

Indian Institute of Technology TirupatiSettipalli, Renigunta Road
Tirupati 517506

Phone no: 0877 – 2500335

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Prof. T.S. Natarajan

Registrar i/c

Date: 08.01.2018**Public Tender No: IITT/MECH/08/2018/16** **Due Date: 02.02.2018 at 15.30 hrs.**

Dear Sir/Madam,

On behalf of the **Indian Institute of Technology TIRUPATI**, sealed quotations are invited in two part bid system for supply of following mechanical equipment for **setting up of Mechanical Engineering Lab at IIT Campus near Merlapaka Village, Venkatagiri Road, YERPEDU Mandalam, Chitoor District, Andhra Pradesh.**

1.0 High speed precision cutting machine, accessories and consumables.

Sl.No	Complete Description of Items (Specification Model, Catalog No.) Use separate Sheet if required	Quantity Required
01.	High speed precision cutting machine	1
02.	Table with automatic horizontal cut and cross feed	1
03.	Wheel fitting (suitable for machine arbour size)	1
04.	Recirculation tank	1
05.	Laser alignment aid	1
06.	Sample holder set for holding round section, flat, irregular shaped, V-shaped and small samples.	1set
07.	Clamping base for sample holder	1
08.	Dressing device for sharpening the cutting tool	1
09.	Sample collector	1
10.	Diamond cutting wheel	10
11.	Corundum cutting wheel	10
12.	Coolant with anti-rust protection	3 litres
13.	Corrosion protection spray	1 litre
14.	Any other accessories or consumables necessary (other than mentioned above) for the proper installation and commissioning of the high speed precision cutting machine as well as its hassle free functioning should also be quoted.	

2.0 Hot mounting press, accessories and consumables.

Sl.No	Complete Description of Items (Specification Model, Catalog No.) Use separate Sheet if required	Quantity Required
01.	Fully automatic hydraulic single cylinder mounting press suitable for preparation of mount size of 25 mm and 40 mm diameter.	1
02.	Mould assembly for 25 mm diameter mount	1
03.	Mould assembly for 40 mm diameter mount	1
04.	25mm diameter spacer for double mount	2
05.	40 mm diameter spacer for double mount	2
06.	Brass brush	3
07.	Funnel	3
08.	Dosing spoon	3
09.	Hot mounting powder Bakelite black	10 kg
10.	Silicon paste Or Anti-stick powder	300 ml Or 1 kg
12	Any other accessories or consumables necessary (other than mentioned above) for the proper installation and commissioning of the hot moulding press as well as its hassle free functioning should also be quoted.	

3.0 Manual double disc grinding and polishing machine, accessories and consumables.

Sl.No	Complete Description of Items (Specification Model, Catalog No.) Use separate Sheet if required	Quantity Required
01.	Double disc grinding and polishing machine	1
02.	250 mm diameter carrier wheel	2
03.	250 mm diameter working wheel	2
04.	250 mm diameter clamping ring	6
05.	250 mm diameter polishing cloth disc (magnetic)	2
06.	250 mm diameter Sic papers of 80, 120, 240, 400, 600 and 1000.	200 in No. for each grit paper
07.	250 mm diameter polishing cloth for medium, soft and hard materials used with diamond 9, 6, 3 and 1 μm .	50 in No.
08.	Diamond suspension (1, 3, 6, 9 μm)	3 litres each
09.	Alumina polishing abrasive suspension (1 and 0.3 μm)	3 litres each
10.	Colloidal alumina polishing abrasive suspension (0.04-0.06 μm)	2 litres
11	Any other accessories or consumables necessary (other than mentioned above) for the proper installation and commissioning of the manual double disc grinding and polishing machine as well as its hassle free functioning should also be quoted.	

4.0 Single disc automatic grinding and polishing machine, accessories and consumables.

Sl.No	Complete Description of Items (Specification Model, Catalog No.) Use separate Sheet if required	Quantity Required
01.	Single disc automatic grinding and polishing machine with polishing head	1
02.	Carrier wheel for 300 mm diameter working wheel	1
03.	300 mm diameter working wheel	1
04.	300 mm diameter magnetic foil	1
05.	300 m diameter polishing cloth carrier disc (magnetic)	1
06.	Dosing unit	1
07.	Bottle holder	1
08.	Bottle	4
09.	Sample holder for single pressure – to hold 6 samples of 25 mm and 40 mm diameter each.	1
10.	Distance rings to accommodate 25 mm and 40 mm diameter specimens in the sample holder.	6 for 25 mm; 6 for 40 mm
11.	Sample holder for un-mounted specimen for central force application	1
12.	Levelling plate (for sample holder of central pressure)	1
13.	300 mm diameter diamond grinding disc of grit 80-100, 320, 600, 1000, and 1200 along with the corresponding dressing stone.	2 for each grit
14.	300 mm diameter polishing cloth for medium, soft and hard materials used with diamond 9, 6, 3 and 1 μm)	20
15	Any other accessories or consumables necessary (other than mentioned above) for the proper installation and commissioning of the single disc automatic grinding and polishing machine as well as its hassle free functioning should also be quoted.	

The detailed specifications of the equipment are given in the Annexure “A” and the compliance statement of specifications as per format (Annexure “B”) enclosed must be filled in item wise and signed with seal. The deviations, if any from the tendered specifications should be clearly brought out in the statement. Technical literature/leaflet showing the compliance of the specification may also be attached with the quotation.

Please ensure that the specifications are basic essence of the product. It must be ensured that the offers must be strictly as per our specifications. At the same time it must be kept in mind that merely copying our specifications in the quotation shall not make the parties eligible for consideration of the quotation. A quotation has to be supported with original catalogue (not of photo copy) of the quoted model duly signed by the principals and the same must be sent along with the technical bid. The quoted model should not become obsolete for a minimum period of 5 years (this is for the availability of spares). Therefore the model quoted should invariably be highlighted in the leaflet/literature enclosed with the quotation. Non-

compliance of the above shall be treated as incomplete/ambiguous and the offer can be ignored without giving an opportunity for clarification/negotiation etc. to the bidder.

1. The eligibility criteria for participation in bid are mentioned below:

- 1.1 The Bidder must be an Original Equipment Manufacturer (OEM) or his Authorized Dealer/Authorized Distributor/ Channel Partner having a Direct Purchase and Support agreement with the OEM. In case, if the Bidder is a Dealer/ Distributor, a valid LETTER OF AUTHORIZATION from Original Equipment Manufacturer should be produced along the bid.
- 1.2 The quoted system and accessories must have been supplied and installed in any of the IIT's and IISC laboratories in the past three years. Proof of supply and its working condition in the supplied institutes is a mandatory and must be produced along with the bid document.
- 1.3 The bidder should be willing to arrange for a demonstration of the equipment offered at free of charge on mutually agreeable place and date prior to opening of price bids to ascertain their conformity with tendered specifications.
- 1.4 Vendor shall possess ISO 9000 certification for quality system implementation. Required evidence shall be provided along with offer.
- 1.5 The technical bid shall be evaluated for acceptability by the technical committee and may call the tenderers for discussion. If necessary, the committee may modify the technical specification to suit the requirement of IIT Tirupati. In such case the opportunity shall be given to the participating bidders for submitting the revised bid as per modified specifications, if any.
- 1.6 Bidder should be registered under GST Act with concerned State Sales Tax Authorities. The bidder should furnish along with the bid document, the relevant GST Registration Document and PAN / TAN copies.
- 1.7 Should submit three years Income Tax returns and GST/VAT/ CST returns filed.
- 1.8 The vendor should have a local office to cater sales and service support in India. Also the vendor should install and provide training on the quoted machine free of cost.
- 1.9 List of Present clientele to whom identical or similar equipment supplied in the preceding three years must be produced with contact addresses & telephone numbers.
- 1.10 Supplier should quote for the equipment including all accessories/ consumables/ services as per specification on a single responsibility basis.

Note:

The supplier should quote commercially proven model of equipment and/or control system. Prototypes are not acceptable.

The above mentioned basic eligibility conditions are broad guidelines for pre-qualification and the Director/Professor in-charge, IIT Tirupati hereby reserves the right to relax / alter / modify / add, any or all the conditions.

Pre-bid meeting: The pre-bid meeting is scheduled to be held on 17.01.2018 at 14.00 hours in the Academic Block, IIT Tirupati 517506. Non-attendance at the pre-bid meeting shall not be a cause for disqualification of a bidder. Bidders may avail the opportunity of pre-bid meeting to get first hand details of the proceedings in their own interest

Delivery schedule: The total equipment should be supplied within 2 months from the date of receipt of Purchase Order, and installation and commissioning should be completed within 20 days from the date of supply of equipment.

The interested bidders are advised to go through the conditions envisaged for eligible criteria for participation in the bidding

2. Instructions to the Bidder

- 2.1 **Preparation of Bids:** The bidders must ensure that bids are submitted in **two part bid system (i.e.) Technical bid and Financial bid in separate envelopes.**
- 2.2 **Techno-commercial bid:** The technical bid should consist of all technical details / brochures along with commercial terms and conditions super-scribed as TECHNICAL BID with Tender No. and date and time of closing and the bidder's name and address No prices should be included in technical bid.
- 2.3 **Financial (Price) bid:** This should indicate item-wise prices for the items with firm and fixed figures and words super-scribed with the Tender No. and date of closing of the Tender with name of supply/work and the bidder's Name and address. The price bid should not contain any conditional clauses. No price escalation for any reasons whatsoever is allowed. All prices should be given in Indian Rupees or USD or Euros only. The Indian bidders shall quote firm price fully in Indian currency only.
- 2.4 The technical and the financial bids duly signed by the bidders or their authorised signatories with name and seal should be put in separate cover and sealed. Both sealed covers should be put into a bigger cover duly super-scribed with PT No. and due date/time with name of supply /work. **Technical bids must either be spiral bound / stapled together. No loose sheets will be accepted. All pages must be numbered.**
- 2.5 **Submission of the tender:** The complete sealed bids in all respects shall be sent to the following address well in advance either by post or by courier so as to reach this office before the due date and time specified in the Schedule. The bids received after closing date and time shall not be considered.

*The Registrar I/C,
Indian Institute of Technology Tirupati,*

Renigunta Road,
Settipalli Post,
Tirupati-517 506, Andhra Pradesh

While submitting the bids, the bidders must sign all the tender documents as a token of accepting of tender documents as well as terms and conditions stipulated therein. Tender documents without signature of bidders or their authorised signatories will be treated as invalid bids.

No conditional offer or terms and conditions will be entertained by the institute and such bids will be treated as invalid.

2.6 The tender documents can be down loaded from IIT Tirupati web site:
<http://iittp.ac.in/tenders> on or after 10.01.2018

2.7 **Bid Security (EMD):** EMD either in the form of Bank Guarantee or Demand draft at 2% of the quoted value initially valid up-to 90 days drawn in favour of Indian Institute of Technology Tirupati payable at Tirupati must be sent along-with the technical bid only. The technical bid without EMD would be considered as UNSOLICITED and will be REJECTED. Photo/FAX copies of the Demand Draft/Banker's pay orders will not be accepted. No interest will be paid for the EMD and the EMD (Bid Security) will be refunded to the successful bidder on receipt of Performance Security (Security Deposit) and in case of unsuccessful bidders, the EMD will be refunded on finalisation of tender.

2.8 Bid security be forfeited without any intimation in such cases as below:-

- a) If a bidder withdraws its bid during the period of bid validity
- b) If a successful bidder fails to execute the awarded contract
- c) If a successful bidder fails to provide performance guarantee

2.9 Details of our Banker

Name of bank	State Bank of India
Address of bank branch	Settipalli Branch Renigunta Road, Tirupati
Bank Branch code	006677
IFS Code	SBIN0006677
Bank Account Number	35523338208

2.10 **Modifications to bid:** The bidder shall make no modifications to the bids after the closing date unless specifically requested by IIT Tirupati. In case certain clarifications are sought by institute after the opening of bid, then the reply of bidder should be restricted to the clarifications sought. Any bidder who modifies his bid having effect of altering the value of his offer after the closing date without specific reference by IIT Tirupati shall make him-self liable to be debarred from this tender and forfeit the bid security amount.

2.11 **Modifications of specification:** The supply to be made by the supplier under this purchase order can be modified or changed by the request from the IIT Tirupati provided that for such modifications or changes the parties shall first agree to

possible addition or deduction in cost, the delivery date and such other terms and conditions occasioned by or resulting from such modification or change. Such agreement shall be effected either by way of exchange of letters duly signed by authorised representatives of the parties or by signed change order form or by minutes of meeting signed by authorised representatives of the parties, which shall constitute the necessary amendments to the contract. Possible increase or decrease in the contact price shall be calculated in accordance with unit prices. The cost of such additional jobs should be reasonably fixed with reference to the quoted price for such or similar items.

- 2.12 **Opening of the tender:** The technical bids will be opened by the tender committee duly constituted in the presence of bidders or their authorised representatives on 02.02.2018 at 16.00 hours. **The technical bid without EMD will not be entertained and treated as invalid bid.** Then the bids will be evaluated by the Technical Evaluation Committee which will decide the suitability of the technical bids as per our requirement and terms and conditions. Once the technical evaluation is completed, the price Bids of only those bidders who are found technically acceptable will be opened in the presence of Authorized Representatives of such bidder(s), if any on a date and at a venue to be intimated by IIT Tirupati to the short listed bidders.
- 2.13 The bidder shall note that any unsolicited post-tender reduction by them would disqualify them from participating from the bidding and forfeit the security bid.
- 2.14 Incomplete bids are liable for rejection.
- 2.15 **Prices:** The price should be quoted on FOR: IIT, Tirupati. The bid should consist of basic price, P&F charges, freight, Installation and commissioning charges and applicable taxes.

The total landed cost will be calculated from the information provided by the bidder in their price bids. The bid conforming to the lowest cost would then be considered for award of contract.

- 2.16 **Annual Maintenance contract (AMC):** AMC charges for a period of three years should be quoted separately for the equipment where-ever applicable which come into force after expiry of warranty/guarantee periods. The quote should contain details about free replacement of spares/accessories/software during the currency of AMC and number of break down calls shall be attended and duration of time required for attending to emergency calls and details of essential spares which are to be supplied on chargeable basis also need to be mentioned in the quote. IIT Tirupati reserves the right to conclude AMC at appropriate time after expiry of warranty period depending upon the requirement.

IIT Tirupati reserves the right to split and award item-wise contract to the lowest bidder.

The custom duty if any applicable must be shown separately. It may be noted that IIT Tirupati is exempted from payment of custom duty and duty at concessional rate against duty exemption will be paid.

In case of import supply, the price should be quoted on EX-WORKS/FOB/CIP basis indicating the mode of shipment.

2.17 **Offer validity:** The offer must be valid for 90 days from the closing date in case of indigenous supply and 120 days in the case of imported supply. If the validity of offers for acceptance is less than 90 day /120 days as the case may be, the same will not be considered.

2.18 **IIT Tirupati** reserves the full right to accept / reject any tender or all tenderers at any stage without assigning any reason.

Yours sincerely,

Registrar, IIT Tirupati

3. **Important Commercial terms and conditions:**

- 3.1 The due date for the submission of the tender is 02.02.2018 at 15.30 hours.
- 3.2 **Late offer:** The offers received after the due date and time of closing will not be considered. The Institute shall not be responsible for the late receipt of Tender on account of Postal, Courier or any other delay.
- 3.3 **Performance Bank Guarantee:** Performance Bank guarantee for 5% of purchase order value should be produced in the form of B.G from the nationalised /scheduled Bank valid till the completion of warranty / guarantee period plus sixty days as claim period. Where-ever installation and commissioning is involved, the guarantee/warranty period shall be reckoned from the date of completion of installation/commission. Failure to render contracted service during the warranty/guarantee period by the contractor, the performance bank guarantee will be forfeited. No interest is payable on the performance Bank guarantee amount.
- 3.4 **Inspection Clause:** All major mechanical equipment will be inspected by a team of IIT Tirupati at Supplier's premises and after clearance in the form of report, the items shall be despatched to IIT Tirupati. Readiness of equipment shall need to be intimated well in advance for our inspection formalities.
- 3.5 **Delivery Schedule:** Please note that delivery is the essence of the contract. In case there is any deviation in the delivery schedule, liquidated damages clause will be levied for the delayed supply period. Therefore, it should be ensured that all the ordered items should be supplied within 2 months from the date of receipt of Purchase Order on door delivery basis at our Institute as per Purchase order terms securely and sufficiently packed by following standard packing procedure to withstand transit damages. In case of import supply, the item should be delivered at the cost of supplier to our institution. The installation and commissioning should be completed as specified in our important terms and conditions.
- 3.6 **Extension of time:** If the completion of stores is delayed due to reason of force majeure such as acts of God, acts of public enemy, acts of Government, fires, floods, epidemics, quarantine restriction, strikes etc., the contractor shall give notice within 15 days to Institute in writing of his claim for an extension of time. The Institute on receipt of such notice after verification, if necessary, may agree to extend the Contract delivery date as may be reasonable but without prejudice to other terms and conditions of the contract.
- 3.7 **Liquidated damages:** If the Contractor fails to deliver the material within the time specified in the Contract or any extension thereof, the Institute shall recover from the Contractor as Liquidated Damages a sum of one-half of one per cent (0.5 per cent) of the Contract Price of the undelivered material for each calendar week of delay. The total liquidated damages shall not exceed ten per cent (10%) of the Contract price of the unit or units so delayed. Stores will be deemed to have been delivered only when all their component parts are also delivered.
- 3.8 **Guarantee/Warranty:** The Contractor shall guarantee that the material supplied shall comply fully with the specifications laid down, for material, workmanship and

performance after acceptance of the material. The tenderer should clearly mention in the bid the period of guarantee/warranty offered by him. If any defects are discovered therein or any defects therein found to have developed under proper use arising from faulty stores design or workmanship, the Contractor shall remedy / replace such defective items at his own cost.

The Bidder should clearly categorize the Basic/Standard features as well as optional features of the system in order to have a clear cost comparison. Essential spares if any for maintenance to be quoted separately. The bidder should ensure continued supply of spares throughout the useful life of the equipment.

3.9 Insurance: IIT Tirupati being a Central autonomous body under Ministry of HRD, Government of India, we will not insure our goods. However, to safe guard the ordered material from probable transit damage while in transportation the contractor may insure the goods at his risk and cost.

3.10 Payment terms: No Advance payment will be made for Indigenous purchase. Our normal payment terms are 100% within 30 days after receipt of complete supply at our site and acceptance. However in case of high value Purchase Orders, as a special case, payment of 90% of Order value will be made based on pre-inspection of material at supplier's site and also on receipt of goods at our site and clearance by inspection team. Balance 10% of PO value after completion of installation, inspection and acceptance formalities. For making payment original tax invoice in triplicate, delivery challan's, material test certificate, pre-inspection of material at factory, guarantee/warranty certificates must be sent along with material.

In case of import supplies, our normal terms of payment are by Sight Draft. However, other terms of payment such as Letter of Credit also considered as agreed upon by opening LC for 100% in which case 90% payment will be released against proof of shipping documents and balance 10% after successful installation wherever the installation is involved/on receipt and acceptance of materials at our site.

3.11 Advance Payment: No advance payment to indigenous supplies will be made. However in case of import goods, specific percentage of advance payment will be agreed upon for which, the foreign vendor has to submit a bank guarantee equal to the amount of advance payment and it should be routed through the beneficiary bank to the end user bank. Otherwise, the Indian agent of the foreign vendor has to submit a bank guarantee through a nationalized bank of India.

If an Indian agent is involved, the following documents must be enclosed:

Foreign principal's proforma invoice indicating the commission payable to the Indian Agent and nature of after-sales service to be rendered by the Indian agent.

Copy of the agency agreement concluded with the foreign principal and the precise relationship between them and their mutual interest in the business.

The enlistment of Indian agent with Director General of Supplies & Disposals under the Compulsory Registration Scheme of Ministry of Finance.

- 3.12 **Agency Commission:** Agency commission, if any, will be paid to the Indian agents in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in tender even in the case of 'Nil' commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent. The foreign principal should indicate about the percentage of payment and it should be included in the originally quoted basic price, if any.
- 3.13 **On-site erection and commissioning:** It is the responsibility of the Contractor to install and commission the equipment or machinery supplied by them within 15 - 20 days from the date of receipt of the item at site of IIT Tirupati and demonstrate the performance of the system to the satisfaction of the users/concerned faculty members/committee in-charge at IIT Tirupati. In case the Contractor fails to carry out the erection as and when called upon to do so within the specified period by the Institute, the Institute shall have the right to get the erection work done through any source of his choice. In such an event, the Contractor shall be liable to bear any additional expenditure that the Institute is liable to incur towards erection.
- 3.14 **Training of end user:** The successful bidder shall provide comprehensive training at IIT Tirupati to IIT personnel on operation, programming, and maintenance at free of cost on all the items installed to the satisfaction of the IIT personnel. The expenses related to travel (to and fro) including local travel, stay, food and per diem and training have to be completely borne by the vendor.
- 3.15 **Do not quote the optional items or additional items unless otherwise mentioned in the tender documents / specifications.**

ARBITRATION CLAUSE: Arbitration in the event of any dispute or difference arising under these terms & conditions or any Condition contained in the Purchase Order or in connection with this contract (except as to any matter the decision of which is specially provided for by these conditions), the same shall be referred to the sole arbitration of the Registrar, IIT Tirupati or of some other person appointed by him, and the dispute further processed in terms of the Arbitration & Conciliation Act ,1996. There will be no objection that the arbitrator is a government servant that he deal with matter which the contract relates to or that in the course of his duties as government servant has expressed views on all or any of the matters in dispute or difference. The award of the arbitrator shall be final and binding on the parties of this contract.

If the arbitrator is the Registrar, IIT, Tirupati

- i. In the event of his being transferred or vacating his office by resignation or otherwise, it shall be lawful for his successor in office either to proceed with the reference himself for to appoint another person as arbitrator, or
- ii. In the event of his being unwilling or unable to act for any reason, it shall be lawful for the Registrar, IIT Tirupati to appoint another person as arbitrator.

If the arbitrator is a person appointed by the Registrar, IIT Tirupati – In the event of his denying or neglecting or refusing to act, or resigning or being unable to act, for any

reason, shall be lawful for the Registrar, IIT Tirupati to proceed with the reference himself or to appoint another person as arbitrator in place of the outgoing arbitrator subject, as aforesaid, to the Arbitration & Conciliation Act, 1996, and the rules thereunder and any statutory modifications thereof for the time being in force shall be deemed to apply to the arbitration proceeding under the clause. The Arbitrator shall have the power to extend with the consent of the purchaser and the contractor the time for making and publishing the award. The venue of Arbitration shall be the place as the purchaser in his absolute discretion may determine work under the Contract shall, if reasonably possible, continue during Arbitration Proceedings.

All amendments, time extension, clarifications etc., if any will be uploaded in the website only and will not be published in newspapers. Bidders should regularly visit the above website to keep themselves updated. No extension in the bid due date/ time shall be considered on account of delay in receipt of any document by mail.

3.16 Acknowledgement: It is hereby acknowledged that the tenderer has gone through all the conditions mentioned above and agrees to abide by them.

**SIGNATURE OF TENDERER
ALONG WITH SEAL OF THE
COMPANY WITH DATE**

Annexure A- Specifications for metallography lab equipment

01. High speed precision cutting machine

Scope: Machine should be able to cut ferrous and non-ferrous, refractory and ceramic samples at high precision.
Specifications:
Cutting wheel size: diameter of 75-200 mm or more
Maximum cutting capacity: 75 mm diameter or more.
Arbour size: 12.0 mm or more.
Feed speed can be pre-set and controlled in the range of 0.005 to 3.0 mm/s.
Rotational speed of the cut-off wheel: variable 300-5000 rpm, in steps of 100 rpm. It shall have programmable cutting length with auto shut-off.
The system should have the capability to automatically reduce the feed speed to approximate value, in case of motor overload due to high feed speed. As soon as the load on the motor is reduced again, the feed speed should get increase to the pre-set level automatically.
The load on the cutting motor should be displayed throughout the process on the display of the control panel.
Automatic horizontal movement: 210 mm or more.
Automatic cross feed: 80 mm or more.
Automatic vertical cut-off: 80 mm or more.
Precision: 0.001 mm or better.
Electronic control: all the parameters should be controlled by touchpad/ joystick/ turn knob.
Display: LCD display/ touch pad in English language
Cutting table material should be corrosion resistant.
After the start button has been pressed, the cover should get locked mechanically and must not get open until the cut-off wheel has stopped. There should be emergency stop switch on the machine.
Machine shall have interlock for locking hood during cutting operation.
Clear vision with naked eye of ongoing cutting process in the enclosed cutting chamber should be ensured.
The machine should have the provision for the coolant hand flush for washing of the debris obtained after cutting process.
LED lighting should be provided inside cutting chamber.
A recirculation cooling tank unit either internal/external with complete filter system should be provided
Accessories:
Table with automatic horizontal cut and cross feed of ranges 210 mm and 80 mm, respectively. The table also need to have T-slots (approx. 8 mm).
Sample holder set for holding round cross section sample, irregular shaped sample, for 'V' shaped sample, small sample and flange set. <ul style="list-style-type: none">• Jaw width – 35 mm or more• Jaw height – 25 mm or more• Clamping range – 100 mm or more• Any related accessories.• Clamping base for sample holders.
Dressing device for sharpening the cutting wheel – 1 in number.

Sample collector – 1 in number.
Laser alignment aid – 1 in number.
Any other required accessory or options should be quoted which will be required for the smooth operation of the machine.
Consumables:
Diamond cutting wheel of (150 x 0.5) suitable for the machine arbour size – 10 in number.
CBN or Corundum cutting wheel of (150 x 0.5) suitable for the machine arbour size – 10 in number.
Anti-corrosion coolant – 3 litres.
Corrosion protection spray – 1 litre.
Warranty:
Three year warranty for all the above mentioned items for the smooth and trouble free working after installation and commissioning.
Power supply:
220-240V, 50/60 Hz, 1 phase
CE certification
The machine should be CE certified.

02. Automatic hot mounting press

Scope: Automatic hot mounting press is used to encapsulate samples for metallographic preparation and shall incorporate single cylinder with a diameter of 25 mm and 40 mm in size.
Specifications:
A fully automatic hydraulic single cylinder mounting press suitable for preparation of mounts size of 25 mm and 40 mm diameter.
Automatic program cycle.
Easy to change mount assembly without any tools.
Closure system: Easy to operate.
Temperature range: up to 175 ⁰ C or more.
Heating time: variable / 0-30 minutes (approx.).
Cooling time: variable / 0-30 minutes (approx.).
Maximum pressure in mould assembly: up to 250 bar or more.
Sensor for detecting if mould cover is closed. Interlocking sensors for start and end of mounting process.
Should have built in alarm for knowing that the mount is ready.
Display: LCD display in English.
Control panel: Touch pad/ button/ touch screen.
Accessories:
Mount assembly of 25 mm and 40 mm: 1 number each.
25 mm and 40 mm diameter spacer for double mount: 2 number each.
Brass brush: 3 in number.
Funnel: 3 in number.
Dosing spoon: 3 in number.
Any other optional accessories for the smooth operation of the machine to be quoted separately.
Consumables:
Black Bakelite hot mounting powder: 10 kg.
Silicon paste – 300 ml or anti stick powder – 1 kg.
And any other consumables (other than mentioned above) required for the preparation of

mount.
Warranty:
Three year warranty for all the above mentioned items for the smooth and trouble free working after installation and commissioning.
Power supply:
220-240V, 50/60 Hz, 1 phase.
CE certification
The machine should be CE certified.

03. Manual double disc grinding and polishing machine

Scope: Grinder and polisher is used to grind and polish different materials of various sizes.
Specifications:
Should have a double disc with single/independent motor drives with variable speed control.
Diameter of the disc: 250 mm.
Speed: Variable speed from 50 to 500 rpm or better.
Splash guard
Cover: Required to cover the equipment when not in use.
Basin rinsing.
Power supply: 220-240 V, 50-60 Hz, single phase.
Accessories:
250 mm diameter carrier wheel: 2 in number.
250 mm diameter working wheel: 2 in number.
250 mm diameter clamping ring: 6 in number.
250 mm diameter polishing cloth carrier disc (magnetic): 2 in number.
Consumables:
250 mm diameter Sic papers of grit 80, 120, 240, 400, 600 & 1000 – each grit paper should be supplied in 200 in number.
Polishing cloths of 250 mm diameter for medium, soft and hard material used with diamond suspension 9, 6, 3 and 1 µm: 50 in number.
Diamond suspension (1, 3, 6, 9 µm): 3.0 litres each.
Alumina polishing abrasive suspension (1 and 0.3 µm): 3.0 litres each.
Colloidal alumina polishing abrasive suspension (0.04 – 0.06 µm): 2.0 litres.
Any other required accessories/ consumables to be quoted for the smooth operation of the machine.
Warranty:
Three year warranty for all the above mentioned items for the smooth and trouble free working after installation and commissioning.
Power supply:
220-240V, 50/60 Hz, 1 phase.
CE certification
The machine should be CE certified.

04. Single disc automatic grinding and polishing machine

Scope: Automatic grinder and polisher is used to grind and polish different materials of various sizes automatically.
Specifications:
Type: Single disc machine.

Diameter of the disc: 300 mm.
Speed: Variable speed from 50 to 600 rpm or better.
The machine should have an electronic control with touch display and all the parameters such as rotational speed, force on the samples, rotational direction etc., should be possible to set and operate.
The machine should have integrated basin rinsing with cleaning and cooling functions.
Water tap should be automatically controlled through solenoid valve.
There should be a transparent protection cover, when the sample preparation takes place for safety of the operator.
Controlled material removal rate is not necessary.
Emergency stop button, should be placed in front and with easiest access for immediate stopping of all moving parts in case of an emergency.
Specifications for sample polishing head:
Suitable for 6 mounted specimens of 25 and 40 mm diameters.
The preparation should be possible with mounted and un-mounted specimens with suitable specimen holders. It should be easily possible to select between two possibilities to run the required method.
Force/ single specimen: The force should be applied individually on each sample.
Central force/ specimen holder: The force should be applied centrally on the specimen holder.
Variable speed: 50 to 150 rpm or better.
Clockwise/ counter-clockwise rotation.
The sample preparation working area to be illuminated by energy saving LEDs.
Specifications for automatic dosing unit:
A complete automatic dosing unit which should have integrated dosing nozzles and controlled by touch display and memory function.
There should be a provision to have dosing lines for four different diamond suspensions, one lubricant and one oxide suspension.
The machine should have in-built feature to inform level of suspension or lubricant in bottle.
Accessories:
Carrier wheel for 300 mm diameter working wheel: 1 in number.
300 mm diameter working wheel: 1 in number.
Magnetic foil, to apply on working wheel: 1 in number.
Polishing cloth carrier disc (magnetic) of diameter 300 – 1 in number.
Bottles of 500 ml capacity: 4 in number.
Bottle holder: 1 in number.
Sample holder for single pressure: 1 in number. <ul style="list-style-type: none"> • Samples to hold simultaneously: 6 or more • Sample diameter: 25 and 40 mm • Individual pressure on each sample • Holder should be made of corrosion resistant material.
Distance rings suitable to accommodate 25 mm and 40 mm diameter mounts in the specimen holder: 6 each.
A suitable sample holder for un-mounted specimen for central force application: 1 in number <ul style="list-style-type: none"> • Samples: 6 or more • Sample diameter: 20-50 mm • Capable to hold non-round samples. • Holder should be made of corrosion resistant material.
Levelling plate (for samples holder of central pressure): 1 in number.

Disc cabinet – 1 in number <ul style="list-style-type: none"> • Should accommodate the wheel size of maximum 300 mm diameter. • Extendable drawers: 5 or more.
Consumables:
<ul style="list-style-type: none"> • Suitable magnetic base diamond grinding disc of 300 mm diameter and grit: 80-100, 320, 600, 1000 and 1200 along with the corresponding dressing stones. <ul style="list-style-type: none"> - 80-100 grit: 2 in number - 320 grit: 2 in number - 600 grit: 2 in number - 1000 grit: 2 in number - 1200 grit: 2 in number • Suitable polishing magnetic base cloth of diameter 300 mm for all the material for pre and final polishing of diamond 9, 6, 3 and 1 µm and oxide suspensions <ul style="list-style-type: none"> - Suitable for 9 and 6 µm: 5 in number - Suitable for 6 and 3 µm: 5 in number - Suitable for 3 and 1 µm: 5 in number - Suitable for alumina suspension: 5 in number
Any other required accessories/ consumables to be quoted for the smooth operation of the machine.
Warranty:
Three year warranty for all the above mentioned items for the smooth and trouble free working after installation and commissioning.
Power supply:
220-240V, 50/60 Hz, 1 phase.
CE certification
The machine should be CE certified.

Note:

- 1. All the above mentioned items should be supplied with accessories (additionally if needed other than mentioned above) for three years of normal operation together with a full three-year warranty.*
- 2. The above mentioned items should also be supplied with soft and hard copies of installation operation, experimental operating and maintenance manuals, which should be demonstrated at the time of installation.*
- 3. Standard tool kit shall be provided for general maintenance service for all the above mentioned products.*
- 4. Vendors need to submit the complete system pre-installation requirements.*

Annexure B – Compliance Statement of Technical Specifications

S.No.	Item description (specification of Item)	Compliance whether “YES” or “NO”	If No, then specify deviations explicitly
01.			
02.			
03.			