE J406 MAY 85 AND BS 4437 1969**, Cater for exact Jominy Test requirements. It should consists of three parts: -1. **Quenching Fixture**: It should be motorised one for constant delivery/circulation of water and does not require any tap connection.
2. **Specially designed Vertical Furnace :**
3. **It should help** quick transfer of the specimen to the quench fixture.
4. One should test three specimens at a time those are placed vertically in a Jominy moulds (S S.) intern should housed in S S. Fixture.
5. Furnace should be supplied with advance digital controller for maintaining the required temperature for jominey application.

 **3. STANDARD ACCESSORIES & SPARES:**1. S.S.Fixture for Jominy Moulds - 1 No.2. S.S.Jominy Moulds - 3 Nos.3. Dummy specimen for setting initial height of water jet. - 1 No.4. Standard Insert for checking jet alignment with top hole. - 1 No.5. Special Tong - 1 No.6. Heating Element Spirals - 1 No.7. Thermocouples - 1 No.8. Air Break Contactor - 1 No.9. Ceramic Muffle 6" X 6" X 12" - 1 No.10.. Jominy Moulds (Stainless Steel) Tow Sets - 1 No.11. Special Tong - 1 No.12. Dummy Specimen for setting initial height of water - 1 No.13. Insert for checking jet alignment with top hole - 1 No.14. Jominy hardness fixture for taking progressive hardness on the specimen.(Progression marking in “inch” or “MM”) | 01 |
| 07. | **ELECTRIC HIGH TEMPERATURE FURNACE,****TECHNICAL SPECIFICATIONS:****1. SHOULD COMPLETE WITH SILICON CARBIDE HEATING ELEMENTS,** **2. CONTROL PANEL WITH DIGITAL PID TEMPERATURE CONTROLLER WITH THYRISTOR**3. **Inside Chamber Dimensions** : 400 W x 400 H x 600 L - mm4. **Top Opening Size** : 400 W x 400 H - mm5. **Approx. Overall dimensions** : 1250 mm W x 1000 mm H x 1450 mm L6. **Maximum Operating Temperature** : 1400° C.7. **Power Input**: 18 kW 8. **Heating Elements** : Silicon carbide rod of reputed make in closely matched should be set mounted horizontally on the upper wall uniformly distributed for even heat and designed with low surface power density of 5W/ sq cm. 9. **Refractory and Insulation**: Cumi brick (1600 deg C service temp) inside layer backed with Hot face kynite insulation ( 1350 deg C) & further backed with 100 mm of ceramic board to ensure minimum heat loss & storage. 10.**Temperature Controller:** Automatic by micro – processor base digital Profile PID controller having 2 program each of 8 steps with R type thermocouple controlled through thyristor in each zone range 0 – 1600°C.11. **Power Controller** /Ageing Compensation : Thyristor having facility of power limit & current trip.12. **Electric Supply**: 415 Volts, 3 phase, 50 cycles, A.C.13. The furnace should be an electric resistance heated vertical type high temperature furnace designed for heating of the Glass rod for the purpose of Tempering suitable for heating upto1400°C.14. It should be a vertical batch furnace and should be heated by silicon carbide non – metallic heating elements which should be operated at low voltage through thyristorized heater control panel.15. The furnace should be provided with an insert / plug type with hinged top cover, lined with refractory and insulation and having suitable clamping arrangement for tight closing. 16. The temperature of the furnace should be controlled automatically and all electrical switchgears are mounted on a sheet steel control panel, which is completely wired from inside and ready for connection to the mains.  | 01 |
| 08. | TRINOCULAR RESEARCH METALLURGICAL UPRIGHT OPTICAL MICROSCOPETrinocular Research Metallurgical Upright Optical Microscope along with Digital Camera and accessories for Image Analysis.* Universal Infinity & Wave Front Abherration corrected optical system.
* Y – Shaped Frame, with built-in transformer. Frame mounted LED light preset switch. Coaxial coarse and fine focus controls with coarse stroke 25mm, Fine Stroke 100μm/ rotation, minimum Graduation 1μm.
* 12V100Watt Halogen illuminator with Bright field, Dark Field, DIC, Polarising & Analysing observation.
* Stage: Mechanical stage with X-Y (76x52mm) movement, right hand control alongwith specimen holder.
* Quintuple revolving nosepiece with DIC slider slot.
* Semi Apochromat Objective 5X N.A 0.15 W.D 12.0, 10X N.A.0.3 W.D6.5, 20X N.A.0.45,W.D. 3.0, 50X N.A.0.8 W.D.1.0 & 100X N.A.0.90 W.D.1.0.
* Siedentopf type wide field (F. No. 22mm) Trinocular tube with inclination 30 degrees, Three position light path selector 100:0 / 20:80/ 0:100 with interpupillary distance adjustment from 50 to 76 mm variable.
* LBD filter & ND filter for Reflected Light observation.
* Polariser slider & 360° rotatable analyzer for reflected illumination tube.
* Adjustable & Rotatable Nomarski differential interference contrast prism slider for reflected light observation.
* Widefield Eyepiece 10X (F.No. 22mm) with Cross Lines.

**DIGITAL CAMERA**Digital Photomicrography system with 5.24 megapixel resolution. Pixel size 3.4μm (H) x 3.4μm(V), CCD sensor. Exposure time 2/10000sec. to 16 secs, Binning option 2x2, 3x3, 4x4.Focussing indicator bar. Image transfer rate minimum 3.5 frames/sec. and 31 frame/sec, at max. resolution. PC interfacing through Firewire.C-Mount Adapter with 0.5X lens.**SOFTWARE**Imaging Software for Microscopy withimage capture and processing software for microscopy applications with focus and measurement Acquisition, display and enhancement Support measurement s like: point, quantity, linear, open polygons and angles; measurements of enclosed areas such as circles, ellipses, rectangles and polygons.Criteria available for selection include the following: length, angle, point, number of points, area, perimeter, diameter, shape, etc. All objects measured are shown in a spreadsheet in the order they were measured. Phase Analysis module is added with software. Optional Modules are Grain Size Intercept solution, Inclusion Worst Field and Particle Size Distribution.**ALONG WITH DESKTOP COMPUTER UPS & COLOUR PRINTER**Desktop Computer Specification:Branded Intel Core i5, OS: Windows 7 Professional, 64 bits. RAM: 4 GB Hard Drive: 500 GB or higher, Display and Graphics: 19″ square LED [Res. 1280x1024], 32 bits graphics card. Motherboard PCI slots – 2 no., PCI express Slot 1x & 2x and USB port [USB2] – 4‐6 nos | 01 |
| 09. | **Computerized Semi Automatic Micro hardness Tester with Manual Load selection****Technical Specifications*** **Test Load** 10 gf to 1000 gf ( With 10 Steps -10,20,50,80,100,200,300,400,500,1000)

 **OR** (With 12 steps –5,10,20,50,80,100,150,200,300,500,1000,2000)* **Dwell time** 5 - 99 Seconds.
* **Loading Mechanism** **Motorized loading and unloading. Selectable by LCD touch screen**
* **Load Selection Motorized by LCD touch Screen and Manual.**
* **Turret** For indenter and objective lens.
* **Indexing** **Motorized Rotating**
* **Objective** For scanning 10 x, Plan achromatic 0.25 NA

For measurement 40 x, Plan achromatic 0.6 NA* **Measurement** Digital Filler micrometer eyepiece

(10 X) with 0.025 Micron accuracy* **Max. Specimen dimn.** Height 65 mm, depth 85 mm.
* **Test table** 100 x 100 mm. Max movement 25 mm in Micrometer X-Y direction with

Micrometer head. | 01 |
| 10. | **0-100 mm Displacement Sensor (LVDT), Spring Loaded type with 3 meter long cable with digital indicator****Sensor Specification :**1. Range : 100µ to 100mm
2. Excitation : 1 Volt R.M.S .5k Hz Sinusoidal
3. Linearity deviation :±0.5% of full scale
4. Hysteresis :±0.1% of full scale
5. Repeatability : ±0.1% of full scale
6. Operating temp :10ºC to 50ºC

**Digital Displacement Indicator (Resolution ; 0.1 mm)** **Displacement Indicator Specification :**1. Display : 3 ½ /4 ½ digit LED display / LCD display
2. Resolution : One part in 1.999/19.999
3. Accuracy : Within+/-0.1% FSR+/-1 count
4. Input : From Displacement Sensor
5. No of Input Channels : One/ Five/ Ten
6. Input connection :Thro 5 pin MS connector
7. Sensor Excitation :1volt R.M.S 5kHz Sinusoidal
8. Zero Adjustment : By panel mounted multitum pot .control
9. Voltage Output :0-10 VDC for full scale of sensor with 1K ohm source resistance
10. Over range Indication : For readings in excess of 1.999/19.999 , display indicates OFL
11. Polarity Indication ; Automatic + for Core-in for Core out
12. Calibration Unit : User defined
13. Operating Temp : +10deg.C to+45 deg.C
14. Power Supply : 230V±10%, 50Hz, AC mains
 | 01 |
| 11. | **MICRO BALANCE**

|  |
| --- |
| **TECHNICAL SPECIFICATIONS :**  |

1. Maximum capacity: 6.1 g
2. Readability: 0.001 mg
3. Repeatability – at nominal load: 0.0008 mg

 – at low load (measured at): 0.0006 mg (0.2 g)1. Linearity: 0.004 mg
2. Eccentric load deviation (test load): 0.005 mg (2 g)
3. Sensitivity offset: 0.7 x 10–6
4. Sensitivity temperature drift: 0.0001%/°C
5. Sensitivity stability: 0.0001%/a
6. Repeatability (sd): 0.0004 mg+3 x (10–8)·R\_gr
7. Differential linearity deviation (sd): √1.5 x (10–13) g·R\_nt
8. Differential eccentric load deviation (sd): 5 x (10–7)·R\_nt
9. Sensitivity offset (sd)2: 1.5 x (10–6)·R\_nt
10. Minimum weight\* (according to USP): 1.2 mg+9 x (10–5)·R\_gr
11. Minimum weight\* (@ U = 1%, 2 sd): 0.08 mg+6 x (10–6)·R\_gr
12. Settling time: < 8 s
13. Fully automatic time- and temperature-controlled internal adjustment and linearization.
14. Easy to clean, motor-driven draft shield
15. Two IR sensors for hands-free operation
16. In-built RS232C, two auxiliary interfaces for connecting a keyboard or additional IR sensor for hands-free operation
17. Slot for a second optional interface such as Local CAN, Ethernet, RS232, USB, MiniMettler, Bluetooth, PS/2
 | 01 |
| 12. | **Data Logging Dual Channel Digital thermometer** **Technical Specification:*** The thermometer should provide digital precision & reliability for temperature measurement.
* The thermometer should have a working range of 10 to 40 deg C and a resolution of 0.001deg C
* Should be equipped with a serial RS-232C interface.
* These thermometers should use high capacity lithium batteries which provide approximately 200 hours of operation
 | 01 |
| 13. |  **COMPUTERISED AIR BLOWER TEST RIG****Technical Specifications:**1. Centrifugal blower: Discharge - 1500 CFM (Max.), Max. Pressure - 4 in of WC2.Electric Motor: 1 hp, 2800 RPM with Speed controller (Variable Frequency Drive)3.Digital Voltmeter: 0 - 1000 V DC4.Digital Ammeter: 0 - 10 A DC5.Inductive Sensor & RPM Indicator: 0-9999RPM6.Digital indicator for measuring Suction and Discharge pressure7.Variable Frequency drive for varying the motor speed8.Butterfly valve or gate valve | 01 |
| 14. | **Computerized Two Stage Reciprocating Air Compressor Test Rig****Technical Specifications:**1. Air Compressor
2. 2 HP Twin Cylinder,
3. Two Stage Reciprocating Air Compressor mounted on air receiver tank with air relief and air delivery valve
4. **Motor :** 2 HP Three Phase AC
5. **Data Acquisition System :** High Speed DAC with 1 mega samples/sec
6. **Software:** Air Compressor Test Express.
7. **Sensors:**

Cylinder Pressure Sensor : Piezeo-Resistive 0-100 BarCrank angle : Rotary 360 PPRAir Measurement : DP SensorPower Consumption : Voltage and Current TransducerTemperature: “k” Type with inline signal conditioner located at inlet and Outlet of compressor | 01 |
| 15. | **ASTM D 97 - NTE 450AUTOMATIC CLOUD AND POUR POINT APPARATUS****Allows the automatic determination of Cloud and Pour point,****Equivalent to ASTM D97 & D2500, IP 15 & IP 219, ISO 3015 & 3016.** **Technical Specifications:**1. Mimics the standard manual methods2. Possibility to run Pour Point, Cloud Point or both methods with the same sample3. Visualisation of the different cooling steps4. Possibility to use a programmed linear cooling slope5. Quick fixation on measuring head6. Easy access to maintenance parameters by software7. Easy access to hardware maintenance 8. CLOUD POINT Detection by optical fiber & POUR POINT Detection by ultrasonic sensor9. **SOFTWARE:**a. Computer interface through a user friendly software accessible by touch screenb. 15 program Files : 5 standards and 10 for usersc. Connection of external PC by Ethernet cabled. Storage of 200 results e. Stand alone or network multiple 10. **SCOPE OF DELIVERY:**a. Printer, b. cloud and Pour point tube, c. Instruction manual. d. Chiller e. tlc30_250Cryostat / 6,5liters (temperature range : -81°C...+100°C ) 230V - 50/60Hzf. Stainless steel probe for Pour Pointg. Stainless steel probe for Cloud Pointh. Optical Fibre for Cloud point detectioni. Ultra sonic sensor for Pour Point detectionj. Stylet for touch screenk. Test tube for Pour Pointl. Test tube with glass mirror for Cloud and Pour Pointm. Test tube with platinium mirror for Cloud and Pour Pointn. Roll of Seiko DPU 414 printer papero. Cloud point (diesel) - 250 ml flaskp. Pour point (diesel) - 250 ml flask | 01 |
| 16. | **CARBON SULPHUR ANALYZER**1. Carbon and sulphur analyzer to analyze the amount ofcarbon and sulphur present in industrial materials suchas metals, alloys, oxides etc.2. Measuring ranges on standard sample weight: (Specified range is minimum requirement, better isacceptable): Carbon: ~ 0.0001% to ~ 6% and Sulfur:~0001% to ~0.4%3.Standard Sample Weight: Up to 1 gm.4.Resolution (Minimum reading): 0.1 ppm or better5. Precision: 2 ppm or ~0.5% RSD or better for Carbonand 2 ppm or ~1.5% RSD or better for Sulphur6. Detector: Independent separate solid state, real timeand simultaneous non-dispersive infra-red detector7. Oxidation facility: Facilities for complete oxidation of Carbon and Sulphur for accurate detection should be provided. Alternately, detector for CO to be provided for complete detection8. Furnace Type: High frequency (20 ±2 MHz orbetter), high power (~2 to ~2.5 kW or better)induction furnace with 5 year warranty for the oscillator9. Provision for extension of measuring range by necessary reducing of the sample weight.10. Spares and consumables should be provided along with the offer.11. Necessary carrier gas with required purity level and driving gas required should be mentioned.12. The equipment should be fully computer controlled with operation, data processing and maintenance check. A suitable laptop / desktop computer of latest version to be provided13.Calibration / validation: Standard certified reference sample for calibration / validation to be provided for both Carbon and Sulphur14. The necessary user friendly software with MS Excelcompatibility and capable of statistical data processing (mean, sd, coefficient of variation etc.) should be included in the offer15. Real time and simultaneous display of carbon and sulphur extraction curve by the software along with real time data of detector operation, pressure, flow rate etc.16. There should be sufficient (15 or more) measurement mode operable through the software along with sufficient memory for storage of previous measurement.17. The software should be capable of alarming the instrument malfunctioning, level of consumables and other necessary checks at the beginning and during operation of the device.18. System check should be possible with the software and there should be separate leak check function | 01 |