



DIRECTORATE OF TECHNICAL EDUCATION AND TRAINING, ODISHA (DTE&T)



Killa Maidan, Buxi Bazar, Cuttack-753001
Phone No-0671(2301061), Fax-0671(2301961)

NIT No.

Date:

File No: DTET-PROC-ET-0002-2025

REQUEST FOR PROPOSAL (RFP)

For

Supply, installation and commissioning of Mechanical equipment for different Govt. ITIs & Polytechnics/Engineering Schools of Odisha.

DTE&T under the administrative control of Skill Development & Technical Education Department, Government of Odisha (the Client) invites sealed proposals from the eligible bidders through e-tender process for “**Supply, installation and commissioning of mechanical equipment for different Govt. ITIs & Polytechnics/Engineering Schools of Odisha**”. Bidders fulfilling the prescribed eligibility criteria of the RFP can access and download the complete RFP Document and other details from www.dtet.odisha.gov.in/www.tendersodisha.gov.in.

The major events under the bid process are:

Sr. No.	List of Key Events	Critical Dates
1	Date of Issue of RFP	03.06.2026
2	Last date for submission of Pre-Bid Queries	08.06.2026 (by 02:00 PM)
3	Date of Pre-proposal Meeting	11.06.2026 (at 03.00 PM)
4	Due Date for Submission of Proposal	30.06.2026 (by 5:00 PM)
5	Date of Opening of Technical proposal	01.07.2026 (by 11:00 AM)
6	Date of Opening Financial Proposal	Through the e-tender portal to be intimated later by e-mail to the technically qualified bidders.
7	Method of Selection	Least Cost Selection (LCS)

The proposals complete in all respect must be submitted through e-tender process latest by **30.06.2026** before **5:00 PM** clearly mentioning ‘**Request for Proposal for supply, installation and commissioning of Mechanical equipment for different Govt. ITIs & Polytechnics/Engineering Schools of Odisha**’. The proposals received beyond the last date and time will be rejected without assigning any reason. Prospective bidders are advised to regularly visit the DTE&T Odisha website (www.dtet.odisha.gov.in/en/tenders) and e-procurement (Tenders Odisha) Portal <https://tendersodisha.gov.in> for any Updates/Corrigendum/Amendment. Any subsequent updates will be announced on the DTE&T Odisha website and e-procurement Odisha portal. The authority reserves all the rights to reject any/ all proposals at any stage without assigning any reason thereof.

Sd/-
Director
DTE&T, Odisha

Memo No.

Date:

- Copy to e-Governance Cell, SD&TE Department, Government of Odisha for publication in the website of the Department for wide publicity.
- Copy to Smt. Kalpana Panigrahi, I/c S&B Section, for publication in the Website and Notice Board of DTE&T without delay for wide publicity.

Sd/-
Director
DTE&T, Odisha



REQUEST FOR PROPOSAL
FOR
SUPPLY, INSTALLATION, & COMMISSIONING OF
MECHANICAL EQUIPMENT FOR DIFFERENT GOVT.
ITIS & POLYTECHNICS/ENGINEERING SCHOOLS OF
ODISHA

Directorate of Technical Education and Training, Odisha
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Disclaimer

The information contained in this Request for Proposal (herein after referred to either “RFP”) document or subsequently provided to the Bidders, whether verbally or in documentary or any other form by or on behalf of the Directorate of technical Education and Training, Odisha herein after referred to as DTE&T, or any of their employees or advisors, is provided to the Bidder(s) on the terms and conditions set out in this RFP document and all other terms and conditions subject to which such information is provided.

DTE&T reserves the right to reject any or all of the proposals submitted in response to this RFP document at any stage without assigning any reasons whatsoever. DTE&T, ODISHA also reserves the right to withhold or withdraw the process at any stage with intimation to all who submitted the RFP document response. DTE&T, ODISHA reserves the right to change/ modify/amend any or all of the provisions of this RFP document. Such changes would be posted only in its website (www.dtetodisha.gov.in). Prospective bidders are requested to visit the website frequently to keep them abreast with the latest developments on this tender.

This is not an agreement and is not an offer or invitation to enter into an agreement of any kind with any party. The purpose of this RFP is to provide interested parties with information that may be useful to them in making their technical & financial offers (Bids) pursuant to this RFP. This RFP includes statements, which reflect various assumptions and assessments arrived at by the DTE&T, ODISHA in relation to the Project. Such assumptions, assessments and statements do not purport to contain all the information that each Bidder may require. This RFP document may not be appropriate for all persons, and it is not possible for the DTE&T, ODISHA, their employees or advisors to consider the business/investment objectives, financial situation and particular needs of each Bidder who reads or uses this RFP document.

The assumptions, assessments, statements and information contained in this RFP may not be complete, accurate, adequate or correct. Each Bidder should conduct its own investigations and analysis and should check the accuracy, reliability and completeness of the information in this RFP document and wherever necessary obtain independent advice from appropriate sources. DTE&T, ODISHA, their employees and advisors make no representation nor warranty and shall incur no liability under any law, statute, rules or regulations as to the accuracy, reliability or completeness of the RFP document.

1. FACT SHEET

Sl. No.	Particular	Details
1.	Name of the Client	Director, Directorate of Technical Education and Training (DTE&T) under the administrative control of Skill Development & Technical Education Department, Government of Odisha.
2.	Method of Selection	Least Cost Selection (LCS)
3.	Mode of Submission	Online (e-tender) www.tendersodisha.gov.in
4.	Date of Issue of RFP(e-tender)	03.06.2026
5.	Deadline for Submission of Pre-Proposal Query	08.06.2026 (by 2:00 PM) (Through email to: dtetodisha.procurement@gmail.com)
6.	Date of Pre-Proposal Meeting	11.06.2026 (at 03.00 PM) (Through Hybrid Mode)
7.	Due date for submission of proposals	30.06.2026 (by 5:00 PM) (www.tendersodisha.gov.in)
8.	Date of opening of Technical Proposal	01.07.2026 (at 11:00 AM)
9.	Date of Technical Presentation	To be informed to the technically qualified bidders later
10.	Date of Opening of Financial Proposal	Through the e-tender portal to be intimated later by e-ma to the technically qualified bidders
11.	Bid Processing Fee (Non-Refundable)	Rs. 10,000/- + GST: 18 % = Rs. 11,800/- (through Online mode).
12.	Earnest Money Deposit (EMD) (Refundable)	Rs.50,00,000/- (Rupees Fifty Lakhs only) valid for minimum 225 days from last date of bid submission (through Online mode)
13.	Performance Security	The selected Bidder shall furnish 5% of the Contract value in shape of Bank Guarantee/e-Bank Guarantee in favour of “DTE&T Odisha” from any scheduled commercial bank.
14.	Address of the Client:	Director, Directorate of Technical Education and Training (DTE&T) Odisha, Killa Maidan, Buxi Bazar, Cuttack, Pin Code: 753001 E-mail: dtetorissa@gmail.com ; & dtetodisha.procurement@gmail.com Contact person: 1. Smt. Rinata Das, Joint Director (Procurement), DTE&T Odisha, Mob. 9861132851

NOTE:

- Amendments/Corrigendum(a) to the RFP document, if any, would be published on the website of DTE&T Odisha and Odisha e-Procurement portal only. Please visit the website: www.dtet.odisha.gov.in/www.tendersodisha.gov.in regularly for the same.
- A bidder may submit their both technical and commercial proposals after fulfilling the minimum eligibility criteria mentioned in Section 4.
- Proposals must be submitted before the date, time and venue mentioned in the Factsheet through Online (e-tender) www.tendersodisha.gov.in. Proposals that are received after the deadline will not be considered.
- The Director, DTE&T reserves all the rights to cancel the Selection Process and reject any or all the proposals at any point of time.
- No contractual obligation whatsoever shall arise from the RFP document unless and until a formal contract is signed and executed between the Director, DTE&T and the Selected Bidder.
- The Director, DTE&T disclaims any factual or other errors in the RFP document (the onus is purely on each Bidder to verify such information) and the information provided therein are intended only to help the Bidder(s) to prepare a proposal in accordance with the terms and conditions as set out in this RFP document.
- **Exemption may be given to the local MSMEs/local Start-Ups (registered in Odisha) for submission of Tender Fee & EMD as per the Odisha Procurement Preference Policy for Micro and Small Manufacturing Enterprises-2023 (MSME Department Notification No. 566/MSME dated 24.01.2024) and Odisha General Finance Rules (OGFR) only after submission of proper documents as proof. An AFFIDAVIT may be submitted as per the TECH-11.**
- **Price Preference is not applicable in this tender.**
- Tender Fee and EMD exemption are not available to any Dealer/ Distributor/ Trader etc., who is not registered as a Manufacturer of similar category of Goods in Odisha.

2. E-TENDERING

Procedure for Participation in e-tendering

- 1) Web address of E-tendering website: [https:// www.tendersodisha.gov.in](https://www.tendersodisha.gov.in).
- 2) The Digital Signature enrollment has to be done with the e-token, after logging into the portal. The e-token may be obtained eMudhraCA/GNFC/IDRBT/MtnlTrustline/SafeScript/TCS.
- 3) Bidder then logs into the portal giving user id / password chosen during enrolment.
- 4) The e-token that is registered should be used by the bidder and should not be misused by others.
- 5) DSC once mapped to an account cannot remap to any other account. It can only be inactivated.
- 6) The Bidders can update well in advance, the documents such as certificates, purchase order details etc., under My Documents option and these can be selected as per tender requirements and then attached along with bid documents during bid submission. This will ensure lesser upload of bid documents.
- 7) After downloading / getting the tender schedules, the Bidder should go through them carefully and then submit the documents as per the tender document; otherwise, the bid will be rejected.
- 8) The BOQ template must not be modified/replaced by the bidder and the same should be uploaded after filling the relevant columns, else the bidder is liable to be rejected for that tender. Bidders are allowed to enter the Bidder Name and Values only.
- 9) If there are any clarifications, this may be obtained online through the eProcurement Portal, or through the contact details given in the tender document. Bidder should take into account of the corrigendum published before submitting the bids online.
- 10) Bidder, in advance, should prepare the bid documents to be submitted as indicated in the tender schedule and they should be in PDF formats. If there is more than one document, they can be clubbed together.
- 11) Bidder should arrange for the EMD as specified in the tender.
- 12) The bidder reads the terms and conditions and accepts the same to proceed further to submit the bids
- 13) The bidder has to submit the tender document(s) online well in advance before the prescribed time to avoid any delay or problem during the bid submission process.
- 14) There is no limit on the size of the file uploaded at the server end. However, the upload is decided on the Memory available at the Client's System as well as the Network bandwidth available at the Client side at that point of time. In order to reduce the file size, bidders are suggested to scan the documents in 75- 100 DPI so that the clarity is maintained and also the size of file also gets reduced. This will help in quick uploading even at very low bandwidth speeds.
- 15) It is important to note that, the bidder has to Click on the Freeze Bid Button, to ensure that he/she completes the Bid Submission Process. Bids which are not Frozen are considered as Incomplete/Invalid bids and are not considered for evaluation purposes.
- 16) The Tender Inviting Authority (TIA) will not be held responsible for any sort of delay, or the difficulties faced during the submission of bids online by the bidders due to local issues.

- 17) The bidder may submit the bid documents online mode only, through this portal. Offline documents will not be handled through this system.
- 18) At the time of freezing the bid, the eProcurement system will give a successful bid updating message after uploading all the bid documents submitted and then a bid summary will be shown with the bid no, date & time of submission of the bid with all other relevant details. The documents submitted by the bidders will be digitally signed using the e-token of the bidder and then submitted.
- 19) After the bid submission, the bid summary has to be printed and kept as an acknowledgement as a token of the
- 20) The bid summary will act as proof of bid submission for a tender floated and will also act as an entry point to participate in the bid opening event.
- 21) Successful bid submission from the system means, the bids as uploaded by the bidder is received and stored in the system.
- 22) System does not certify for its correctness.
- 23) The bidder should see that the bid documents submitted should be free from virus and if the documents could not be opened, due to virus, during tender opening, the bid is liable to be rejected
- 24) The time that is displayed from the server clock at the top of the tender Portal, will be valid for all actions of requesting bid submission, bid opening etc., in the e-Procurement portal. The Time followed in this portal is as per Indian Standard Time (IST) which is GMT+5:30. The bidders should adhere to this time during bid submission.
- 25) All the data being entered by the bidders would be encrypted at the client end and the software uses PKI encryption techniques to ensure the secrecy of the data. The data entered will not be viewable by unauthorized persons during bid submission and not viewable by anyone until the time of bid opening. Overall, the submitted bid documents become readable only after the tender opening by the authorized individual transferred over secured Socket Layer (SSL) with 256-bit encryption technology. Data encryption of sensitive fields is also done.
- 26) The bidders are requested to submit the bids through online eProcurement system to the TIA well before bid submission end date and time (as per Server System Clock).

3. SECTION I: Letter of Invitation

RFP No: DTET/2025-26/16934/04

Date: 23/12/2025

Name of the Assignment: “RFP for supply, installation and commissioning of Mechanical equipment for different Govt. ITIs & Polytechnics/Engineering Schools of Odisha”.

1. DTE&T under the administrative control of Skill Development & Technical Education Department, Government of Odisha (The Client) invites online Bids (both Technical & Financial) from the Original Equipment Manufacturer (OEM) or authorised Technology Partner/Channel Partner for **“Supply, installation and commissioning of Mechanical equipment for different Govt. ITIs & Polytechnics/Engineering Schools of Odisha”**. More details on the proposed assignment are provided at **Section-3: Terms of Reference (ToR)** of this bid document.
2. Bidder will be selected under **Least Cost Selection (LCS) method** as prescribed in the RFP Document.
3. The proposal, complete in all respect as specified in the RFP document must be accompanied with a **Non-refundable** amount of **Rs. 10,000/- + Rs. 1800 (GST @18%) = Rs. 11,800 (Rupees Eleven Thousand Eight Hundred)** towards **Tender Processing Fee** and a **refundable amount of Rs.50,00,000/- (Rupees Fifty Lakhs only)** towards **EMD**, failing which the bid will be rejected.
4. The last date and time for submission of Bid complete in all respects is mentioned as per the data sheet in www.tendersodisha.gov.in and the date of opening of the technical proposal, Technical Presentation & financial bid in the presence of the bidder’s representative at the specified address as mentioned in the Bidder Data Sheet. Representative of the bidder may attend the meeting with due authorization letter on behalf of the bidder.
5. This RFP includes following sections:
 - a. Letter of Invitation [Section – I]
 - b. Information to the Bidder [Section – II]
 - c. Terms of Reference [Section – III]
 - d. Technical Bid Submission Forms [Section – IV]
 - e. Financial Bid Submission Forms [Section –V]
 - f. Annexure [Section – VI]
6. While all information/data given in the RFP are accurate within the consideration of scope of the proposed assignment to the best of the Client’s knowledge, the Client holds no responsibility for accuracy of information and it is the responsibility of the bidder to check the validity of information/specifications/narrations included in this document. No claim whatsoever shall be admissible for the alleged loss/damage suffered by the bidders on account of such rejection. In case of any dispute/ ambiguity arising in the process relating to documents, the decision of the Tender calling authority shall be final, binding and cannot be challenged.
7. **The Client reserves the right to accept / modify/ reject any/all Bids / cancel the complete tender or part of it at any stage without assigning any reason thereof.**

Sd/-
Director
DTE&T Odisha

4. SECTION II: Information to the Bidders

4.1 Pre-Qualification/Eligibility Criteria:

Before opening and evaluation of the technical proposals, each bidder will be assessed based on the following pre-qualification criteria. The bidder is required to produce the copies of the required supportive documents / information as part of their technical proposal failing which the proposals will be rejected.

Sr. No.	Pre-Qualification Criteria	Specific Requirement	Documents Required
1	Legal Entity	The Bidder must be registered as either of the following: a. Company under Companies Act, 1956/2013 or b. Partnership Firm registered under the Indian Partnership Act, 1932 or c. Limited Liability Partnership registered under The Limited Liability Partnership Act, 2008 registered	Registration documents of the Bidder as a duly registered legal entity in India along with: • Registration document showing incorporation of the Bidder, • Certified copy of registered Partnership Deed, • PAN Card of the registered legal entity, • GST certificate of the registered legal entity (Form GST REG-06), • Any other supporting document, as may be required.
2	OEM or Authorised Technology/ Channel Partner	The bidder should be an original equipment manufacturer (OEM) or Authorised Channel Partner/Technology Partner of the OEM.	<ul style="list-style-type: none"> • For Original Equipment Manufacturer (OEM) - Copy of the manufacturing license, or • For the Authorized Channel Partner/ Technology Partner: An undertaking from the OEM is required stating that they would facilitate the Bidder on a regular basis with technology/product updates and extend support for the warranty as well and along with manufacturing license of OEM. (TECH-9)
3	Operation	The Bidder Firm should have been in operation in relevant field for the past 07 (seven) years as on the date of issue of RFP and filed ITRs for the last three FYs (i.e., FYs 2022-23, 2023-24 & 2024-25)	Audited Financial Statements for the last three financial years duly sealed & signed by a Chartered Accountant in practice, along with ITR for the said periods and the latest GST Return (GSTR-3B). Provisional Audit Report for any of the FYs will not be accepted.
4	Financial Capacity	The Bidder shall have an average annual turnover of at least Rs. 16.00 Crore over the last three Financial Years i.e., FY: 2022-23, 2023-24 & 2024-25. This must be the Bidder's turnover and not that of group companies/ organizations.	Audited financial statements/CA certified true copy stating the turnover. Financial Details of the bidder (TECH - 3) along with copies of last three FY's Audited Financial

			Statement duly sealed & signed by a Chartered Accountant in practice.
5	Net Worth	i) The net worth of the Bidder firm (manufacturer or authorized partner) should not be negative in 'FY 2024-25' and ii) also should have not eroded by more than 30% (thirty per cent) in the last three years, ending on '31 st Mar'2025'.	A Certificate duly sealed & signed by a Chartered Accountant in practice with Registration Number
6	ISO Certificate	The Technology Partner/Channel Partner or the OEM company should have ISO 9001, ISO 14001 & ISO 45001 certification.	Copy of valid ISO certificates of the agency/ the OEM must be submitted.
7	Past Experience		
7.1	Similar supply experience	The bidder, during last 03 (Three) financial years, must have the experience of supply and installation of similar category items/equipment with following minimum order value. i. Experience in execution of Single Work Order involving supply of similar category of items/equipment with minimum order value of Rs.16.00 Crore or above, Or ii. Experience in execution of at least 02 (Two) Work Orders involving supply of similar category of items/equipment with minimum order value of Rs.8.00 Crore or above, iii. Experience in execution of at least 05 (Two) Work Orders involving supply of similar category of items/equipment with minimum order value of Rs.6.00 Crore or above, at any Government or Private organization/ Government or Private Educational Institute/ Government or Private training institute/ any Industry.	Copies of Relevant Work Orders/Sanction Orders/ Contract or MOUs/MOAs containing value of the supplies/ Work Completion Certificate/ Successful Project Completion and Performance Certificate/Commissioning Certificates or equivalent documentary evidence from the client should be provided as proof (TECH-5)
8	Quality Certification	The bidder/vendor should have ISO/ISI Certification with every Machinery Test Certificate Mandatory as applicable.	Copy of valid ISO/ISI certificates along with Machinery Test Certificate as applicable.
9	Mandatory Documents	The bidder shall submit the Technical data in compliance with the technical specifications mentioned in the tender document (ToR).	Submission of product wise brochure & catalogues and relevant pages from the website with available technical data in compliance with the technical specifications mentioned in the ToR.
10	Blacklist	The Bidder shall not have been blacklisted by any Central / State Government Ministry in India or Public Sector Undertakings or any Government Agencies. Any Bidder that has been barred by the Central Government, any State Government, a statutory authority, or a	Notarized Undertaking by the Authorized Signatory (TECH-6)

		Public Sector Undertaking from participating in any project and the bar subsists as on the date of the Proposal Due Date, would not be eligible to submit a Proposal.	
	Consortium/ Joint Venture	No consortium/ JVs/ associations/ subcontracting shall be allowed under this tender.	Declaration of submitting as independent Bidder from the Authorized Signatory (TECH-7)
	Authorized Representative	A Power of Attorney in the name of the person signing the proposal.	Original Power of Attorney (Notarized on a Rs.100/- Non-Judicial Stamp Paper) (TECH-4)
10	No failure of performance	A Bidder including any Associate should, in the last 3 (three) years, have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award against the Bidder, or Associate, as the case may be, nor has been expelled from any project or contract by any public entity nor have had any contract terminated by any public entity for breach by such Bidder, or Associate.	The Director, DTE&T would place sole reliance on the certification provided by the Bidder in this regard in its Cover Letter. Any misrepresentation or concealment of any information in this regard shall render the Bid liable for outright rejection at the sole discretion of the Director, DTE&T.
	Bid Processing Fee (Non-Refundable)	The Bidder shall furnish a Tender Fee of Non-refundable amount of Rs. 10,000/- + Rs. 1800/- (GST @18 %) = Rs. 11,800 (Rupees Eleven Thousand Eight Hundred Only).	Payment to be done through online mode.
	Earnest Money Deposit (EMD) (Refundable)	The Bidder shall furnish EMD amount of Rs.50,00,000/- (Rupees Fifty Lakhs only).	Payment to be done through online mode

4.2 Documents to be submitted along with TECHNICAL BID (PART-A):

The bidder must furnish the following documents duly signed in along with their Technical Proposal:

- Filled in Bid Submission Check List in Original (Annexure-I)
- Covering letter (TECH – 1) on bidder's letterhead requesting to participate in the selection process
- Bid Processing Fee & EMD as applicable
- Copy of Certificate of Incorporation/ Registration
- Copy of PAN
- Copy of Goods and Services Tax Identification Number (GSTIN)
- Copies of IT Return for the last three financial years i.e., FY:2022-23, 2023-24 & 2024-25 and the copy of latest GST Return (in GSTR-3B)
- General Details of the Bidder (TECH – 2)
- Financial Details of the bidder (TECH – 3) along with all the supportive documents such as Balance Sheet and Income/ Expenditure Statement duly signed as per the instruction.
- Power of Attorney (TECH – 4) in favour of the person signing the bid on behalf of the bidder or Board of Directors.
- List of clients for supply of equipment/machines of same category (Past Experience Details, (TECH – 5) along with copies of contracts / work orders / completion certificate from previous Clients (as provided in the RFP).
- Notarized Undertaking from the Bidder on not blacklisted (TECH - 6)
- No Consortium/Joint Venture Declaration (TECH-7)

- Technical Compliance Sheet (Requirements and specifications as per the ToR) (Tech-8)
- Manufacturing License or the Manufacturer's Authorization Form (TECH-9)
- Declaration regarding "Restrictions on procurement from a Bidder of a country which shares a land border with India" (TECH - 10)
- Bidder's Affidavit for Micro and Small Manufacturing Enterprises to get an exemption as per the Odisha Procurement Preference Policy (TECH - 11).
- Net worth Certificate duly sealed & signed by a Chartered Accountant.
- Copy of valid ISO/ISI certificates along with Machinery Test Certificate as applicable.
- **Submission of product wise brochure & catalogues and relevant information on products supplies**
- Certification in its Cover Letter by the Bidder regarding non-failure to perform on any contract

Note:

Bidders should submit the required supporting documents as mentioned above. Bids not conforming to the eligibility criteria and non-submission of required documents as listed above will lead to rejection of the bid. Submission of forged documents will also result in rejection of the bid. Bidders are advised to study all instructions, forms, terms & conditions, and other important information as mentioned in the RFP document. The proposal must be completed in all respects, indexed. Each page should be numbered and signed by the authorized representative. Client at its own discretion reserves the right to ask for clarifications/supporting documents at any time during evaluation.

1. Bid Processing Fee (Non-Refundable):

The bidder must furnish as part of technical Bid, the required bid processing fee amounting to **Rs. 10,000/- + Rs. 1800 (GST @18 %) = Rs. 11,800** (Rupees Eleven Thousand Eight Hundred) through online mode. Proof of submission must be attached with the technical bid. Bids received without bid processing fee will be rejected.

2. Earnest Money Deposit (EMD):

The bidder must furnish, as part of the technical Bid, an Earnest Money Deposit (EMD) amounting to Rs.50,00,000/- (Rupees Fifty Lakhs only) through online mode. Bids received without EMD will be rejected. Proof of submission must be attached with the technical bid.

The EMD amount is interest free and would be refunded through online mode after finalization of the selection process and award of contract. The EMD, for the amount mentioned above, of the successful Bidder would be returned only after furnishing the required Performance Security and signing of the contract. The EMD will be forfeited on account of the following reasons:

- A Bidder engages in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice as envisaged under this RFP (including the standard form of Work Order); or,
- If any Bidder withdraws its Proposal during the Bid Validity Period as specified in this RFP and as extended by the Bidder from time to time; or,
- In the case of the Selected Bidder, if the Selected Bidder fails to accept the Work Order or execute the Contract or fails to furnish the Performance Security within the specified time limit; or,
- If the Bidder commits any breach of terms of this RFP or is found to have made a false, representation to the client.

3. Performance Security:

- a. The successful bidder, within 15 days after the receipt of notification of award of the Contract (LoA) from DTE&T, shall furnish Contract Performance Guarantee to the DTE&T, Odisha

which shall be equivalent to **5%** of Total Bid Value (excluding taxes) and shall be in the form of a Bank Guarantee /e-Bank Guarantee from any of the commercial banks in India in the Performa given here-in-after in this document valid initially **42 months** and may be extended beyond three years of completion of warranty period from the date of award of Contract as specified in the document.

- b. The proceeds of the performance guarantees shall be payable to the DTE&T, Odisha as compensation for any loss/ penalties resulting from the Selected Bidders failure to complete its obligations under the Contract.
- c. The performance guarantee will be released by DTE&T, Odisha and returned to the Selected Bidder after 60 days of completion of warranty period subject to fulfillment of all obligations on recommendation of respective Principal.

4. Proposal Validity:

Proposal shall remain valid for a period of **180 (One Hundred Eighty) days** from the date of opening of the technical proposal. The Client reserves the right to reject a proposal valid for a shorter period as non-responsive and will make the best efforts to finalize the selection process and award of the contract within the bid validity period. The bid validity period may be extended on mutual consent. If agreed upon, the bid security so deposited shall also be suitably extended.

5. Pre- Proposal Queries and Meeting:

The Bidder may request a clarification of any part of the RFP prior to the last date for submission of queries through email, as indicated in the Bidder's Data Sheet. Bidders are allowed to submit their queries in respect of the RFP and other details if any, to DTE&T in the following format.

Sl	Section/Page No and RFP Clause reference.	Content of RFP requiring clarifications	Queries/ Change/Clarification requested

A Pre-Bid meeting will be organized by DTE&T to address the queries relating to the overall selection process and scope of the work through Hybrid Mode (**both virtual & physical mode**) **as per the timeline mentioned in the Data Sheet.** The client will address the queries submitted by the bidders.

- i. The purpose of Pre-Bid discussion is to provide the Bidders with information regarding the RFP, project requirements, and opportunity to seek clarification regarding any aspect of the RFP and the project. However, DTE&T, Odisha, reserves the right to hold or to reschedule the Pre-Bid meeting.
- ii. DTE&T, Odisha shall not be responsible for ensuring that the Bidder's queries have been received by them. Any requests for clarifications received after Pre-Bid meeting will not be entertained.
- iii. However, DTE&T, Odisha makes no representation or warranty as to the completeness or accuracy of any response made in good faith, nor does it undertake to answer all the queries that have been submitted by the Bidders
- iv. The Client's responses to Bidder queries will be made available to all Bidders and shall be uploaded on the Client's website. It shall be the Bidder's responsibility to check the Client's website for the responses to the queries or requests for clarification.
- v. Any such corrigendum shall be deemed to be incorporated into this RFP and binding on all Bidders.

6. Submission of Proposals:

The bid should be submitted through Online mode only in www.tendersodisha.gov.in.

The tender is to be submitted electronically in two separate Cover No.1 (Technical Cover) and Cover No. 2 (Financial Cover) and contents as indicated below:

Cover No.1 (Technical Cover)

The bidder must furnish the following documents duly signed in along with their Technical Proposal:

- Filled in Bid Submission Check List in Original (Annexure-I)
- Covering letter (TECH – 1) on bidder's letterhead requesting to participate in the selection process
- Bid Processing Fee & EMD as applicable
- Copy of Certificate of Incorporation/ Registration
- Copy of PAN
- Copy of Goods and Services Tax Identification Number (GSTIN)
- Copies of IT Return for the last three financial years i.e., FY:2022-23, 2023-24 & 2024-25 and the copy of latest GST Return (in GSTR-3B)
- General Details of the Bidder (TECH – 2)
- Financial Details of the bidder (TECH – 3) along with all the supportive documents such as Balance Sheet and Income/ Expenditure Statement duly signed as per the instruction.
- Power of Attorney (TECH – 4) in favour of the person signing the bid on behalf of the bidder or Board of Directors
- List of clients for supply of equipment/machines of same category (Past Experience Details, (TECH – 5) along with copies of contracts / work orders / completion certificate from previous Clients (as provided in the RFP).
- Notarized Undertaking from the Bidder on not blacklisted (TECH - 6)
- No Consortium/Joint Venture Declaration (TECH-7)
- Technical Compliance Sheet (Requirements and specifications as per the ToR) (Tech-8)
- Manufacturing License or the Manufacturer's Authorization Form (TECH-9)
- Declaration regarding "Restrictions on procurement from a Bidder of a country which shares a land border with India" (TECH - 10)
- Bidder's Affidavit for Micro and Small Manufacturing Enterprises to get an exemption as per the Odisha Procurement Preference Policy (TECH - 11).
- Net worth Certificate duly sealed & signed by a Chartered Accountant.
- Copy of valid ISO/ISI certificates along with Machinery Test Certificate as applicable.
- Submission of product wise brochure & catalogues and relevant information on products supplies
- Certification in its Cover Letter by the Bidder regarding non-failure to perform on any contract.

Cover No.2 (Financial Cover)

Price Bid. (Cover -2 in BoQ)

The following supporting documents to be attached (in PDF format) with the seal & signature of the signing authority along with the Price Bid (BoQ) within the Cover-2.

1. FIN-1: Financial Bid covering letter.
2. FIN-2: Equipment wise cost breakup (PDF as well as in Excel Format)

The offer must be submitted in Two Bid - Two covers only though uploading in the eProcurement Portal, before the last date & time for bid submission.

Tender document (s) and all enclosures must contain the signature of the competent authority of the firm.

7. Evaluation of Proposals

A Three stage evaluation process will be conducted as explained below for evaluation of the proposals:

A. Preliminary Evaluation (1st Stage):

Preliminary evaluation of the proposals will be done to determine whether the proposal complies with the prescribed eligibility condition and the requisite documents / information have been

properly furnished by the bidder or not. Submission of documents/ information as per Pre-Qualification/Eligibility Criteria will be verified.

The bidder is required to produce the copies of the required supportive documents/information as part of their technical proposal failing which the proposals will be rejected.

B. Technical Evaluation (2nd Stage):

Technical proposal will be opened and evaluated for those bidders who qualify the preliminary evaluation stage. Detailed evaluation process as per the following parameters will be adopted for proposal evaluation:

Sl. No.	Criteria	Maximum Mark	Documents Required
1	Financial Capacity & Experience	40 Marks	
1.1	<p>Turnover: The Bidder should have an Average annual turnover of Rs. 16.00 Crore in the last three financial years (i.e., FY: 2022-23, 2023-24 & 2024-25).</p> <p><i>Scoring Criteria:</i></p> <ul style="list-style-type: none"> Greater than or equal to Rs.16 Crore and less than Rs.30 Crore: 05 Marks Greater than or equal to Rs.30 Crore: 10 Marks 	10	Financial details of the Bidders in TECH-3 duly signed by the CA
1.2	<p>Past Experience: The bidder, during last 03 (Three) financial years must have experience of supply of equipment/machines from same category at any Government or Private organization/ Government or Private educational institute/ Government or Private training institute/ any Industry with order value as follows.</p> <p><i>Scoring Criteria:</i></p> <ul style="list-style-type: none"> For every work order value of Rs.16 Crore or more: 10 Marks. For every work order value more than or equal to Rs.8 Crore but less than Rs.16 Crore: 05 Marks. For every work order value more than or equal to Rs.6 Crore but less than Rs.8 Crore: 02 Marks. <p>(Maximum up to 20 marks)</p>	20	Copies of Relevant Work Orders/ Sanction Orders/ Contract, MOUs containing value of the work/ Work Completion Certificate/ Successful Project Completion and Performance Certificate/ Commissioning Certificates or equivalent documentary evidence from the client should be provided as proof (TECH-5)

1.3	Performance Feedback: Performance Feedback/Certificate from the existing client where similar category of equipment supplied and installed for a work order of value not less than 10 Crore. For every positive performance certificate/feedback, 05 marks will be given. (Maximum up to 10 marks)	10	Performance Certificate/ Performance Feedback or equivalent documentary evidence from the existing client should be provided as proof with contact details (TECH-5).
2	Quality, Training & Placement	60 Marks	
2.1	Quality of proposed equipment/ machines: Quality of the proposed Equipment/ Machines with respect to the technical specifications offered by the bidder, subjected to adherence of technical specifications asked for	60	Technical Compliance Sheet (Tech-8) with Submission of product wise brochure & catalogues and relevant pages from the website with available technical data in compliance with the technical specifications mentioned in the tender document.
	Grand Total (1 + 2)	100	
<ul style="list-style-type: none"> • The minimum qualifying mark is: 70 • Bidder has to score at least 50% in each category i.e. (1.1 to 1.3 & 2.1). • Bidder must score at least 70% to qualify for opening of Financial Bid. • The scores provided by the Technical Committee will be considered as final. • The Technical Committee may ask the bidders with prior intimation of at least 3 days for a brief Technical PPT presentation on Bidder's proposals includes description of products make, model & proposed specifications of items in their Technical Proposal, past experience, objective, proposed plan, approach and methodology etc. 			

Selection of Bidder

All responsive Bids will be considered for further processing as below:

- Technical Evaluation Committee will prepare a list of responsive Bidders, who comply with all the Terms and Conditions of the Tender. All eligible bids will be considered for further evaluation by the Committee according to the evaluation process defined in this RFP document. The decision of the committee will be final and binding on all bidders and cannot be questioned at any stage of evaluation.
- DTE&T reserves the right to ask for a technical elaboration/clarification in the form of a technical presentation from the Bidder on the already submitted Technical Proposal at any point of time before opening the Financial Proposal by providing at least 3 days of advance notice.
- DTE&T, Odisha also reserves the right to seek confirmation/clarification from the issuing agency for the supporting documents submitted by the bidder. To assist in the examination, evaluation and comparison of the bids, and qualification of bidders, the committee may, at its discretion, ask any bidder for a clarification of its bid. The committee's request for clarification and the response shall be in writing through approved mode only and no other mode shall be entertained. Any clarification submitted by a bidder that is not in response to a request shall not be considered.
- If any bidder fails to provide the requested presentation/clarification/information within the stipulated date and time given by the DTE&T, Odisha, the bid shall be technically disqualified. The request for clarification and the response shall be in writing, without any alterations regarding the price or substance of the bid submitted.

- e. Further the scope of evaluation committee also covers taking any decision regarding the Tender document, execution/ implementation of the project including management period.
- f. A detailed evaluation of the bids shall be carried out by the Technical Evaluation Committee in order to determine whether the Bidders are competent enough and whether the technical aspects are substantially responsive to the requirements set forth in the RFP document. The bidders must submit the Make, Model, Features, and Technical Specifications along with the images of equipment for which they are submitting the bid. Bidders may propose better technical specifications which may fit for the labs.
- g. Bidders failing to comply with any of the above then the Bid will be summarily rejected. Bidders who score at least **70%** marks in Technical Evaluation criteria set forth in this RFP document will be eligible for opening of their Financial Bid. If a bid does not meet minimum score, it will be deemed technically non-compliant and will not proceed to the financial evaluation.
- h. The bidders are expected to provide following details along with their technical bids.
 - Detailed requirement of Civil, Electrical, & other works for the installation, commissioning & demonstration of the equipment/machines proposed in their technical bid.
 - Required raw material and consumables (if any) for demonstration/testing of the supplied equipment/machines.
 - Bidders must proposed required spare parts or tools & tackles (if any) to run the equipment/machines smoothly during the warranty period of 3 years.

C. Evaluation of Financial Proposal (3rd Stage)

The financial proposals shall be opened on the prescribed date in the presence of the bidder/bidder's representative who wishes to attend the meeting with proper letter of authorization. The name of the bidder along with the quoted financial price will be announced during the meeting.

- 1. The financial bids of bidders whose bids have been technically qualified (i.e., obtained minimum **70 marks** in Technical Evaluation) shall be opened by the Committee on the date and time specified in the RFP
- 2. Least Cost Selection (LCS) method will be followed during the Financial Evaluation and overall selection process.
- 3. Price Quoted without tax (as applicable) of the following in the BoQ MS-Excl format will be considered together for Evaluation of the Financial Bid.

I. Total Cost of the Goods

II. Total Cost of Comprehensive Annual Maintenance Contract (CAMC) for 03 Years

- 4. Bidder must submit the Financial Proposal in PDF format (FIN-1 & FIN-2) along with the price quoted in BoQ MS-Excl format.
- 5. The bidder with Lowest Quoted Base Price (without tax) (L1) will be considered as Final Selected Bidder.
- 6. In case two or more bidders quoted the same prices, the Committee shall decide on the L1 bidder based on the following **tie-breaking criteria**:
 - i. The bidder's turnover for the financial year 2024-25 will be considered first.
 - ii. If the tie persists, the turnover for the financial year 2023-24 will be considered.
[If further tie-breaking is required, the turnover for the financial year 2022-23 will be considered.
 - iii. If the tie remains unresolved after considering the above financial years, the L1 bidder will be determined by a draw, which will take place in the presence of the concerned bidders. The Committee's decision on this matter should be final and binding.
- 7. If a tenderer submits a bid with what appears to be **predatory pricing or an abnormally low bid**, the Tender Evaluation Committee may request a written clarification from the bidder. The bidder will be asked to provide a detailed price analysis, price break up, or justification of the quoted price, considering the scope, schedule, risk allocation, and any other requirements outlined in the

tender documents.

If, after reviewing the price analysis or justification, the bidder fails to provide adequate supporting documentation, evidence, or calculations to substantiate the quoted price, the Committee may, at its sole discretion, reject the bid.

8. Contract Negotiations:

Contract negotiation, if required will be held at a date, time and address as intimated to the selected bidder/s. The bidder will, as a pre-requisite for attendance at the negotiations, confirm availability of all the proposed staff or the assignment. Representative conducting negotiations on behalf of the bidder must have written authority to negotiate and conclude a contract.

9. Award of Contract:

- a. Being the lowest bidder (L1) is not the sole criterion for the award of the contract. The feasibility of the lowest quoted price will be assessed by the Committee, taking into consideration the relevant rules, terms and conditions outlined in the tender. The Committee's decision in this regard will be final and binding on all parties involved. Upon completion of the evaluation process, the contract will be awarded to the bidder who quoted the lowest base price (L1) and complies with all applicable laws, regulations, and provisions stated in the tender.
- b. DTE&T shall inform those Bidders whose Proposals did not meet the requirement or were considered non-responsive, informing them that their Financial Proposals will not be opened after completing the selection process. DTE&T shall simultaneously notify those Bidders who technically qualify on the Technical Evaluation process, informing them of the date and time set for opening of the Financial Proposals.
- c. The Bidder's name, the Proposal Price, the total amount of each Proposal and other such details, will be announced and recorded by the DTE&T at the opening of Proposal.
- d. After acceptance of LoA (Letter of Award) of Contract, Performance Security has to be deposited as specified in this document for signing an Agreement with DTE&T.
- e. The selected Agency shall sign the Agreement within 21 (twenty-one) days from the issuance of LoA (Letter of Award) of Contract:
 - i. DTE&T will sign the Agreement with the successful Bidder for a period as mentioned in 'Duration of Contract' in the document.
 - ii. DTE&T may extend the Agreement for a time period beyond what has been specified in 'Duration of Contract' in the document.
 - iii. DTE&T will also have the right to provide extension/ increase in the scope of work as per the mutually agreed terms and conditions between both the parties.
- f. In case of unsatisfactory or rejection of equipment or performance of L1 bidder, only L2 bidder will be invited for negotiation to supply and fulfill the contract at L1 prices.

10. Payment Modalities:

Payment will be made to the selected company as per the schedule mentioned on achieving milestones/agreed work plan as per the ToR (Section-III).

11. Duration of Contract and other timelines:

The contract shall be valid initially for a period of 40 months from the date of issuance of LOA and other timelines are detailed below.

- i. **Supply of equipment/machines:** 3 months from the date of signing the Contract.
- ii. **Installation & commissioning:** 1 month from the date of receiving site readiness confirmation from the Principal of respective Institute.
- iii. **Comprehensive Maintenance Warranty:** 36 months from the date of successful commissioning.

12. Conflict of Interest:

A Bidder shall not have a conflict of interest (the “Conflict of Interest”) that affects the Bidding Process. Any Bidder found to have a Conflict of Interest shall be disqualified. In the event of disqualification, the Authority shall be entitled to forfeit and appropriate the Bid Security, as mutually agreed genuine pre-estimated loss and damage likely to be suffered and incurred by the Authority and not by way of penalty for, inter alia, the time, cost and effort of the Authority, including consideration of such Bidder’s proposal (the “Damages”), without prejudice to any other right or remedy that may be available to the Authority under the Bidding Documents and/ or the Agreement or otherwise. Without limiting the generality of the above, a Bidder shall be deemed to have a Conflict of Interest affecting the Bidding Process, if:

- The Bidder or its Associate and any other Bidder or its Associate thereof have common controlling shareholders or other ownership interests.
- A constituent of such Bidder is also a constituent of another Bidder; or
- Such Bidder or any Associate thereof receives or has received any direct or indirect subsidy, grant, concessional loan or subordinated debt from any other Bidder or any Associate thereof or has provided any such subsidy, grant, concessional loan or subordinated debt to any other Bidder or any Associate thereof; or
- Such Bidder has the same legal representative for purposes of this Bid as any other Bidder; or
- Such Bidder, or any Associate thereof has a relationship with another Bidder, or any Associate thereof, directly or through common third party/ parties, that puts either or both of them in a position to have access to each other’s information about, or to influence the Bid of either or each other; or
- Such Bidder, or any Associate thereof has participated as a consultant to the Authority in the preparation of any documents, design or technical specifications of the Project.

13. Disclosure:

- a. Bidders have an obligation to disclose any actual or potential conflict of interest. Failure to do so may lead to disqualification of the bidder or termination of its contract.
- b. Bidders must disclose if they are or have been the subject of any proceedings (such as blacklisting) or other arrangements relating to bankruptcy, insolvency or the financial standing of the Bidder, including but not limited to appointment of any officer such as a receiver in relation to the Bidder’s personal or business matters or an arrangement with creditors, or of any other similar proceedings.
- c. Bidders must disclose if they have been convicted of, or are the subject of any proceedings relating to:
 - Criminal offence or other serious offence punishable under the law of the land, or where they have been found by any regulator or professional body to have committed professional misconduct;
 - Corruption including the offer or receipt of an inducement of any kind in relation to obtaining any contract;
 - Failure to fulfill any obligations in any jurisdiction relating to the payment of taxes or social security contributions.

14. Anti-corruption Measure:

- Any effort by Bidder(s) to influence the Client in the evaluation and ranking of financial Bids, and recommendation for award of contract, will result in the rejection of the Bid.

- A recommendation for award of Contract shall be rejected if it is determined that the recommended bidder has directly, or through an agent, engaged in corrupt, fraudulent, collusive, or coercive practices in competing for the contract in question. In such cases, the Client shall blacklist the bidder either indefinitely or for a stated period of time, disqualifying it from participating in any related bidding process for the said period.

15. Force Majeure

“Force Majeure” means an event which is beyond the reasonable control of a Party, and which makes a Party’s performance of its obligations here under impossible or so impractical as reasonably to be considered impossible in the circumstances, and includes, but is not limited to, war, riots, civil disorder, earthquake, fire, explosion, storm, flood or other adverse weather conditions, strikes, lockouts or other industrial action (except where such strikes, lockouts or other industrial action are within the power of the Party invoking Force Majeure to prevent), confiscation or any other action by government agencies.

Force Majeure shall not include: (i) any event which is caused by the negligence or intentional action of a Party or agent’s employees thereof, nor (ii) any event which a diligent Party could reasonably have been expected to take into account or avoid or overcome in the carrying out of its obligations during the subsistence of this Agreement. Force Majeure shall not include insufficiency of funds or failure to make any payment required hereunder.

16. Language of Proposals:

The proposal and all related correspondence exchanged between the bidder and the Client shall be written in the English language. Supporting documents and printed literature that are part of the proposal may be in another language provided they are accompanied by an accurate translation of the relevant passages in English with self-certification for accuracy, in which case, for the purposes of interpretation of the Proposal, the translated version shall govern.

17. Cost of bidding:

The Bidder shall bear all costs associated with the preparation and submission of its proposal. The Client shall not be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process. Bidder/s is/are not allowed to submit more than one proposal under the selection process. Alternate bids are also not allowed.

18. Legal Jurisdiction:

All legal disputes are subject to the jurisdiction of competent court of Cuttack /Bhubaneswar only.

19. Governing Law and Penalty Clause:

The schedule given for delivery is to be strictly adhered to in view of the strict time schedule. Any unjustified and unacceptable delay in delivery shall render the bidder liable for liquidated damages and thereafter the Client holds the option for cancellation of the contract for pending activities and complete the same from any other Bidder. The Client may deduct such sum from any money from their hands due or become due to bidder. The payment or deduction of such sums shall not relieve the bidder from his obligations and liabilities under the contract. The rights and obligations of the Client and the bidder under this contract will be governed by the prevailing laws of Govt of India/ Odisha.

- Notwithstanding the right of DTE&T, Odisha to cancel the order, Delay Charges for late delivery at 0.5% (Half percent) of the undelivered portion of order value per week will be charged for every week’s delay in the specified delivery schedule subject to a maximum of 5% of the value of the contract. Delay Charges should be recouped from pending payment or Performance Security as per the payment schedule. No Delay Charges will be charged in case of

circumstances beyond control of the selected Bidder. The decision of the authority placing the contract, whether the delay in delivery has taken place on account of reasons attributed to the bidder shall be final.

- ii. Please note that the above Delay Charges for delay in delivery and delay in commissioning are independent of each other and shall be levied as the case maybe.
- iii. DTET, Odisha reserves its right to recover these amounts from Performance Guarantee and the payments due to the bidder as per the payment schedule. Delay Charges will be calculated on per week basis.
- iv. The cumulative and aggregate limit of Delay Charges for delay in delivery and Delay Charges for delay in commissioning would be limited to maximum of 5% of the total Bid Value. The aggregate liability of the selected Bidder shall in no event exceed the total Bid Value under this Contract.
- v. Delay charges shall also be applicable for delay in Comprehensive Warranty (CMC) during the warranty period i.e. 36 months from the date of successful commissioning. For every week's delay, 0.5% (Half percent) of order value (excluding taxes) will be charged for the specified CMC schedule mentioned in the **Section-III, Point No.6**, subject to a maximum of **5%** of the value of the contract.

20. Client's right to accept any Bid, and to reject any or all Bid/s

The Client reserves the right to accept or reject any Bid, and to annul or amend the bidding / selection / evaluation process and reject all Bids at any time prior to award of contract award, without assigning any reason there of and thereby incurring any liability to the bidders. Misrepresentation/improper response/ by the bidder may lead to the disqualification of the bid. If such disqualification/rejection occurs after the Bids have been opened and the highest-ranking bidder gets disqualified/rejected, then the client reserves the right to consider the next best bidder, or take any other measure as may be deemed fit in the sole discretion of the Client, including annulment of the selection Process.

21. Number of Bids:

Each Bidder shall submit only one (1) Bid, in response to this RFP. Any Bidder who submits or participates in more than one Bid shall be disqualified. The Bidder shall be responsible for all costs associated with the preparation of its Bid and its participation in the bidding process.

22. Amendment of the RFP Document:

At any time before submission of proposals, the Client may amend the RFP by issuing an addendum through Department website. Any such addendum will be binding on all the bidders. To give bidders reasonable time in which to take an addendum into account in preparing their proposals, the Client may, at its discretion, extend the deadline for the submission of the proposals.

23. Confidentiality:

Information relating to evaluation of proposals and recommendations concerning awards shall not be disclosed to the bidders who submitted the proposals or to other persons not officially concerned with the process, until the publication of the award of contract. The undue use by any Consultant of confidential information related to the process may result in rejection of its proposal and may be subject to the provisions of the Client's antifraud and corruption policy. During the execution of the assignment except with prior written consent of the Client, the consultant or its personnel shall not at any time communicate to any person or entity any confidential information acquired in the course of the contract.

24. Settlement of Dispute:

The Client and the Bidder shall make every effort to resolve amicably, by direct negotiation, any disagreement or dispute arising between them under or arising from or in connection with the contract. All claims and disputes arising under or relating to this Agreement are to be settled by binding arbitration in the state of Odisha. An award of arbitration may be confirmed in a court of competent jurisdiction. Arbitration shall be as per Indian Arbitration Act, 1996.

Disputes not so resolved amicably within 30 days of receipt of notice of such as a dispute shall be resolved by Commissioner –cum-Secretary to Government, SD&TE Department, Government of Odisha which is binding and final.

25. Disqualification of Proposal:

The proposal is liable to be disqualified in the following cases as listed below:

- Proposal submitted without Bid Processing Fee & EMD as applicable
- Proposal not submitted in accordance with the procedure and formats as prescribed in the RFP
- During validity of the proposal, or its extended period, if any, the bidder increases his quoted prices
- Proposal is received in incomplete form
- Proposal is received after due date and time for submission of bid
- Proposal is not accompanied by all the requisite documents / information
- A commercial bid submitted with assumptions or conditions
- Bids with any conditional technical and financial offer
- If the bidder provides any assumptions in the financial proposal or qualifies the commercial proposal with its own conditions, such proposals will be rejected even if the commercial value of such proposals is the lowest / best value
- Proposal is not properly sealed or signed
- Proposal is not conforming to the requirement of the scope of the work of the assignment.
- Bidder tries to influence the proposal evaluation process by unlawful/corrupt/fraudulent means at any point of time during the bid process
- If, any of the bid documents (including but not limited to the hard and soft/electronic copies of the same, presentations during evaluation, clarifications provided by the bidder), excluding the commercial bid, submitted by the bidder is found to contain any information on price, pricing policy, pricing mechanism or any information indicative of the commercial aspects of the bid;
- Bidders or any person acting on its behalf indulges in corrupt and fraudulent practices
- Any other condition / situation which holds the paramount interest of the Client during the overall section process.

26. Fraud and Corrupt Practices

The Bidders and their respective officers, employees, agents and advisers shall observe the highest standard of ethics during the Bidding Process. Notwithstanding anything to the contrary contained herein, Director, DTE&T may reject a Bid without being liable in any manner whatsoever to the Bidder, if it determines that the Bidder, directly or indirectly or through an agent, engaged in corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice in the Bidding Process. In such an event, Director, DTE&T shall be entitled to forfeit and appropriate the Bid Security or Performance Security, as the case may be, as Damages, without prejudice to any other right or remedy that may be available to Director, DTE&T under the Bidding Documents and/ or the Agreement, or otherwise.

Without prejudice to the rights of the Director, DTE&T herein above and the rights and remedies which Director, DTE&T may have under the RFP, or otherwise if a Bidder is found to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice during the Bidding Process such Bidder, at the sole and absolute discretion of Director, DTE&T, shall not be eligible to participate in any tender or RFP issued by Director, DTE&T during a period of 2 (two) years from the date such Bidder, is found to have directly or indirectly or through an agent, engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practices, as the case may be. The following terms shall have the meaning hereinafter respectively assigned to them.

5. SECTION III: Terms of Reference (ToR)

“RFP for supply, installation and commissioning of Mechanical equipment for different Govt. ITIs & Polytechnics/Engineering Schools of Odisha”.

1. Introduction:

The Directorate of Technical Education and Training, Odisha, having its principal office at Killa Maidan, Buxi Bazaar, Cuttack-753001 (herein after referred to as the “DTE&T” which expression shall, unless repugnant to the context or meaning thereof, include its administrators, successors and permitted assigns), looks after technical education at Technical Institutes/Colleges, Diploma and formal CTS training at ITI level. It also provides Dual System Training, On-the-Job Training, Apprenticeship Training in order to prepare the Youth suitable for gainful wage and self-employment through Nano Unicorn Project of OSDA for a decent livelihood.

The goal of the DTE&T is to impart quality skill development training to build a knowledgeable workforce to cater to the demand of the labour market. Additionally, generation of such industry- ready manpower would ensure India’s competitiveness in the global market.

DTE&T invites proposals from the leading OEM/Authorised Partner of OEM/Authorised Dealer/Distributors of OEM having experience of supply, installation and commissioning of the lab equipment for several trades of ITIs and Polytechnics.

The project will support the Directorate of Technical Education & Training, Odisha, (herein after called “DTE&T”) in training youth in the age group of 18–34 to increase their skills, employability, and income. The project aims to produce appropriately qualified and multi-skilled workers with excellent employment and career prospectus which meet the needs of the economy. The project will benefit youth, women, and disadvantaged groups.

2. Objective:

The objective of this RFP is to select OEMs/Authorised Partners/Authorised Dealers having experience of supply, installation and commissioning of similar category of equipment at any Government or Private organization/ Government or Private educational institute/ Government or Private training institute/ any Industry.

DTE&T will provide the lab infrastructure with required space with electrical power supply (three phase connection) to the nearest distribution panel box, water supply (if required), furniture and other pre-requisite amenities before supply of equipment. The selected bidder will be responsible for supply and installation of equipment/machineries, commissioning & Comprehensive Warranty for 36 months, and provide operational training (as per the requirement) for 03 days to the nominated staff from the consignee institutes.

3. Scope of the Project

A- Scope of DTE&T (the Buyer/Client):

The scope of work of the DTE&T inter alia states that;

- I. Consignee Institutes shall provide required space in the lab for the installation & commissioning of the equipment/machines within the lab of the premises of the Govt. ITIs and Polytechnics/Engineering Schools.
- II. Facilitate additional space (covered area) if required upon availability at the institute premises at free of cost.
- III. Provide basic amenities like approach road and water supply (if required) nearest to the lab for running the machinery/equipment. Three phase electrical connection at nearest distribution/panel board will be provided at the designated labs by the consignee institutes.

- IV. Required space, furniture, air conditioners (if required) etc. will be provided by the consignee institutes.
- V. Conduct Pre-Delivery Inspection of sample equipment through Physical mode by its own technical experts or 3rd party agency/consultants/advisors appointed by DTE&T before the proposed equipment dispatch by the selected bidder and Post Delivery Inspection of all equipment by its own technical experts or by an independent agency appointed by DTE&T at any point of time. The operational expenses like testing the machines/equipment will be borne by the supplier.
- VI. Consignee institutes will be responsible to monitor the performance of the supplied equipment/machineries and progress of the work.

B- Scope of the Successful Bidder:

1. Supply, installation and commissioning of all machines/equipment in compliance to the technical specifications mentioned in **Section-III** (Point No.6) of the RFP, will be done by the Selected Bidder at the consignee institutes. Partial bidding/supply will not be accepted.
2. After the supply of equipment/machines, the successful bidder has to execute its installation & commissioning in the designated site(s) at the address. No extra cost shall be paid for this purpose.
3. Selected Bidder is responsible for all necessary works including necessary civil works (i.e. earthing/grounding of the machines), electrical connections from nearest distribution panel board to the machines and all type of cables connections, circuit breakers etc. required for connecting power supply point to machines, and other requisite works to complete the installation of the equipment/machines at the Consignee Institutes, falls within the ambit of scope of work of selected bidder.
4. Required Room/space, Furniture (if any), Air Conditioners (if any), Water Supply (if any) etc. will be provided by the Consignee Institutes but Selected Bidder is expected to supply all other installation accessories, facilities and services required for successful installation and smooth operation of the equipment. Bidders may conduct the site survey before installation at no additional cost.
5. Any accessories that must be needed for operation of the equipment but not mentioned in the specification shall also be quoted by the selected bidder.
6. Suitable and essential tool kit is to be supplied by the selected bidder with the equipment for the required maintenance.
7. The equipment/machines should be installed and commissioned at site. Site requirement along with the layout drawing for installation of equipment, electrical & water supply (if any) from main/ nearest sources shall be provided by the selected bidder upon issuance of Letter of Award of Contract (LoA).
8. The bidder shall not charge extra for additional items including fuel & lubricants (if required), Gas Cylinders (if required), raw materials, consumables etc. required to meet the operational requirement during installation, commissioning and hands-on training at consignee institutes.
9. The selected bidder shall provide comprehensive warranty of supplied machineries/equipment for 36 months from the date of successful commissioning. The warranty does not include tools & tackles, consumables, PPE etc (if any).
10. DTE&T Odisha reserves the right to increase/decrease the ordered quantity by up to 25 per cent at any time, till the final delivery date (or the extended delivery date of the contract), by giving reasonable notice to the supplier without any change in the final agreed price.
11. The selected bidder must sign the agreement for Comprehensive Annual Maintenance Contract (CAMC) with DTE&T Odisha for 03 (three) years for the equipment/machines mentioned in **Section-III (Point No.6)**. This CAMC contract must be signed 02 (two) months before expiry of

the comprehensive warranty period i.e. 36 months. A performance security @5% of the Annual awarded Value of Comprehensive Annual Maintenance Cost (CAMC) (without tax) for the respective year must be submitted by the selected bidder and the same will be initially valid for fifteen months and may be extended further, if necessary.

C- Pre-Delivery Inspection and Post-Delivery Inspection of all equipment:

DTE&T may conduct a Pre-Delivery inspection of all equipment/sample equipment through Physical mode by its own technical experts or 3rd party agency/consultants/advisors appointed by DTE&T before the dispatch of the proposed equipment by the selected bidder at the supplier's premises or at the manufacturer's factory site. The operational charges i.e. testing charges for samples, raw material, consumables (if any) etc. shall be borne by the supplier. But, other expenses like travelling, boarding and lodging of the technical experts, will be borne by the Authority.

All tests and inspections of all equipment during Post-Delivery Inspection shall be made at the place of delivery. Officers authorized by DTE&T shall be entitled at all reasonable time to inspect and supervise and test during installation and commissioning. Such inspection will not relieve the selected Bidder of their obligation in the contract.

If the OEM/Technology Partner fails to comply with any of the quality, technical specification or clause mentioned in the RFP, and then the Contract will be terminated by DTE&T Odisha.

4. Special Terms and Conditions:

1. Manufacturer (OEM) / Authorized Channel Partner/ Authorized Technology Partner having valid manufacturing license of OEM/ authorization certificates from OEM are eligible to participate in this tender. OEM must provide necessary documentary evidence of being an Original Equipment Manufacturer of the related equipment. Bid specific authorisation must be submitted in case of participation by channel partner/technology partner of OEM.
2. OEM should be nationally / internationally reputed Company.
3. For Technology Partner/Channel Partner, an undertaking from the OEM is required stating that they would facilitate the Bidder on a regular basis with technology/product updates and extend support for the warranty as well.
4. In this tender, either the authorized channel partner/technology partner on behalf of the OEM or OEM itself can submit bid proposals, but both cannot submit bids simultaneously for the same tender.
5. If authorized channel partner/technology partner submits bid on behalf of the OEM, the same authorized channel partner/technology partner shall not submit a bid on behalf of another OEM for the same tender. Bidder has to quote for all BoQ equipment as per Section-III (Point No.6). Partial bidding is not allowed.
6. In a scenario, if both OEM and or its channel partner/authorized dealer participated in the bidding process, bids of both OEM & an authorized partner/dealer will be technically disqualified and EMD will be forfeited as per prevailing rules. The authorization from OEM should indicate bid reference number.
7. The supplier of the equipment must confirm in writing that the spares for the entire supplied equipment will be available for a period of at least five years after the model of equipment supplied has been phased out. For frequently required spares, there should be adequate inventory with the Indian agency.

8. The successful bidder is responsible for the supply, installation and maintenance of the equipment. Equipment documentation including user manuals and operation and troubleshooting guides to be provided.
9. Comprehensive Warranty period shall specifically be mentioned in the offer. The selected bidder must adhere to the warranty clause mentioned herein.
10. Selected Bidder must sign Comprehensive Annual Maintenance Contract (CAMC) with DTE&T Odisha for at least 03 (three) years for the equipment/machines mentioned here in this RFP.
11. Financial Proposal must be submitted as per the BoQ format shared in **FIN-1 & FIN-2** (PDF file).
12. Bidders must submit Technical Specification Compliance sheet within their technical bid. The bidders must be kept in their mind that mere copying of our specifications in the technical specification compliance sheets, shall not make the technical bid eligible for consideration. A bid has to be supported with original catalogue of the quoted item/s duly signed by the authorized person participating in the bid. Non-compliance with the above conditions shall be treated as incomplete/ambiguous and the bid shall be rejected without giving an opportunity to the bidder for further clarification/negotiation etc.
13. The bidder must produce documentary evidence of past supply experience of the offered make & model of the major equipment/machineries to any Govt./Private organization/industry.
14. Details of foundation drawing for instruments and equipment, if any, should be provided.
15. The Bidder shall quote their lowest possible price, and prices quoted by the Bidder shall be “fixed” during the Bidder’s performance of the contract and not subject to any variation and/or escalation.
16. Bidder must quote **Cost of the Goods**, which shall indicate clearly the including all taxes and charges towards packing, forwarding, handling, insurance, comprehensive warranty for 36 months, freight, incidental service, civil, electrical and other works, (if any), installation & commissioning of the goods and training to the consignee’s personnel at site and **Cost of Comprehensive Annual Maintenance Cost (CAMC) in BoQ (FIN-1 & FIN-2)**, indicating the total cost of Comprehensive Annual Maintenance Cost for the equipment/machines offered for this tender’ for 03 Years and applicable after the expiry of comprehensive warranty of 36 months. The price shall be quoted in Indian Rupees only.
17. The cost of standard accessories shall be included in basic price and optional accessories shall have to be quoted separately.
18. Any component, fitting etc. which may not have been specifically mentioned in the specifications but which are usual and necessary for the equipment, shall be supplied by the bidder at no extra cost.
19. In case of items of import, the bidder should take full responsibility for customs clearance, handling, tax payment, etc. and same should be inclusive in the financial bid.
20. DTE&T Odisha shall sign a **Comprehensive Annual Maintenance Contract (CAMC)** for 03 (three) years (which may be extended further as per the requirement of DTE&T Odisha) for the equipment/machines mentioned in **‘Section-III (Point No.6)’** of the RFP, with the Selected Bidder beyond the warranty period of 36 months and shall be as per the terms and conditions mentioned in Annexure-III. Year wise cost of such maintenance contract (CAMC) shall be quoted.

21. Higher technical specifications may be considered subject to competitive price offer.
22. DTE&T Odisha reserves the right to accept, split, divide, negotiate, cancel or reject any bid or to annul and reject all bids at any time prior to the award of the contract without incurring any liability to the affected bidders or any obligation to inform affected bidder, the grounds of such action.
23. Price bid should be submitted in the BoQ format in **FIN-1 & FIN-2**. Price bid should have equipment wise breakup.
24. Performance Security – A performance security in the form of Bank Guarantee/e-Bank Guarantee for 5% of the Awarded Value (excluding taxes) to be submitted within 15 days of issuance of the Letter of Award (LoA). The Bank Guarantee will be valid initially for **42** months and may be extended further if required. The performance guarantee will be released by DTE&T, Odisha and returned to the Selected Bidder after 60 days of completion of warranty period subject to fulfillment of all obligations on recommendation of respective Principal of the institutes.

5. Comprehensive Warranty (36 Months) Clause:

The final selected bidder must provide Comprehensive Warranty Maintenance Services for all supplied equipment/machines (except consumables, PPE and tools & tackles) at the Consignee Institutes for 36 months from the date of successful installation & commissioning. The scope of the bidders is as below.

- i. Maintenance Services shall consist of Preventive and Corrective maintenance of equipment specified in **Section-III (Point No. 6)** (excluding consumables, PPE and tools & tackles) & will include repair and replacement of parts free of cost.
- ii. Preventive maintenance, half-yearly once, which includes:
 - i. Check-up to ensure that device connection is proper; cabling is at proper condition etc.
 - ii. Cleaning of the above instruments & equipments and checking the System Performance.
- iii. The selected bidder must conduct preventive maintenance services **at least twice (2 times) in a year** at the Consignee Institute.
- iv. The parts replaced must be new parts or equivalent in performance to new parts.
- v. Any complaint informed through telephone/email must be acknowledged with a Complaint No. by the Supplier which will be noted by Consignee. All further contact with the Supplier on such complaint will be initiated through that Complaint No. Once rectification done, that No. will be cancelled by both parties. A register is to be maintained by the Supplier where complaints are to be noted along with Complaint No.
- vi. The maintenance shall be attended by the service engineer **within 3 days** of intimation to the Bidder.
- vii. The Service Engineer of the Supplier will be allowed to handle the respective plant & machineries only in the presence of the officer in charge at the institute site.
- viii. The selected bidder should ensure that maintenance job is not hampered/ delayed due to paucity of spares/inadequate manpower etc.
- ix. Minor repair to be done **within 3 days** of complaint registered and for major breakdown or replacement of parts must be completed by 15 days from the complaint registered to supplier. For imported parts, the replacement should be done within 4 weeks maximum.

6. Comprehensive Annual Maintenance Contract (CAMC):

- i. The Selected Bidder shall be under the obligation of entering into a Comprehensive Annual Maintenance Contract (CAMC) with DTE&T Odisha for a minimum period of 03 (three) years, renewable if felt necessary, on mutually acceptable rates, terms, and conditions mentioned herein. CAMC shall start after the completion of Warranty.
- ii. The scope of CAMC shall cover maintenance and supply/replacement of materials and components, for smooth and reliable operation of the systems without trouble.
- iii. Accordingly, the Bidders has to offer rates in BoQ given **FIN-1 (PDF File)**, for the CAMC charges for the proposed equipment.
- iv. Selected agency must sign the Comprehensive Annual Maintenance Contract (CAMC) with DTE&T Odisha for 03 (three) years for the equipment/machines supplied at the Consignee Institutes (except tools, tackles, raw materials, PPE etc.). This CAMC contract must be signed before expiry of the comprehensive warranty period i.e. 36 months. A performance security @5% of the Annual cost of CAMC (excluding Taxes) in the form of Bank Guarantee/Fixed Deposit Receipt/Term Deposit Receipt, must be submitted by the selected Agency before signing the CAMC contract for the respective lot and which will be initially valid for 15 months and may be extended further if necessary.
- v. The Performance security towards CAMC for the particular year shall be returned only after submission and confirmation of BG/TDR/FD/DD of subsequent years.

6. List of equipment/machines and their Technical Specifications /Compliance Statement (Tentative list subject to change):

List of equipment and consignee institute for Govt. ITIs

Equipment Name	GOVT ITI ROURKELA	ITI BERHAMPUR	TTI, TAKATPUR	Govt.ITI Bhandaripokhari	Govt. ITI Anandapur	GOVT ITI JAIPUR	Govt. ITI Talcher	Gopabandhu Govt. ITI Ambaguda	GOVERN MENT ITI, BOUDH	GOVT ITI HINJILICUT	Govt ITI Rasanpur
Lathe S.S &S.C. (all geared type)	1	31	6	0	2	8	2	0	0	0	0
SOLID WORKS	25	0	0	0	0	0	0	0	0	0	0
Universal Milling Machine	2	4	4	0	0	0	1	0	0	0	0
Powersaw machine	3	3	0	0	0	0	0	0	0	0	1
Pipe bending machine	0	0	0	0	4	0	1	0	0	0	0
Tool and Cutter Grinder	1	0	2	0	0	0	0	2	0	3	0
Pillar Type Drilling Machine	0	2	2	0	0	0	1	0	0	0	0
Double Ended Pedestal Grinder	1	2	0	0	0	0	0	0	1	0	0
Air Compressor	1	0	1	0	0	0	0	3	1	0	0
Surface Plate - Granite	0	0	0	0	0	0	0	0	0	1	0
Battery operated Pallet truck	0	0	0	5	0	0	0	0	0	0	0
Cylindrical Grinding Machine	1	0	3	0	0	0	0	0	0	0	0
Radial drilling machine	1	0	0	0	0	0	0	0	0	0	0
Absorption and Stripping Equipment	1	0	0	0	0	0	0	0	0	0	0
Shearing Machine	2	1	0	0	0	0	0	0	0	0	0
Surface Grinding Machine	0	1	2	0	0	0	0	0	0	0	0
Hydraulic Surface Grinding Machine	2	1	0	0	0	0	0	0	0	0	0
Hand Drill Machine	1	0	0	0	0	0	0	0	0	0	0
Horizontal Milling Machine	1	2	0	0	0	0	0	0	0	0	0
Demarcation Equipment	0	0	0	2	0	0	0	0	0	0	0
Universal cylindrical grinding machine	1	1	0	0	0	0	0	0	0	0	0
Gear pump test rig	1	0	0	0	0	0	0	0	0	0	0
Battery operated Order picker	0	0	0	2	0	0	0	0	0	0	0
SENSITIVE BENCH DRILL MACHINE	1	0	0	0	0	0	0	0	0	0	0
Shaping Machine	0	0	1	0	0	0	1	0	0	0	0
Hydraulic Pressure Testing Machine	0	0	0	0	1	0	0	0	0	0	0
PLOTTER	0	0	0	0	0	0	0	0	0	0	0
Vertical Milling Machine	0	0	0	0	0	0	0	0	0	0	0
Power Hacksaw Machine	0	1	0	0	0	0	0	0	0	0	0
Co-ordinate measuring machine	1	0	0	0	0	0	0	0	0	0	0
Screw pump	1	0	0	0	0	0	0	0	0	0	0
Breaker Machine	0	0	0	0	0	0	0	0	0	0	0
Battery operated Fork lift	0	0	0	1	0	0	0	0	0	0	0
Band Saw Machine	1	0	0	0	0	0	0	0	0	0	0
HDPE Butt Fusion Welding Machine	0	0	0	0	0	0	0	0	0	0	0
Portable Drilling Machine	0	0	0	0	0	0	0	0	0	0	0
Horizontal Milling Machine	0	0	0	0	0	0	0	0	0	0	0
Turret Ram Milling Machine	1	0	0	0	0	0	0	0	0	0	0
Silicon Carbide Grinder	0	1	0	0	0	0	0	0	0	0	0
Profile Projector	1	0	0	0	0	0	0	0	0	0	0
SLIP GAUGE AS JOHNSON METRIC SET	0	0	0	0	1	0	0	0	0	0	0
Vertical Milling Machine	1	0	0	0	0	0	0	0	0	0	0
Slotter Machine	0	1	0	0	0	0	0	0	0	0	0
Hydraulic Pipe Bending Machine	0	0	0	0	1	0	0	0	0	0	0
Electric Pressure Test Pump Machine	0	0	0	0	0	0	0	0	0	0	0
Grand Total	52	51	21	10	9	8	6	5	2	4	1

RFP for supply, installation & commissioning of Mechanical equipment for different Govt. ITIs & Polytechnics/Engineering Schools of Odisha

Equipment Name	GOVT ITI SONEPUR	Govt. ITI Athamalik	Govt. ITI Barbil	Govt. ITI Bargarh	Govt. ITI Bolangir	Govt. ITI Chatarpur	Govt. ITI Cuttack	Govt. ITI Hirakud	Govt. ITI Junagarh	Govt. ITI Kaptipada	Govt. ITI Krushnaprasad
Lathe S.S & S.C. (all geared type)	0	2	0	0	0	0	0	0	2	0	1
SOLID WORKS	0	0	0	0	0	0	0	0	0	0	0
Universal Milling Machine	0	0	0	0	0	0	0	2	0	0	0
Powersaw machine	0	0	1	0	0	0	0	0	0	0	0
Pipe bending machine	2	0	0	0	0	0	0	0	0	0	0
Tool and Cutter Grinder	0	0	0	0	0	0	0	0	0	0	0
Pillar Type Drilling Machine	0	0	0	0	1	0	0	0	1	0	0
Double Ended Pedestal Grinder	0	0	0	0	0	0	0	0	1	0	0
Air Compressor	0	0	0	0	0	0	0	0	0	0	0
Surface Plate - Granite	0	0	0	0	0	0	1	0	0	0	0
Battery operated Pallet truck	0	0	0	0	0	0	0	0	0	0	0
Cylindrical Grinding Machine	0	0	0	0	0	0	0	0	0	0	0
Radial drilling machine	0	0	0	1	0	0	0	0	0	1	0
Absorption and Stripping Equipment	0	0	0	0	0	2	0	0	0	0	0
Shearing Machine	0	0	0	0	0	0	0	0	0	0	0
Surface Grinding Machine	0	0	0	0	0	0	0	0	0	0	0
Hydraulic Surface Grinding Machine	0	0	0	0	0	0	0	0	0	0	0
Hand Drill Machine	1	0	0	0	0	0	0	0	0	0	0
Horizontal Milling Machine	0	0	0	0	0	0	0	0	0	0	0
Demarcation Equipment	0	0	0	0	0	0	0	0	0	0	0
Universal cylindrical grinding machine	0	0	0	0	0	0	0	0	0	0	0
Gear pump test rig	0	0	0	0	0	0	0	0	0	0	0
Battery operated Order picker	0	0	0	0	0	0	0	0	0	0	0
SENSITIVE BENCH DRILL MACHINE	0	0	0	0	0	0	0	0	0	0	0
Shaping Machine	0	0	0	0	0	0	0	0	0	0	0
Hydraulic Pressure Testing Machine	0	0	0	0	0	0	0	0	0	0	0
PLOTTER	0	0	0	0	0	0	0	1	0	0	0
Vertical Milling Machine	0	0	0	0	0	0	0	1	0	0	0
Power Hacksaw Machine	0	0	0	0	0	0	0	0	0	0	0
Co-ordinate measuring machine	0	0	0	0	0	0	0	0	0	0	0
Screw pump	0	0	0	0	0	0	0	0	0	0	0
Breaker Machine	0	0	0	0	0	0	0	0	0	0	0
Battery operated Fork lift	0	0	0	0	0	0	0	0	0	0	0
Band Saw Machine	0	0	0	0	0	0	0	0	0	0	0
HDPE Butt Fusion Welding Machine	0	0	0	0	0	0	0	0	0	0	0
Portable Drilling Machine	0	0	0	0	0	0	0	0	0	0	0
Horizontal Milling Machine	0	0	0	0	0	0	0	1	0	0	0
Turret Ram Milling Machine	0	0	0	0	0	0	0	0	0	0	0
Silicon Carbide Grinder	0	0	0	0	0	0	0	0	0	0	0
Profile Projector	0	0	0	0	0	0	0	0	0	0	0
SLIP GAUGE AS JOHNSON METRIC SET	0	0	0	0	0	0	0	0	0	0	0
Vertical Milling Machine	0	0	0	0	0	0	0	0	0	0	0
Slotter Machine	0	0	0	0	0	0	0	0	0	0	0
Hydraulic Pipe Bending Machine	0	0	0	0	0	0	0	0	0	0	0
Electric Pressure Test Pump Machine	0	0	0	0	0	0	0	0	0	0	0
Grand Total	3	2	1	1	1	2	1	5	4	1	1

RFP for supply, installation & commissioning of Mechanical equipment for different Govt. ITIs &
Polytechnics/Engineering Schools of Odisha

Equipment Name	Govt. ITI Malkangiri	Govt. ITI Parjanga	Govt. ITI Patnagarh	Govt. ITI Raigarh	Govt. ITI Sheragada	Govt. ITI, Jajpur	Govt. ITI, Nandapur	Govt. ITI, Rua	Govt. ITI Balasore	Govt. ITI Paradeep	Govt. ITI Rayagada	SIPT (ITI), Pat tamundai
Lathe S.S & S.C. (all geared type)	0	2	0	0	1	0	0	0	0	0	1	0
SOLID WORKS	0	0	0	0	0	0	0	0	0	0	0	0
Universal Milling Machine	0	0	0	0	0	0	0	0	0	0	0	0
Powersaw machine	1	1	1	0	0	0	0	0	0	0	0	0
Pipe bending machine	1	0	0	0	0	0	0	1	1	0	0	0
Tool and Cutter Grinder	0	0	0	0	0	0	0	0	0	0	0	0
Pillar Type Drilling Machine	0	0	0	0	0	0	1	0	0	0	0	0
Double Ended Pedestal Grinder	1	0	0	0	0	0	1	0	0	0	0	0
Air Compressor	0	0	0	0	0	0	0	0	0	0	0	0
Surface Plate - Granite	0	0	0	0	0	3	0	0	0	0	0	0
Battery operated Pallet truck	0	0	0	0	0	0	0	0	0	0	0	0
Cylindrical Grinding Machine	0	0	0	0	0	0	0	0	0	0	0	0
Radial drilling machine	1	0	0	0	0	0	0	0	0	0	0	0
Absorption and Stripping Equipment	0	0	0	0	0	0	0	0	0	1	0	0
Shearing Machine	0	0	0	0	0	0	0	0	0	0	0	0
Surface Grinding Machine	0	0	0	0	0	0	0	0	0	0	0	0
Hydraulic Surface Grinding Machine	0	0	0	0	0	0	0	0	0	0	0	0
Hand Drill Machine	0	0	0	0	0	0	0	0	1	0	0	0
Horizontal Milling Machine	0	0	0	0	0	0	0	0	0	0	0	0
Demarcation Equipment	0	0	0	0	0	0	0	0	0	0	0	0
Universal cylindrical grinding machine	0	0	0	0	0	0	0	0	0	0	0	0
Gear pump test rig	0	0	0	0	0	0	0	0	0	1	0	0
Battery operated Order picker	0	0	0	0	0	0	0	0	0	0	0	0
SENSITIVE BENCH DRILL MACHINE	0	0	0	1	0	0	0	0	0	0	0	0
Shaping Machine	0	0	0	0	0	0	0	0	0	0	0	0
Hydraulic Pressure Testing Machine	0	0	0	0	0	0	0	0	1	0	0	0
PLOTTER	0	0	0	0	0	0	0	0	1	0	0	0
Vertical Milling Machine	0	0	0	0	0	0	0	0	0	0	0	0
Power Hacksaw Machine	0	0	0	0	0	0	0	0	0	0	0	0
Co-ordinate measuring machine	0	0	0	0	0	0	0	0	0	0	0	0
Screw pump	0	0	0	0	0	0	0	0	0	0	0	0
Breaker Machine	0	0	0	0	0	0	0	1	0	0	0	0
Battery operated Fork lift	0	0	0	0	0	0	0	0	0	0	0	0
Band Saw Machine	0	0	0	0	0	0	0	0	0	0	0	0
HDPE Butt Fusion Welding Machine	0	0	0	0	0	0	0	0	0	0	0	1
Portable Drilling Machine	1	0	0	0	0	0	0	0	0	0	0	0
Horizontal Milling Machine	0	0	0	0	0	0	0	0	0	0	0	0
Turret Ram Milling Machine	0	0	0	0	0	0	0	0	0	0	0	0
Silicon Carbide Grinder	0	0	0	0	0	0	0	0	0	0	0	0
Profile Projector	0	0	0	0	0	0	0	0	0	0	0	0
SLIP GAUGE AS JOHNSON METRIC SET	0	0	0	0	0	0	0	0	0	0	0	0
Vertical Milling Machine	0	0	0	0	0	0	0	0	0	0	0	0
Slotter Machine	0	0	0	0	0	0	0	0	0	0	0	0
Hydraulic Pipe Bending Machine	0	0	0	0	0	0	0	0	0	0	0	0
Electric Pressure Test Pump Machine	0	0	0	0	0	0	0	1	0	0	0	0
Grand Total	5	3	1	1	1	3	2	3	4	2	1	1

List of equipment and consignee institute for Govt. Polytechnics/Engineering Schools

SL No.	Name of equipments	BOSE Cuttack	GP Boudh	GP DHENKANAL	GP Koraput	GP NABARANGPUR	GP Puri	GP Nayagarh	GP Bhubaneswar	GP Nuapada	GP Sambalpur
1	2 stage Reciprocating Compressor Test Rig	1	0	1	1	1	1	0	0	1	0
2	Calibration of emission control systems	0	0	0	0	0	1	1	0	1	0
3	Izod & Charpy impact testing machine	1	1	1	1	1	1	0	1	0	0
4	Surface Grinder Using Magnetic Chuck	0	0	0	0	0	0	0	0	0	0
5	Tool and Cutter Grinder.	0	0	0	0	0	0	0	0	0	0
6	Computerised Hydraulic grip universal testing machine 6 pillar model	1	0	1	1	1	1	1	1	0	0
7	ALL GEARED HEAD LATHE MACHINE WITH ALL ASSESORIES	5	0	0	0	0	0	0	0	0	0
8	Apparatus for determination of Co-efficient of friction of flow through pipes.	0	0	0	0	0	0	0	1	0	4
9	BERNOULLI'S APPARATUS	0	0	0	0	0	0	0	0	0	0
10	Bomb Calorimeter (for solid & liquid fuels)& Junkers Gas Calorimeter (Bomb Calorimeter-1 & Junkers Gas Calorimeter -1 where two)	2	2	2	2	2	2	1	4	2	2
11	CONRADSON CARBON RESIDUE APPARATUS - FOUR TEST	2	0	1	0	1	1	0	0	1	0
12	Cracks detection using (i) Visual inspection and ring test (ii) Die penetration test (iii) Magnetic particle test	2	0	1	1	1	0	1	2	0	0
13	Dead Weight Pressure Gauge Tester	2	0	1	0	0	1	1	0	1	0
14	Flash & Fire Point Tests Using Pensky Martin Apparatus	2	0	1	1	1	0	0	0	0	1
15	HEAT BALANCE TEST RIG(CI/SI ENGINE)	0	1	0	0	0	0	0	0	0	0
16	HIGH PRESSURE BOILER WITH MODEL	0	0	1	0	0	0	0	2	0	1
17	Horizontal Milling Machine	1	0	0	0	0	0	0	0	0	0
18	Impact of Jet Apparatus	1	0	0	0	0	0	0	0	0	0
19	Insulating Slab and metal rod thermal Conductivity Apparatus	1	0	1	0	0	3	1	0	1	0
20	Metallurgical Microscope Integrated with Computer	2	2	1	1	1	1	1	2	1	2
21	Minor Losses Apparatus	1	0	0	0	0	0	0	1	0	0
22	Morse test apparatus	0	0	0	0	0	0	0	0	0	0
23	Moulding & casting equipments	0	0	0	0	0	1	0	0	1	0
24	ORIFICE METER FOR DETERMINATION OF CD,CC & CV	0	0	0	0	0	0	0	1	0	0
25	PELTON TURBINE/KAPLAN TURBINE/FRANCIS TURBINE	0	0	0	0	0	0	0	0	0	0
26	Porter Governor, Proell Governor, Hartnell Governor for measuring Radius and Height for different Rotational Speeds, Mass of Balls and Spring Stiffness (in Spring Loaded Governors)	0	0	0	0	0	0	0	0	0	0
27	RADIAL DRILLING MACHINE	2	0	0	0	0	0	0	0	0	0
28	Reciprocating pump test rig	1	0	0	0	0	0	0	1	0	0
29	ROCKWELL'S HARDNESS TESTING MACHINE	0	0	0	1	1	1	1	1	1	2
30	Shaper Machine & its accessories	0	0	0	0	0	0	0	0	0	0
31	SHEAR TESTING MACHINE	1	0	1	0	0	0	1	1	0	0
32	SPRING TESTING MACHINE(OPEN&CLOSED)	2	1	1	1	1	1	0	1	1	0
33	STATIC AND DYNAMIC BALANCING APPARATUS	0	0	0	0	0	0	0	0	0	0
34	TORSION TESTING MACHINE	0	0	0	0	0	0	0	0	0	0
35	UNIVERSAL GRINDING MACHINE WITH COMPLETE SET	0	0	0	0	0	0	0	0	0	0
36	Universal Milling Machine	1	0	0	0	0	0	0	0	0	0
37	VCR TEST RIG	1	0	0	0	0	0	0	0	0	0
38	VENTURIMETER APPARATUS FOR DETERMINATION OF CD	0	0	0	0	0	0	0	0	0	0
39	VISCOSITY MEASUREMENT USING SAYBOLT VISCOMETER	2	0	1	0	1	1	0	0	1	1

RFP for supply, installation & commissioning of Mechanical equipment for different Govt. ITIs &
Polytechnics/Engineering Schools of Odisha

SL No.	Name of equipments	GP Gajapati	GP Berhampur	GP Malkangiri	GP Deogarh	GP Jagatsinghpur	GP Mayurbhanj	GP Sonepur	GP Angul	GP Bargarh	GP Bolangir
1	2 stage Reciprocating Compressor Test Rig	1	0	0	1	0	0	0	1	0	1
2	Calibration of emission control systems	1	0	0	1	0	1	0	1	0	1
3	Izod & Charpy impact testing machine	1	0	0	1	0	1	1	1	1	1
4	Surface Grinder Using Magnetic Chuck	0	0	0	0	0	0	0	1	0	0
5	Tool and Cutter Grinder.	0	0	0	0	0	0	2	0	0	0
6	Computerised Hydraulic grip universal testing machine 6 pillar model	0	0	0	1	1	1	1	1	0	1
7	ALL GEARED HEAD LATHE MACHINE WITH ALL ASSESORIES	0	0	0	0	0	0	1	0	0	0
8	Apparatus for determination of Co-efficient of friction of flow through pipes.	0	0	0	1	0	1	0	0	0	0
9	BERNOULLI'S APPARATUS	0	0	0	1	0	0	0	0	0	0
10	Bomb Calorimeter (for solid & liquid fuels)& Junkers Gas Calorimeter (Bomb Calorimeter-1 & Junkers Gas Calorimeter -1 where two)	2	2	1	1	0	1	1	1	1	2
11	CONRADSON CARBON RESIDUE APPARATUS - FOUR TEST	1	1	0	1	0	0	1	1	0	1
12	Cracks detection using (i) Visual inspection and ring test (ii) Die penetration test (iii) Magnetic particle test	1	1	1	1	0	1	1	0	3	3
13	Dead Weight Pressure Gauge Tester	1	1	0	1	0	1	1	1	1	1
14	Flash & Fire Point Tests Using Pensky Martin Apparatus	1	0	0	1	0	0	0	1	0	1
15	HEAT BALANCE TEST RIG(CI/SI ENGINE)	0	0	0	1	0	0	0	0	0	0
16	HIGH PRESSURE BOILER WITH MODEL	1	0	0	0	0	0	0	0	0	0
17	Horizontal Milling Machine	0	0	0	0	0	0	0	1	0	0
18	Impact of Jet Apparatus	0	0	0	1	0	0	0	0	0	1
19	Insulating Slab and metal rod thermal Conductivity Apparatus	1	1	0	1	0	1	1	1	1	1
20	Metallurgical Microscope Integrated with Computer	1	1	1	2	0	1	1	1	1	1
21	Minor Losses Apparatus	0	0	0	0	0	1	0	0	0	0
22	Morse test apparatus	0	0	0	1	0	0	0	0	1	1
23	Moulding & casting equipments	0	0	1	2	0	0	3	0	1	2
24	ORIFICE METER FOR DETERMINATION OF CD,CC & CV	0	0	0	1	0	0	0	0	0	0
25	PELTON TURBINE/KAPLAN TURBINE/FRANCIS TURBINE	0	0	0	1	0	0	0	1	0	0
26	Porter Governor, Proell Governor, Hartnell Governor for measuring Radius and Height for different Rotational Speeds, Mass of Balls and Spring Stiffness (in Spring Loaded Governors)	0	0	0	1	0	0	0	0	0	1
27	RADIAL DRILLING MACHINE	0	0	0	1	0	0	0	1	0	0
28	Reciprocating pump test rig	0	0	0	1	0	0	0	0	0	0
29	ROCKWELL'S HARDNESS TESTING MACHINE	0	0	0	1	0	1	1	1	1	1
30	Shaper Machine & its accessories	0	0	0	0	0	0	0	0	0	0
31	SHEAR TESTING MACHINE	1	1	1	1	0	1	1	0	1	1
32	SPRING TESTING MACHINE(OPEN&CLOSED)	1	1	0	0	0	0	1	1	1	1
33	STATIC AND DYNAMIC BALANCING APPARATUS	0	0	0	1	0	0	0	0	0	0
34	TORSION TESTING MACHINE	0	0	0	2	0	0	0	0	0	0
35	UNIVERSAL GRINDING MACHINE WITH COMPLETE SET	1	0	0	1	0	0	1	1	0	1
36	Universal Milling Machine	0	0	0	0	0	0	0	1	0	0
37	VCR TEST RIG	0	0	0	2	0	0	0	0	0	0
38	VENTURIMETER APPARATUS FOR DETERMINATION OF CD	0	0	0	1	0	1	0	0	0	0
39	VISCOSITY MEASUREMENT USING SAYBOLT VISCOMETER	1	0	0	0	0	0	1	1	1	1

RFP for supply, installation & commissioning of Mechanical equipment for different Govt. ITIs & Polytechnics/Engineering Schools of Odisha

SL No.	Name of equipments	GP Bhadrak	GP Darlipali	GP Balasore	GP Kalahandi	ITT Choudwar	JES Jharsuguda	OSME Keonjhar	SKDAV Rourkela	UCPES Berhampur	UGIE Rourkela	UGMIT Rayagada
1	2 stage Reciprocating Compressor Test Rig	0	0	0	1	1	0	0	0	1	1	0
2	Calibration of emission control systems	0	0	1	0	0	0	1	0	1	1	0
3	Izod & Charpy impact testing machine	0	0	0	1	0	1	1	1	2	0	1
4	Surface Grinder Using Magnetic Chuck	0	1	0	0	0	0	0	0	0	0	0
5	Tool and Cutter Grinder.	0	0	0	0	0	0	0	0	0	0	0
6	Computerised Hydraulic grip universal testing machine 6 pillar model	0	0	0	0	0	0	1	2	1	2	1
7	ALL GEARED HEAD LATHE MACHINE WITH ALL ASSESORIES	0	4	0	0	1	0	5	0	2	0	0
8	Apparatus for determination of Co-efficient of friction of flow through pipes.	0	0	0	0	1	0	0	0	0	1	0
9	BERNOULLI'S APPARATUS	0	0	0	0	0	0	0	0	0	0	0
10	Bomb Calorimeter (for solid & liquid fuels)& Junkers Gas Calorimeter (Bomb Calorimeter-1 & Junkers Gas Calorimeter -1 where two)	0	0	2	2	1	0	2	2	0	0	1
11	CONRADSON CARBON RESIDUE APPARATUS - FOUR TEST	0	0	1	1	1	0	2	0	0	0	0
12	Cracks detection using (i) Visual inspection and ring test (ii) Die penetration test (iii) Magnetic particle test	0	0	2	1	0	0	2	0	1	0	1
13	Dead Weight Pressure Gauge Tester	0	0	1	1	1	0	2	0	1	0	1
14	Flash & Fire Point Tests Using Pensky Martin Apparatus	0	0	0	1	0	0	0	0	0	0	1
15	HEAT BALANCE TEST RIG(CI/SI ENGINE)	0	0	0	0	0	0	0	0	0	0	0
16	HIGH PRESSURE BOILER WITH MODEL	0	0	0	1	0	0	0	0	0	0	0
17	Horizontal Milling Machine	0	1	0	0	0	0	0	0	0	0	0
18	Impact of Jet Apparatus	0	0	0	0	1	0	2	0	0	1	0
19	Insulating Slab and metal rod thermal Conductivity Apparatus	0	0	1	1	2	0	2	0	1	0	0
20	Metallurgical Microscope Integrated with Computer	0	0	1	1	1	0	2	0	1	0	1
21	Minor Losses Apparatus	0	0	0	0	1	0	0	0	0	0	0
22	Morse test apparatus	0	0	0	0	0	0	0	0	0	0	0
23	Moulding & casting equipments	0	0	1	0	1	0	1	1	1	0	0
24	ORIFICE METER FOR DETERMINATION OF CD,CC & CV	0	0	0	0	0	0	0	0	0	0	0
25	PELTON TURBINE/KAPLAN TURBINE/FRANCIS TURBINE	0	0	0	0	0	0	1	0	3	0	0
26	Porter Governor, Proell Governor, Hartnell Governor for measuring Radius and Height for different Rotational Speeds, Mass of Balls and Spring Stiffness (in Spring Loaded Governors)	0	0	0	1	1	0	2	0	1	0	0
27	RADIAL DRILLING MACHINE	0	0	0	0	0	0	2	0	0	0	0
28	Reciprocating pump test rig	0	0	0	0	0	0	1	0	1	0	0
29	ROCKWELL'S HARDNESS TESTING MACHINE	0	0	0	1	0	0	0	0	0	0	0
30	Shaper Machine & its accessories	0	2	0	0	0	0	2	0	0	0	0
31	SHEAR TESTING MACHINE	0	2	0	1	0	0	0	0	1	0	1
32	SPRING TESTING MACHINE(OPEN&CLOSED)	0	0	1	1	1	0	2	0	1	0	1
33	STATIC AND DYNAMIC BALANCING APPARATUS	0	0	0	1	0	0	2	0	0	0	0
34	TORSION TESTING MACHINE	0	0	0	0	1	0	0	0	1	0	1
35	UNIVERSAL GRINDING MACHINE WITH COMPLETE SET	0	0	0	1	1	0	2	0	2	0	0
36	Universal Milling Machine	0	1	0	0	0	0	1	0	1	0	0
37	VCR TEST RIG	0	0	0	1	0	0	0	0	1	0	0
38	VENTURIMETER APPARATUS FOR DETERMINATION OF CD	0	0	0	0	0	0	0	1	0	0	0
39	VISCOSITY MEASUREMENT USING SAYBOLT VISCOMETER	0	0	1	1	1	0	1	1	0	0	1

Technical Specifications for the equipment of Govt. it is and Govt. Polytechnics/Engineering Schools are enclosed as Annexure-IV:

7. SECTION IV: Technical Bid Submission Forms (Cover-1)

TECH -1

COVERING LETTER

(ON BIDDERS LETTER HEAD)

[Location, Date]

To

**The Director
Directorate of Technical Educational and Training, Odisha
Killa Maidan, Buxi Bazar, Cuttack– 753001**

Sub: “RFP for supply, installation and commissioning of Mechanical equipment for different Govt. ITIs & Polytechnics/Engineering Schools of Odisha”. [TECHNICAL BID]

Dear Sir,

I/We (Name of the Bidder) hereby submit our Proposal in response to notice inviting RFP date and RFP document no..... and confirm that:

1. With reference to your RFP document dated, I/we, having examined the Bidding Documents and understood their contents, hereby submit my/our Bid. The Bid is unconditional and unqualified.
2. I/We acknowledge that the DTE&T will be relying on the information provided in the Bid and the documents accompanying the Bid for selection of the Bidder for the aforesaid project(s), and we certify that all information provided therein is true and correct; nothing has been omitted which renders such information misleading; and all documents accompanying the Bid are true copies of their respective originals.
3. This statement is made for the express purpose of qualifying as a Bidder for the aforesaid Project.
4. I/ We shall make available to the DTE&T any additional information it may find necessary or require to supplement or authenticate the Bid.
5. I/ We acknowledge the right of the DTE&T to reject our Bid without assigning any reason or otherwise and hereby waive, to the fullest extent permitted by applicable law, our right to challenge the same on any account whatsoever.
6. I/ We certify that in the last three years, we have neither failed to perform on any contract, as evidenced by imposition of a penalty by an arbitral or judicial authority or a judicial pronouncement or arbitration award, nor been expelled from any project or contract by any public authority nor have had any contract terminated by any public authority for breach on our part.
7. I/ We declare that:
 - I/ We have examined and have no reservations to the Bidding Documents, including any Addendum issued by the DTE&T;
 - I/We do not have any Conflict of Interest in accordance with **Clause 12** of the RFP document;
 - I/We have not directly or indirectly or through an agent engaged or indulged in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice, as defined in the RFP document, in respect of any tender or request for proposal issued by or any

- agreement entered into with the DTE&T or any other public sector enterprise or any government, Central or State; and
- I/ We hereby certify that we have taken steps to ensure that in conformity with the provisions of **Section 14 of** the RFP, no person acting for us or on our behalf has engaged or will engage in any corrupt practice, fraudulent practice, coercive practice, undesirable practice or restrictive practice.
8. I/We understand that the DTE&T may cancel the Bidding Process at any time and that the DTE&T is neither bound to accept any Bid that you may receive nor to invite the Bidders to Bid for the Project, without incurring any liability to the Bidders.
9. I/ We agree and undertake to abide by all the terms and conditions of the RFP document.
10. I/ We offer a Bid Security/EMD to the DTE&T in accordance with the RFP document.
11. I/ We agree and understand that the Bid is subject to the provisions of the Bidding Documents. In no case, I/we shall have any claim or right of whatsoever nature if the Project is not awarded to me/us or our Bid is not opened or rejected.
12. I/ We certified that the period of validity of Proposal is till the end of the Contract Agreement period and I/We are quoting for all the services mentioned in the Scope of Work of the RFP.
13. DTE&T, Odisha, may contact the following person for further information regarding this Proposal:

Name and full address of office, Contact No., Email ID, Company Name

In witness thereof, I/we submit this Bid under and in accordance with the terms of the RFP document

Yours sincerely,

Authorized Signatory with Date and Seal:

Name and Designation: _____

Address of the Bidder: _____

TECH -2

Bidder's Organisation (General Details)

SL No	Description	Full Details
1	Name of the Bidder	
2	Address for communication: Tel: E-mail ID:	
3	Name of the authorized person signing & submitting the bid on behalf of the Bidder: Mobile No.: Email id:	
4	Registration / Incorporation Details Registration No: Date & Year. :	
5	Local office in Bhubaneswar If Yes, please furnish contact details	Yes / No
6	Bid Processing Fee Details Amount:	
7	EMD Details Amount:	
8	PAN Number	
9	Goods and Services Tax Identification Number (GSTIN)	
10	Willing to carry out the assignment as per the scope of work of RFP	YES
11	Accept all the terms and conditions as specified in the RFP	YES

Authorized Signatory with Date and Seal:

Name and Designation: _____

Address of the Bidder: _____

TECH -3

Bidder Organisation (Financial Details)

Financial Information in INR			
Details	FY 2022-23	FY 2023-24	FY 2024-25
Annual Turnover in INR			
<p><i>Supporting Documents:</i></p> <p>Audited certified financial statements for the last three (Submission of copies of Income & Expenditure Statement and Balance Sheet for the respective financial years is mandatory along with this form). Provisional Audit report for any of the FYs is not acceptable.</p> <p><i>Filled in information in this format must have to be jointly certified and sealed by the CA and the authorized representative of the bidder and to be furnished in original along with the technical Bid failing which the Bid will be out rightly rejected.</i></p>			

Signature and Seal of the Chartered Accountant with Date in original.

Authorized Signatory with Date and Seal:

Name and Designation: _____

Address of the Bidder: _____

TECH - 4

FORMAT FOR POWER OF ATTORNEY

(Notarized copy on Rs. 100 Non-Judicial Stamp Paper)

(Required only if the Signatory is not directly authorized by the Company Board/Governing Body, or Partners. Otherwise, the Board Resolution/Partners Resolution would suffice)

Known all men by these presents, we..... (name of the firm and address of the registered office) do hereby irrevocably constitute, nominate, appoint and authorize Mr./ Ms. (name), son/daughter/wife of and presently residing at, who is presently employed with us and holding the position of, as our true and lawful attorney (hereinafter referred to as the “Attorney”) to do in our name and on our behalf, all such acts, deeds and things as are necessary or required in connection with or incidental to submission of our tender against the Bid document no. [•] dated [•] published by DTET for the “Procurement of Goods – [•]”, including but not limited to signing and submission of all applications, bids and other documents and writings,

AND we hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed to have been done by us.

IN WITNESS WHEREOF WE... .., THE ABOVE-NAMED PRINCIPAL HAVE EXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF..... 20[•].

For
Witnesses

.....
(Signature, name, designation and address)

1.

2.

Accepted

(Signature)
(Name, Title and Address of the Attorney)

Encl: Board resolution for Authorized signatory

TECH - 5

(BIDDER'S PAST EXPERIENCE DETAILS)

(List of orders/assignments only of similar nature)

Sl. No.	Name of Buyer/Client, Address with Telephone No, e-mail, Contact Person, Mobile No.	Name of Project	Nature of Project/Goods/ Services and Brief of Project	Project Start Date and End Date	Project Cost/ Contract Value (In Rs.)	Status (Complete/ In Progress/ Delay)
A	B	C	D	E	F	G
1						
2						
3						
4						
5						

Note: Information not conforming to the above format will be treated as non-responsive. The bidder must enlist their relevant experience for technical marking purpose. Copies of the Work order / Contract Document / Completion Certificate from the previous Clients need to be furnished along with the above information.

Authorized Signatory with Date and Seal:

Name and Designation: _____

Address of the Bidder: _____

TECH - 6

Affidavit for not being blacklisted

<< An affidavit on a non-judicial stamp paper of INR 100/- by Company Secretary/ Authorized Representative and Signatory of the Applicant with his/her dated Sign and duly notarized >>

AFFIDAVIT

(to be executed on INR 100 non-judicial stamp paper and to be duly notarized)

Date: _____

Sub: Tender No. _____

In response to the Tender Document above stated, I/We hereby declare and solemnly swear that our Company/ firm _____ is not banned/blacklisted as on date by any competent court of Law, forum or any State Government or Central Government or their agencies or by any statutory entities or any PSUs.

AND, if at any stage the declaration/statement on oath is found to be false in part or otherwise, then without prejudice to any other action that may be taken, I/We, hereby agree to be treated as a disqualified Bidder for the ongoing Contract.

In addition to the disqualification our concern/entity may be banned/blacklisted.

AND, that I/We, shall have no right whatsoever, to claim for consideration of my/our bid at any stage and the money deposited in the form of EMD shall be liable for forfeiture in full, and the tender, if any to the extent accepted, may be cancelled.

Signature of the Deponent

(Authorized signatory of the Bidder with Seal)

Date:

Place:

TECH –7

(To be submitted On Bidders Letter Head)

Non-Consortium Declaration

We, _____ <name of the Organisation>, having our registered office at _____, <HQ address of the Organisation> hereby certify and confirm that in the preparation and submission of our Proposal for _____ (name of the Project) under this RFP

Reference No. _____, We have not acted in concert or in collusion with any other Bidder or other person(s) and also not done any act, deed or thing, which is or could be regarded as anti-competitive. We declare that we are submitting this proposal as an independent Bidder, and not as a part of any consortium/Joint Venture/Associations.

We further confirm that we have not offered nor will offer any illegal gratification in cash or kind to any person or organization in connection with the instant proposal.

We also acknowledge that in case of misrepresentation of the information, our proposal / contract shall be rejected / terminated at any stage by the client, which shall be binding on us. Any loss or damage to the client, on this count will be compensated by us.

Dated this _____ Day of _____, 2025

Authorized Signatory with Date and Seal:

Name and Designation: _____

Address of the Bidder: _____

TECH –8

Technical Compliance Sheet

(To be submitted on Bidder's Letterhead)

Sl. No.	Product Name (As mentioned in ToR)	Technical Specifications (As per ToR)	Compliance (Yes/No)	If No, Reasons of deviations	Remarks (Additional features, if any)

Note:

The Technical compliance sheet shall provide a detailed list of identified requirements and specifications as mentioned in the ToR (Section-III). The bidder should indicate against the requirement in the compliance column to indicate the extent to which their proposals comply with the requirements. Bidder should also fill the details of proposed hardware and provide the necessary information.

The offered product within the scope of this RFP may have some features not contained in the ToR. Bidder may provide these details separately. These will not be part of above evaluation criteria.

Authorized Signatory with Date and Seal:

Name and Designation: _____

Address of the Bidder: _____

TECH –9

Manufacturer's Authorization Form

(To be submitted on OEM Letterhead)

To,

The Director,
Technical Education and Training, Odisha, Cuttack
Killa Maidan, Buxi Bazar, Cuttack – 753001.

Dear Sir,

We M/s. _____ who are established and reputable manufacturers of

do hereby authorize M/s. _____ (Name and address of Agent / Dealer) to participate in the above tender.

We hereby extend our technical assistance to the bidder during installation and inspection of the product.

We hereby certify that, the equipment being sold would not be declared End of Support (EoS) or become obsolete in the next 5 years. Also, we certify that the products being sold would be covered under Warranty / Support and OEM support will be available for 03 years (as specified in the RFP/ NIT No.) from the date of installation, even in the case, the bidder becomes “Out of service”.

We have studied the requirements of the product and confirm that we will adhere to the specifications of the tender and quality plan and extend all support during the inspection and provide documentary evidence at the time of inspection for the verification by the Client/Client's representative.

Date: _____

Yours faithfully,
(Name)

**Signature and
Seal of the OEM**

For and on behalf of M/s. _____

(Name of the manufacturer)

TECH-10

**Declaration regarding “Restrictions on procurement from a Bidder of a country which
shares a land border with India”**

(To be submitted on Bidder’s Letter Head)

To,

The Director
Directorate of Technical Education and Training, Odisha
Killa Maidan, Buxi Bazaar, Cuttack- 753001
Phone No-0671 (2301061); Email: dtetorissa@gmail.com

Dear Sir,

In reference to bid submitted by M/s _____ against DTE&T Odisha’s Tender NIT Number: _____, I/We have read the Order No: 27945 /F; dated: 16-10-2020 from Finance Department, Government of Odisha regarding **restrictions on procurement from a bidder of a country which shares a land border with India and on sub-contracting to contractors from such countries.**

I/We certify that M/s _____ (name of Bidder) is not from such a country and will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority. I also certify that M/s. _____ will not offer any products/services of entity from such countries unless such entity is registered with the Competent Authority.

I/We certify that we/our Collaborator/Tie-Up Partners are/is not from such a country or, if from such a country, have/has been registered with the Competent Authority and we will not sub-contract any work to a contractor from such countries unless such contractor is registered with the Competent Authority.

We hereby certify that we fulfill all requirements in this regard and are eligible to be considered.

Authorized Signatory with Date and Seal:

Name and Designation: _____

Address of the Bidder: _____

TECH-11

“Bidder’s Affidavit for Micro and Small Manufacturing Enterprises to get an exemption as per the Odisha Procurement Preference Policy”

<< An affidavit on a non-judicial stamp paper of INR 10/- by Company Secretary/ Authorized Representative and Signatory of the Applicant with his/her dated Sign and Seal >>

AFFIDAVIT

(Applicable to Bidders who fall under the definition of Odisha Small Manufacturing Enterprises)

I, Shri/ Smt/ Ms.(Designation) of (name of the Bidder Enterprise) solemnly state the following.

1. That annual turn-over of my enterprise is less than Rs. 50 Cr.
2. That my enterprise has a valid Udyam Registration bearing No within the jurisdiction of the State of Odisha.
3. That manufacturing plant/unit of my enterprise is located in Odisha in Village/Town/City _____, Block/ULB _____ Dist. _____.
4. That the goods for which I am submitting this bid are manufactured in the above-mentioned manufacturing plant/unit of my enterprise.
5. That the goods to be supplied by my enterprise shall be its own manufactured goods.
6. That my enterprise shall not supply goods which are not manufactured by my enterprise.
7. That my enterprise has not been blacklisted/debarred by any Government Organization from participating in current procurement process.
8. That my enterprise comes under the definition of Odisha Small Manufacturing Enterprise (OSME), as defined in the Policy, and is, therefore, eligible for preferences and relaxations provided in the Policy for OSMEs.
9. That I am submitting this affidavit in response to the tender No _____ dated _____ invited by (Organisation Name) _____ for supply of (item name) _____.

I certify that all information furnished by me as above are true and correct. If any information is found to be incorrect, I and my enterprise shall be liable for any punitive action as deemed appropriate by competent authority.

Date: _____ Signature of Bidder _____

Name of the Bidder _____

Address _____

Mobile No. _____

Email: _____

8. SECTION V: Financial Bid (Cover-2)

FIN-1
COVERING LETTER
(In Bidders Letter Head)

To

[Location, Date]

The Director
Directorate of Technical Educational and Training, Odisha
Killa Maidan, Buxi Bazar, Cuttack- 753001
Phone No-0671(2301061), Fax-0671(2301961)
Email-dtetorissa@gmail.com

Sub: RFP for Supply, installation and commissioning of Mechanical equipment for different Govt. ITIs & Polytechnics/Engineering Schools of Odisha [FINANCIAL BID]

Sir,

I, the undersigned, offer to provide the Goods/Services for [Insert title of assignment] in accordance with your RFP No._____, Dated: _____. Our Financial Bid is for the sum of [Insert amount(s) in words and figures*]. This amount is inclusive of all the applicable taxes as per GST Act.

I do hereby undertake that, in the event of acceptance of our bid, the supply/services shall be provided with respect to the terms and conditions as stipulated in the RFP document. Equipment wise cost as per format (FIN-2) given in the RFP documents are mentioned below:

SL No	Particulars	Total Cost (Rs) (Without Tax)	Total Cost (Rs) (With Applicable Taxes)
1	*Total Cost of Goods [supply of equipment, machinery and software (if any) with their perpetual licenses, tools & tackles, consumables, comprehensive warranty for 36 months and cost of freight, insurance, unloading charges, installation & commissioning charges, civil, electrical and other works (if any) and hand-holding for 36 months (if applicable) etc.] **The bidder must provide equipment wise cost breakup (In FIN-2) with this section.		
2	CAMC Charges for 4th year		
3	CAMC Charges for 5th year		
4	CAMC Charges for 6th year		
	GRAND TOTAL		
	**Grand Total (Total Cost without tax) in words (_____)		

*** DTE&T Odisha reserves the right to increase/decrease the ordered quantity by up to 25 per cent at any time, till the final delivery date (or the extended delivery date of the contract), by giving reasonable notice to the supplier without any change in the final agreed price.**

****Both Price of Goods and CAMC charges in the BoQ will be considered for Financial Bid Evaluation.**

*** If any discrepancy is found in between total figure and words, then the value mentioned in word shall be final.**

Equipment wise cost breakup & rate of GST in tabular format must be submitted in the FIN-2 with this price bid format. The total price of this breakup should match the price at serial -01 of above BOQ.

Yours faithfully,
Authorized Signatory [In full and initials]:
Name and Designation of Signatory with Date and Seal:

FIN-2

Bill of Quantity (BoQ)

(on Bidders Letterhead)

Name of the Bidder: _____

Sub: RFP for Supply, installation and commissioning of Mechanical equipment for different Govt. ITIs & Polytechnics/Engineering Schools of Odisha [FINANCIAL BID]

SI No	Item description	Quantity	Price Per Unit without GST	Total Price without GST	Rate of GST (%)	Total Price with GST
1	Cost of Goods					
1.1						
1.2						
1.3						
1.4						
1.5						
1.6						
1.7						
1.8						
1.9						
1.10						
	*Bidder may add rows here for submission of item wise rate					
	Total Cost of Goods					

The bidder can add rows below as required.

Notes:

- Price must be quoted in INR only. Quoted Price must be fixed for the entire contract period.
- The quoted price should be inclusive of freight, insurance, comprehensive warranty, unloading charges, installation & commissioning charges, civil, electrical and other works, if any etc.
- This document (FIN-2) should be submitted in PDF as well as in Excel format.**
- DTE&T Odisha reserves the right to increase/decrease the ordered quantity by up to 25 per cent at any time, till the final delivery date (or the extended delivery date of the contract), by giving reasonable notice to the supplier without any change in the final agreed price.**

Our Financial Proposal shall be binding upon us subject to the modifications resulting from contract negotiations, up to expiration of the validity period of the Proposal.

We solemnly affirm that we will strictly adhere to the laws against fraud, corruption and unethical practices, including but not limited to "Prevention of Corruption Act, 1988", during the Request for Proposal (RFP) process and execution of the Contract, in case we are awarded the work. We understand you are not bound to accept any Proposal you receive.

Yours faithfully,

Authorized Signatory [In full and initials]:

Name and Designation of Signatory with Date and Seal:

9. Section VI: Annexures

Annexure I: Bid Submission Checklist

Sl No	Description	Submitted (Yes/No)	Page No.
Technical Proposal (PART – A)			
1	Filled in Bid Submission Check List (ANNEXURE I)		
2	Covering Letter (TECH -1)		
3	Bid Processing Fee of Rs. 11,800/- (date and online number)		
4	EMD amount of equal to 2% of the total quoted price without tax (date and online number)		
5	Copy of Certificate of Incorporation / Registration of the Bidder		
6	Copy of PAN & Goods and Services Tax Identification Number (GSTIN)		
7	Copies of IT Returns for the last 3 FYs (2021-22, 2022-23 and 2023-24) latest GST Return (in GSTR-3B)		
8	General Details of the Bidder (TECH - 2)		
9	Financial details (Turnover) of the bidder (TECH – 3) along with all the supportive documents such as copies of Income-Expenditure Statement and Balance Sheet for the concerned period		
10	Power of Attorney (TECH - 4) in favour of the person signing the bid on behalf of the bidder		
11	List of completed assignments of similar nature (Past Experience Details) (TECH – 5) along with the copies of work orders for the respective assignments		
12	Undertaking for not have been black listed by any Central / State Govt./any Autonomous bodies as on date of bid submission. (Tech-6)		
13	No Consortium/Joint Venture Declaration (Tech-7)		
14	Technical Compliance Sheet (Requirements and specifications as per the ToR) (Tech-8)		
15	Manufacturing License or the Manufacturer's Authorization Form (TECH - 9)		
16	Declaration regarding "Restrictions on procurement from a Bidder of a country which shares a land border with India" (TECH - 10)		
17	Affidavit for Micro and Small Manufacturing Enterprises (TECH - 11)		
18	Net Worth Certificate duly sealed & signed by a Chartered Accountant		
19	Valid ISO/ISI certificates along with Machinery Test Certificate as applicable.		
20	Product wise brochure & catalogues and relevant information on products to be supplied		
21	Certification in its Cover Letter regarding non-failure of performance on any contract		
Financial Proposal (PART -B)			
1	Covering Letter (FIN-1)		
2	Bill of Quantity (BoQ) (FIN-2)		

Undertaking:

All the information has been submitted as per the prescribed format and procedure.

Authorized Signatory [In full and initials]: _____

Name and Designation with Date and Seal: _____

Signature: _____

Annexure II: Performance Bank Guarantee Format

To

Directorate of Technical Education and Training, Odisha,
Killa Maidan, Buxi Bazaar, Cuttack – 753001.

WHEREAS <<Name and address of the supplier>> (hereinafter called “the supplier”) has undertaken, in pursuance of contract no.....dated to supply (description of goods and services) (herein after called “the contract”).

AND WHEREAS it has been stipulated by you in the said contract that the supplier shall furnish you with a bank guarantee by a scheduled commercial bank recognized by you for the sum specified therein as security for compliance with its obligations in accordance with the contract;

AND WHEREAS we have agreed to give the supplier such a bank guarantee;

NOW 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 contract and without cavil or argument, any sum or sums within the limits of (amount of guarantee) as aforesaid, without your needing to prove or to show ground or reasons for your demand or the sum specified therein.

We hereby waive the necessity of your demanding the said debt from the supplier before presenting us with the demand.

We further agree that no change or addition to or other modification of the terms of the contract to be performed there under or of any of the contract documents which may be made between you and the supplier shall in any way release us from any liability under this guarantee and we hereby waive notice of any such change, addition or modification.

This guarantee shall be valid until the.....day of.....,20.....

Our branch at* (Name & Address of the* branch) is liable to pay the guaranteed amount depending on the filing of claim and any part thereof under this Bank Guarantee only and only if you serve upon us at our* branch a written claim or demand and received by us at our* branch on or before Dtotherwise bank shall be discharged of all liabilities under this guarantee thereafter.

.....
(Signature of the authorized officer of the Bank)

.....
Name and designation of the officer

.....
Seal, name & address of the Bank and address of the Branch

* Preferably at the headquarters of the authority competent to sanction the expenditure for purchase of goods or at the concerned district headquarters or the State headquarters.

Annexure III: Proforma of the “Comprehensive Annual Maintenance Contract (CAMC) to be Signed between DTE&T, Odisha and the Agency”

This Agreement (hereinafter called the “Agreement”) is made on this [•] day of the month of [month], [year].

BETWEEN

Directorate of Technical Education and Training, Odisha having its office at Killa maidan, Buxi Bazar, Cuttack – 753001 (hereinafter referred to as “DTET”, which expression shall, unless repugnant to or inconsistent with the context, mean and include its successors and assigns) of the first part.

AND

M/s. [•], a company incorporated under the provisions of the Companies Act, 1956/2013 or a registered partnership firm under the provisions of the Indian Partnership Act, 1932 or a LLP firm registered under LLP Act, 2008 and having its registered office at [•] (hereinafter referred to as the “Service Provider” which expression shall unless repugnant to or inconsistent with the context, mean and include its successors and assigns) of the other part.

WHEREAS

- i) the Service Provider, in the ordinary course of its business, is engaged in providing [•] services to its clients, and have represented to DTET through their bid(s), against Bid document No. [•] dated [•] (hereinafter called the “Tender”) for the Procurement of Goods and provide Annual Comprehensive Maintenance Services (CAMC) for the equipment/machines supplied at different Consignee Institutes (list attached in Section-III, Point No.6), after completion of warranty period - [•] (through e-procurement tender process);
- ii) on the basis of the said Tender, DTET has adjudged the Service Provider as a successful Bidder and issued Letter of Award (LoA) No. [•] dated [•] for the same;
- iii) the Service Provider has agreed through their letter of acknowledgement vide letter No. [•] dated [•] to perform and undertake the scope of work as described in the Tender;
- iv) the Service Provider is being engaged to provide the required services on the terms and conditions set forth in this Agreement;

NOW THEREFORE THE PARTIES hereby agree as follows:

1. The mutual rights and obligations of the Service Provider and DTET shall be as set forth in this Agreement, in particular:
 - The Service Provider shall provide the services in accordance with the provisions of this Agreement; and
 - DTET shall make payments to the Service Provider in accordance with the provisions of this Agreement.
2. **Conditions of Contract**
 - (a) **Contract Period:** Annual Comprehensive Maintenance Contract (CAMC) initially valid for fifteen months and may be extended further if necessary.
 - (b) **Payment Terms:** 100% of the annual awarded value (final quoted /negotiated prices) within 30 days of submission of Tax invoice along with certification from the Principal of consignee institute.

Payment shall be released annually on completion of CAMC subject to satisfactory performance and due recommendation from concerned Principal/Head of institute.

(c) Other Terms and Conditions:

- i. Maintenance services shall consist of Preventive and Corrective maintenance of equipment specified above & will include supply and replacement of parts free of cost.
- ii. Preventive maintenance, half-yearly once to be done, should include:
 - a. Check-up to ensure that device connection is proper; cabling is at proper condition etc.
 - b. Cleaning of the above equipment & checking the system performance.
- iii. The Supplier is to furnish the tentative schedule of the preventive maintenance for the equipment mentioned above of Comprehensive Annual Maintenance Contract (CAMC) to be carried out.
- iv. The parts replaced must be new parts or equivalent in performance to new parts.
- v. All software updates should be provided free of cost during CAMC period
- vi. The Supplier will also provide the same maintenance service in case of the movement of equipment from the place of original installation to a different place or lab within the consignee institute's premises.
- vii. Any complaint informed through telephone/e-mail must be acknowledged with a Complaint No. by the Supplier which will be noted by Consignee. All further contact with the Supplier on such complaint will be initiated through that Complaint No. Once rectification is done, that No. will be cancelled by both parties. A register is to be maintained by the Supplier where complaints are to be noted along with Complaint No.
- viii. The maintenance shall normally be done during working hours of the customer i.e. from 10 AM to 5 PM. However, in case of emergency, maintenance may have to be done beyond office hours and even on holidays. Prior arrangement through proper communication should be worked out in all such cases by the Supplier and the Consignee.
- ix. The Service Engineer of the Supplier will be allowed to handle the respective equipment only in presence of the officer in charge at the Consignee site.
- x. The Supplier should ensure that maintenance job is not hampered / delayed due to paucity of spares/ inadequate manpower, etc.
- xi. The Supplier should submit the service call report to the Consignee for each and every service call without fail.
- xii. In case of delay / lack of communication, penalty will be calculated as mentioned below in CAMC Clause.

COMPREHENSIVE ANNUAL MAINTENANCE CONTRACT CLAUSE

Category of Maintenance	Response Time	Penalty/Delay Charges
Minor faults	Immediately with telephonic or email support or maximum within 48hrs from the actual time of reporting of the problem to the Supplier.	0.5% (Half Percent) of the total contract value (without tax) shall be deducted for every week's delay. The delay charges will be deducted from the pending payment or Performance Security submitted by the Supplier. In no context the total delay charges will exceeds 5% of the total Contract Value (excluding taxes).

Minor repair which requires visit to the Consignee Institute	Within 7 days of complaint registered.	
Major breakdown or replacement of parts	Within 15 days from the complaint registered to supplier.	

- xiii. A logbook shall be maintained in which the vendor shall record all the complaints made and parts taken out of branches/office for repair. The vendor shall submit copy of consolidated complaint reports furnishing the details of institute-wise breakdown calls lodged/attended and its status on quarterly basis to Purchaser's office at Cuttack.
- xiv. Repair and servicing of equipment shall be carried out at consignee institute sites, in case the equipment is required to be transported to the Supplier's/manufacture's service workshop for repairs, the same shall be undertaken at the risk and cost of the Supplier. Moreover, the Supplier may furnish Security Amount in form of Demand Draft (equal to the cost of the equipment/machine) to the Principal of the Consignee Institute before the equipment taken out from the consignee institute.
- xv. After completion of the work/repair/maintenance, the Principal of the consignee institute shall issue a certificate of completion to the supplier.

- (d) The Agreement shall be governed by the laws of India and the courts of Bhubaneswar/Cuttack shall have exclusive jurisdiction over all disputes arising under, pursuant to and/or in connection with this Agreement
- (e) This Agreement has been executed in English, which shall be the binding and controlling language for all matters relating to the meaning or interpretation of this Agreement

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their respective authorized representatives on the day and year first before written.

For and on behalf of Directorate of Technical Education and Training, Odisha
(Authorized Representative)
Name:
Designation: Director
DTE&T Odisha
Killa Maidan, Buxi Bazaar, Cuttack-751001, Odisha

For and on behalf of M/s.
(Authorized Signatory)
Name:
Designation:
Name of the Service Provider:
Address:

In presence of the following witnesses

Name:
Designation:
DTE&T Odisha
Killa Maidan, Buxi Bazaar, Cuttack-751001, Odisha

Name:
Designation:
Name of the Service Provider:
Address:

Technical Specifications for the equipment of Govt. ITIs:**Lathe S.S &S.C. (all geared type)**

SL No.	Machine Description	Bidders specification	Bidder's Compliance
A	MAKE & Model No. / ID for the offered Machine		
1	Work Area Dimensions		
1.1	Swing over machine bed : 400 mm or more		
1.2	Swing over cross slide : 200 mm or more		
1.3	Distance between centers : 1000 mm or more		
1.4	Turning length: 900 mm or more		
1.5	Width of bed : 250 mm or more		
1.6	Height for centres: 200 mm or more		
2	WORK SPINDLE		
2.1	Spindle bore : 80 mm or more		
2.2	Type & size of spindle nose (ASA): A2-5 or better		
3	CARRIAGE		
3.1	Cross Slide Travel: Min. 200 mm		
3.2	Compound slide Travel: Min. 100 mm		
3.3	Tool Shank Section: Min. 20x20 mm		
4	ACCURACIES [As per IS 1878 (Part 1, 1993)] / DIN 8605 or equivalent [Bidder to provide "Test Chart" for the offered machine]		
4.1	RUNOUT		
4.1.1	Measurement of runout of spindle nose 0.01mm or better		
5	TOOL POST		
5.1	Quick Change Tool Post : Min. 20X20 mm		
6	TAIL STOCK WITH HAND WHEEL		
6.1	Stroke of quill /Spindle Travel: Min. 100 mm		
6.2	Taper socket/ Taper of sleeve: Min. MT-4 or better		
6.3	Tail Stock Barrel diameter/Quill diameter: Min 60 mm		
7	DRIVE		
7.1	Type of Drive: Geared / VFD (<i>Bidder to mention the type of Drive</i>)		
7.2	No. of speeds: Min 8 No.		
7.3	Speed minimum range = Range 40 rpm to 50 rpm		
	Speed maximum range = Range 1500 rpm to 2000 rpm		
7.4	No. of feeds: 24 or better		
7.5	Feed range(Longitudinal): 0.05 – 2.0 mm/rev or better		
7.6	Feed range(cross):0.05 to 0.62 mm/rev or better		
8	THREAD PITCHES WITH STANDARD CHANGE GEAR SET		
8.1	BS threads:4-48 T.P.I or better		
8.2	All standardized metric threads: 0.5 – 6 mm pitch		
8.3	Lead screw diameter: Min 32 mm		
8.4	Lead screw pitch: 6 mm		
8.5	Motor Power: Min. 3.0 kW or better		
9	COOLANT TANK WITH PUMP		
9.1	Tank capacity suitable to machine capacity		
9.2	Coolant Pump suitable to machine		

10	STANDARD ACCESSORIES		
10.1	2 Fixed Machine centres		
10.2	Square Tool Post		
10.3	Chip collecting tray		
10.4	Oil Can		
10.5	Set of Allen keys		
10.6	Set of Spanners		
10.7	Metric gears/Inch Gears		
10.8	Machine Break and Foot Brake		
10.9	Machine Lamp		
10.10	Three Jaw Chuck diameter 200mm		
10.11	Four Jaw Chuck diameter 200 mm		
10.12	Collet chuck & collets (from 4 to 26 mm in steps) with 1mm step		
10.13	Emergency stop		
10.14	Main switch and control panel		
10.15	Reduction Sleeve MT5 /MT2 , MT5/MT3, MT5/MT4		
10.16	Face plate		
10.17	Anti Vibration Pad		
10.18	Arrangement for engagement and disengagement of power feed		
10.19	Machine must have safety feed over load feature		
10.20	Combine (straight and v) Bed with Hardness 300 BHN (min).		
10.21	Drive plate for carrier		
10.22	Quick change tool post		
10.23	Splash guard		
10.24	Chuck Guard		
10.25	Taper Turning attachment		
10.26	Follow rest		
10.27	Steady rest		
10.28	Lathe carriers or equivalent		
10.29	Revolving centres		
11	CUTTING TOOLS to be supplied		
11.1	SHANK SIZE : AS PER THE TOOL POST OPENING SIZE		
11.2	Minimum 20X20mm Shank		
11.3	TOOL HOLDER SPECIFICATION:		
11.4	PCLNR/PDJNR 2 Nos.		
11.5	MDJNR 1 Nos.		
11.6	SVJBR 1 Nos.		
11.7	CNMG INSERTS 10 Nos.		
11.8	DNMG INSERTS 10 Nos		
11.9	VBMT INSERTS 10 Nos.		
11.10	External Thread Tool holder of 2 mm Pitch 1No, with inserts 10 Nos.		
11.11	Boring Bar DIA 12mm (SCLCR) 1 No., with inserts 10Nos		
	Boring Bar DIA 12mm (SDQCR) 1 No., with inserts 10Nos		
11.12	Boring Bar DIA 16mm (SCLCR), with inserts 10 Nos.		
	Boring Bar DIA 16mm (SDQCR) 1 No., with inserts 10Nos		
11.13	Grooving Tool holder (TTER3), with inserts (3mm width), 10 Nos		
11.14	Internal Thread cutting holder(DIA 12MM), with inserts (2mm pitch), 10 Nos.		
11.15	Keyless chuck (MT3) – 1 No.		

11.16	Sleeve (MT3-4) 1 No.		
11.17	Sleeve (MT2-3) – 1 No.		
11.18	Knurling Tool – 1No.		
11.19	Drill Bit set of 0.5 mm step(2-12mm) – 1 Set		
11.20	Reamer (5-12mm) H7 of 1mm step – 2 Nos. each		
11.21	The Supplier required to provide 1 st fill coolant and Hydraulic Oil		
12	Documentation		
12.1	Machine Manuals		
12.1.1	Mechanical maintenance manual 2 sets each (one hard copy and one soft copy)		
12.1.2	Electrical maintenance manual 2 sets each (one hard copy and one soft copy)		
12.1.3	Detailed Layout plan		
12.1.4	Operating and Programming Instruction		
12.1.5	Installation and Commissioning instructions		
12.1.6	Quality Test and Accuracy Test Chart Records		
12.1.7	Circuit Diagrams		
12.1.8	Maintenance / Repair Charts		
12.1.9	Preventive Maintenance Instructions		
12.1.10	Lubrication Chart & Lubricant list		
12.1.11	Detailed packing list of all Items and devices and detailed prospect of machine & all other Accessories to be enclosed in the respective boxes. Lifting instruction to be shown in packing list.		
13	Installation & Commissioning		
13.1	The final leveling adequacy shall be ensured by the supplier while installation of the machine before starting of the actual operation at customers site.		
13.2	The machine to be inspected as per accuracy chart before dispatch at supplier site. The suppliers to prove out the “Test Components” in all aspects. Acceptance and Qualification during Pre Dispatch Inspection (PDI) at supplier end. Release of machine for dispatch after successful completion of acceptance test, post PDI.		
13.3	The complete installation and commissioning must be carried out by the supplier for all the machines at the final destination/premises. A final accuracy test to be conducted by the purchaser/consignee. Final accuracy test report is to be signed jointly by Purchaser/consignee and supplier. Final acceptance would be given after conducting the accuracy test at the installation location.		
14	Training		
14.1	To be provided for one machine at each of the final destinations		
14.2	Operator training – 3 days.		
14.3	Maintenance course mechanical, electrical and electronics – 2 days.		

SOLID WORKS DESIGNING SOFTWARE

SOLIDWORKS Latest Version with Perpetual License for 25 users.

SL No	Name of the Item	Specifications	
1	SolidWorks Software	Type of Edition	SolidWorks Education Edition
		Platform Type	Desktop based
		Module	Mechanical Design, General Design
		Software Version:	2022-23
		Type of Licensing	PERPETUAL LICENSING with every year free upgrade
		Training options	Required
		Mechanical Design Features (Tools Included)	1. Solidworks 3D CAD, 2. Solidworks Simulation Premium, 3. Solidworks Flow Simulation, 4. Solidworks Plastics 5. Solidworks Motion Simulation, 6. Solidworks Sustainability etc.
		Software Description	Comprehensive 2D,3D
		License Delivery Mode	Electronic License
		No. of years for OEM support & updation	Minimum 3 Years
		Additional Terms & Conditions:	<ul style="list-style-type: none"> • Authorization Certificate from Dassault System is required during bidding. • Bidder shall maintain the software during the subscription service, which provides technical support, upgrades released during the period and maintenance of the software for minimum three years.

Universal Milling Machine

Parameter	Specifications	Bidder's Specifications	Bidder's Compliance
Working Surface (mm)Length	1350mm to 1600mm		
Working Surface (mm)Width	300mm to 450mm		
Swivel range of table on both side	0° to 45°		
T-Slot Nos.	3		
T-Slot Size	14mm to 18mm		
T-Slot Centre	45mm to 65mm		
Min. distance, centre lower face of	60mm		
Milling head spindle to table to face	0		
Max. distance, centre lower face of	600mm		
Milling head spindle to table to face	475mm		
X-Longitudinal Travel (Max.)	800 mm to 1000mm		
Y-Cross Travel (Max.)	400mm to 600mm		
Z-Vertical Travel (Max.)	230mm to 450mm		
FEEDS			

No. of Feeds	18 to 21		
Range of Longitudinal Feed/ min	16-25 to 800 - 1000		
Range of Cross Feed / min	16-25 to 800 - 1000		
Range of Vertical Feed / min	4-10 to 200-400		
No. of Rapid Feeds	1		
Longitudinal Rapid Feeds / min	Min.3200		
Cross Rapid Feeds / min	Min.3200		
Vertical Rapid Feeds / min	Min.800		
SPINDLE			
No. of Spindle Speeds	18 to 21		
Range of Spindle Speeds (RPM)	25-45 to 1800 - 2000		
Spindle Taper	ISO 40		
ELECTRICAL			
Main Motor	7.5 H.P. to 10 H.P.		
Feed Motor	2 H.P. to 3 H.P.		
Coolant Motor	0.1 H.P. to 0.15 H.P.		
STANDARD ACCESSORIES			
Stub arbore size – (Dia. 27mm, Dia.32mm, Dia.40mm) - 1 No.each			
Long arbore size - Ø27mm x500mm long & Ø 1”x500mm long - 1 No.each			
Universal vertical head - 1 No.			
Universal dividing head - 1 No.			
Rotary table size 250mm-300mm - 1 No.			
Slotting attachment - 1 No.			
Rack cutting attachment -1 No.			
Machine light suitable for 415 V operations with machine lamp. – 1 Set			
Coolant system with tank – 1 Set			
7.5 H.P. - 10 H.P. Electric motor with control gear – 1 Set			
Auto feed box with 2 H.P. - 3 H.P. Electric motor - 1 Set			
Set of requisite tools - 1 Set			
Swivel base type machine vice 160 mm heavy duty - 1 No.			
Conical type collets Ø 5mm to Ø 25 mm by 1mm or 2mm with collets chuck - 1 Set			
Face milling cutter size Φ 80mm x 27mm or Φ 100mm x 32mm bore diameter with index able carbide inserts - 1 No.			
Self-cantering vice - 1 No.			
Instruction & spare parts manual - 1 No.			

Powersaw Machine

Power saw machine – hydraulic feed system: 400 mm. Blade size, Motor Capacity -0.75 KW

Sr. No.	Technical Specification		Bidder's Compliance
	Details	Capacity/Size	
1.	Size	18”	
2.	Electric Motor	2HP, 3 Phase, ISI MARK	
3.	Blade Size	16” to 18”	

4.	Weight Approx	550 to 600 kg.(Light Weight Offer Will Not Be Consider)	
5.	Cutting For Round Bar M.S.	10"	
6.	Cutting For Square Bar M.S.	8"	
7.	Coolant Pump	Mechanical (0.1hp)	
8.	D.O.L. Starter	L&T/Siemens or any other equivalent.	
9.	Length Gauge, Guards, Spout Fittings		
10.	Motor Pulley	1 No.	
11.	Maintenance Manual Book	2 Nos	
12.	With Auto feed Hydraulic system and stopper		
13.	With Adjustable Vice		

Pipe Bending Machine

SL No	Description/Parameter	Specifications	Bidder's Compliance
1	OPERATING ENVIRONMENT	The machine shall be capable of working in a non-air conditioned normal workshop environment. The ambient temperature at the site at which the machine will be installed may vary from +4°C to +50°C over the year. The relative humidity may be as high as 95%. The atmosphere is expected to be dusty. The machine offered shall be suitably tropicalised to work under these atmospheric conditions without any adverse effect on the performance.	
2	GENERAL FEATURES		
2.1	Semi Automatic Pipe bending machine (single axis) for bending of tubes in round, rectangular, square and other sections of Mild Steel, Aluminium Steel, alloys etc.		
2.2	The pipe bending machine is required to be electro-mechanical operated and self contained & sturdy in construction. The machine is to be designed to facilitate bending of complicated shapes without any obstruction. The machine is to be simple in design and easy to operate with undue fatigue of operator. The machine is to be provided with liner scale calibrated in metric units and angular scale in degrees on body of the machine to show the angle of bend and length being bent.		

Pipe Bending Machine			
SL No	Description/Parameter	Specifications	Bidder's Compliance
3	SPECIFICATIONS		
3.1	Max. Tube capacity (D X T) (Ferrous tubes UTS 45 kg/mm ²)	D 45 mm x Thk 5 mm	
3.2	Min. Tube capacity (Dia)	6 minimum	
3.3	Max. Bend radius (CLR)	500 mm	
3.4	Min. Bend radius	1.5 D	
3.5	Length of mandrel	3 mtrs	
3.6	Bend angle range	5 to 180 degrees	
3.7	Direction of bending	clockwise	
3.8	Bending speed (vendor to confirm that in manual operation speed can be adjusted to very low value and inching operation is available)	18 RPM	
3.9	Repetitive bend accuracy	(+0.2 Degrees)	
3.10	Tube indexing facility (Rotary and linear)	Manual (against present stops)	
3.11	Rotary index stations (for plane of bend)	Any plane	
3.12	Liner index station (for distance between bends)	30mm min.	
3.13	Setting accuracy (for plane of bend)	Vendor to specify	
3.14	Setting accuracy (for distance between bends)	(+0.2 mm)	
3.15	Chucking arrangement	Manually	
3.16	Memory capacity (Min. 15 programs)	2000 Programs	
3.17	Motor capacity	5 HP	
3.18	Machine lubrication centralised automatic (motorised) oil lubrication system	Greasing Nipple is to be provided	
4	CONTROL SYSTEM AND PANEL		
4.1	PLC based system with display (Touch Screen 3 inch & above) & switches for various auto/manual operations. (Make-Siemens/ Fanuc /Mitsubishi/ABB/Allenbr/OMRON)	7" inch Screen PLC Based (Make-Siemens /Fanuc/ Mitsubishi/ ABB/Allenbr/ OMRON)	
4.2	Electric control panel having PLC modules and other electronics	Reputed make	
5	MACHINE SPEED ACCURACY AND STROKE		
5.1	Bending speed maximum	100*/sec min.	
5.2	Bending accuracy	(+/- 0.25 max)	
5.3	Return maximum speed	70*/sec min.	
5.4	Feeding speed maximum	200mm/sec	
5.5	Feeding accuracy	(+/- 0.2 max)	
5.6	Feeding push bending force at 1000 mm/sec	1.5 ton min.	
5.7	Rotation speed maximum	300*/sec min.	
5.8	Rotation accuracy	(+/- 0.2 max.)	

5.9	Rotation stroke	(360*)	
5.10	Tube clamping speed maximum	80 mm/sec min.	
5.11	Tube clamping stroke	200 mm min.	
5.12	Axes feed mechanism	Single axis	
6	DIE SETS AND RADIUS REQUIREMENTS		
6.1	Tooling: Tool set for MS/2tl Tubes (Including mandrel tie rods, dies and clamp brackets etc.)	2 Sets	
6.2	Round pipe diameter	2 Sets	
6.3	MS round pipe diameter	2 Sets	
6.4	Bidder may offer optional equipment/attachment if any	Bidder to specify	
7	ACCESSORIES		
7.1	Allen key set	2 Sets	
7.2	Allen bolts	2 Sets	
7.3	Spanner set for machine	2 Sets	
7.4	Operating manual	2 Sets	
7.5	Maintenance manual (inclusive of spares and lubricants specifications /grades).	2 Sets	
7.6	Proximities & limit switches	2 Sets	
7.7	bearings	2 Sets	

Tool and Cutter Grinder Machine

SL No.	Description	Unit	Requirement	Bidder's Compliance
1	Centre height	mm	120-150	
2	Swing Diameter	mm	250 - 300	
3	Swing with raising block	mm	350 - 400	
4	Distance between tailstock centres	mm	700- 800	
5	Distance between work head & tailstock Centre	mm	600 - 650	
6	Table			
6.1	Longitudinal travel	mm	500 - 600	
6.2	Clamping area	mm	(900 - 1000) x (100 - 200)	
6.3	Cross traverse	mm	250 - 300	
6.4	L.C of Cross Motion of Table	mm	0.02	
6.5	Swivel of the table with centre locking	deg.	Plus / Minus 45	
6.6	Fine Swivel with end locking	deg.	Plus / Minus 9	
7	Tilting Wheel Head			
7.1	Eccentricity with central line of column	mm	40	
7.2	Vertical adjustment	mm	250-300	
8	Spindle Axis			
8.1	Above the axis of centres	mm	200-230	
8.2	Below the axis of centres	mm	60-80	
9	Swivel			
9.1	Vertical plane	deg.	Plus / Minus 20 - 25	

9.2	L. C of the Wheel Head Vertical Motion	mm	0.01	
9.3	Vertical Travel of the Wheel Head	mm	290	
9.4	Horizontal plane	deg.	360	
9.5	Wheel speed in either sence of rotation	rpm	2800 / 5600 or better	
9.6	Maximum dia. of grinding wheel	mm	200	
9.7	Motor Power	kW	0.75 or better	
10	Work Head			
10.1	Spindle bore taper		MT5	
10.2	Taper on Wheel Head Spindle		01:05	
10.3	Tail stock taper		MT2	
11	Internal Grinding			
11.1	Dia. Range Min. / Max	mm	14 / 56	
11.2	Max. Spindle speed	rpm	18000 - 25000 or better	
11.3	Total power	kW	3 or better	
12	Accessories:			
12.1	Cylindrical grinding attachment			
12.2	Internal grinding attachment			
12.3	Universal vice for surface grinding			
12.4	Radius grinding attachment			
12.5	Radius truing attachment			
12.6	Hydraulic equipment for table movement			
12.7	Fine cross feed attachment			
12.8	PTFE coated guide way for cross movement			
12.9	Tape relief grinding attachment			
12.10	Rough reamer / core drills relief grinding attachment			
12.11	Attachment for grinding and relief of disc cutter			
12.12	Spiral milling and hob grinding attachment			
12.13	Twist drill sharpening attachment			
12.14	Permanent magnetic chuck			
12.15	Dust Exhausting device			
12.16	Water cooling device			
12.17	3-Jaw chuck			
12.18	Indexing unit			
12.19	Collet chucking attachment			
12.20	Attachment for grinding carbide tip tools			
12.21	Precision radius grinding attachment.			
12.22	DRO for all slides with display unit			
12.23	Grinding wheel guards			
12.24	Grinding wheel flanges(different sizes)			
12.25	Machine Lamp			
12.26	Diamond Tool with holder			
12.27	One set of manuals			
12.28	One set of Service Tools			
12.29	Different Grinding wheel (Cup, saucer, taper, straight etc.)			
12.30	Anti-vibration pads			
12.31	Indexing Head attachment with spring loaded center			

Pillar Type Drilling Machine

Sr. No.	Technical Specification		Bidder's Compliance
	Details	Capacity/Size	
14.	Drill size	12MM	
15.	Spindle Speed	FOUR SPEED	
16.	Speed Range	650 to 2400 RPM	
17.	Spindle Nose	MT-2	
18.	Spindle Centre to Column	150MM	
19.	Spindle Travel	75 MM	
20.	Maxi. Distance	Spindle to Table 420MM	
21.	Maxi. Distance Spindle to Base	620MM	
22.	Working Surface of Base	240 X190MM	
23.	Working Surface of Table	205 MM	
24.	Column Diameter	47 MM	
25.	Machine Base	300X200	
26.	Motor	0.75 KW/1440RPM	
27.	V-Belt Size	FHP-2350	
28.	Weight Of Machine(Approx.)	170kg Approx.	
29.	COOLENTSYSTEM		
30.	Casting grade FG260IS210 should be certified by NABL Approved Lab		

Double Ended Pedestal Grinder

Sr. No.	Technical Specification		Bidder's Compliance
	Parameter	Specification	
1.	178 mm wheels (one fine and one rough wheel)		
	WHEEL		
2.	Wheel Diameter	250 mm	
3.	Wheel Bore Diameter	25.4 mm	
4.	Width of the wheel	25 mm	
5.	Centre Distance	600 mm	
6.	Wheel 2 nos. Corse & fine		
7.	MOTOR	1HP	
8.	SPINDLE RPM	2800 RPM	
9.	Centre Height from GL	910 MM	
10.	DRIVE	V-Belt Driven	
11.	WHEEL WITH SAFTY GURAD COVER		
	Accessories required		
12.	Tool rests adjustable type in both direction Vertical and Horizontal		
13.	Wheel guard for both wheels		
14.	Eye shield for both wheels		
15.	Coolant Tray		
	Other Requirements:-		
16.	The body shall be made up of Heavy duty Cast iron with attractive appearance.		

17.	The motor shall be enclosed in the body which is readily accessible.	
18.	The spindle shall be mounted on heavy duty ball bearings. The spindle bearings and motor bearings are greased adequately.	
19.	Wheel flanges shall be balanced in design.	
20.	The drive shall be through V belts to the spindle by an electric Motor.	
21.	Two speeds are to be provided to maintain the peripheral speeds when the wheels 60.19. The motor shall be 400/440 Volts 3 phase 50 cycles with ISI marks	
22.	L&T push button starter direct on line with overload, under voltage is preferable.	
23.	Standard accessories shall be mentioned separately to ensure the machine	
24.	The machine shall have the ease provision for mounting the special accessories.	
25.	Pedestal Body made up of Heavy duty selected cast iron to ensure maximum strength, accuracy & Reliability	
26.	With motor enclosed in the body which is readily accessible.	
27.	Push button type Starter with Overload relays for motor protection	
28.	Casting Grade: -FG260IS210	
29.	Casting grade should be certified by NABL approved Labs.	
30.	Bench Grinding Machine mounted on Rigid steel Frame	
31.	Low Noise: Below allowable noise level.	
32.	High Filtering efficiency even for the fine stdusts.	

Air Compressor

SL No	PARAMETERS	SPECIFICATION	Bidder's Compliance
1	Type	Air Cooled, Encap Series Tank Mounted Rotary Screw Air Compressor, Single stage	
2	Motor	5.5 kW/ 7.5 HP, 415 V, 3 Phase/ 50 Hz Induction Motor	
3	Working Pressure	9.5 bar g or 138 psi g	
4	Maximum Pressure	9.7 bar g or 141 psi g	
5	Free Air Delivery	20 CFM OR 0.57m ³ /min	
6	Dimension	Should not exceed (Length x Breadth x Height) (615 x 715 x 845) mm	
7	Noise	64dB (A) max.	
8	Starter	Direct on Line Starter	
9	Version	Canopied	
10	Tank	220/270 litres, 10 kg/cm ² , Horizontal, Fitted with Safety Valves, pressure gauge and Auto drainage valve.	
11	Air Dryer		
12	Rating	20 CFM OR 0.57m ³ /min	
13	Maximum Pressure	16 bar g	
14	Cooling Media	Air	
15	Filter	Downstream Pre, Fine & Carbon Filters, Capacity-90-1200 cfm, Working pressure - 7-60 bar, Filtration Range-1-0.003 micron	

Surface Plate - Granite

Sr. No.	Technical Specification	Bidder's Compliance
1.	Uniformity In Hardness	
2.	Accurate Under Load Conditions	
3.	Vibration Absorbent	
4.	Easy To Clean	
5.	Rust-Proof, Non-Corrosive	
6.	Lower Co-efficient of Thermal Expansion	
7.	Warp Resistant	
8.	Low Porosity	
9.	Non-Abrasive	
10.	Non-Magnetic	
11.	Granite Grade 7.0	
12.	Over all flatness $\leq 19\mu\text{m}$	
13.	Length 1000mm	
14.	Width 1000 mm	
15.	Thickness 200 mm	
16.	Working height 850-900mm	
17.	Stand Cast Iron with adjustable screw	
18.	Corners Chamfered and rounded	
19.	Protection cover Suitable size	

Battery operated Pallet truck – 2 Nos.

Sr. No.	Technical Specification	Bidder's Compliance
1.	Capacity- 1Ton Battery Operated, Lifting Speed-100mm/sec,Max. lifting Height-110mm,Fork Length-1200mm,Overall Fork Width-550mm,Minimum fork Height-85mm	

Battery operated Fork Lift – 2 Nos.

Sr. No.	Technical Specification	Bidder's Compliance
2.	4 wheel forklift 1.5 ton, Lifting height-3m to 6m, wheel base-1400mm, Fork length-1150mm,	

Order Picker – 2 Nos.

Sr. No.	Technical Specification	Bidder's Compliance
3.	Capacity-300-400kg, Hydraulic Semi Electric	

Battery operated Reach Truck – 2 Nos.

Cylindrical Grinding Machine

Sr. No.	Technical Specification	Bidder's Compliance
1.	Operating Conditions	
2.	Altitude: 1000 meters above MSL	
3.	Humidity: 35-95%	
4.	Ambient Temp: 4-45 °C	
5.	Power supply: 415 volts \pm 15V, 50 Hz \pm 3%, 3 phases AC Supply.	
6.	Pneumatic Pressure: 4-6 Kg/cm ² (The equipment shall work from any pressure between 4-6 Kg/cm ²) as per necessity.	
	TECHNICAL SPECIFICATION	
7.	Centre distance: 650mm minimum	
8.	Centre Height: 150mm minimum	
9.	Longitudinal side: Max.travel=Centre distance +50mmSpeed: 50-5500mm/min. Reversal dwell: 0-6s Minimum increment on diameter: 0.00125mm or better Swivel of table: +/- 70 or better	
10.	Wheel head side: Rapid approach: 45mm minimum Infeed1: 0.012-6mm/min Incremental feed: 0.001-0.05mm Wheel head Swivel: 60° towards Work Head & 45° away from Work Head	
11.	5-Wheel head: External grinding wheel size: diameter X Width X bore = 300/400 X40 X127mm Power requirement: 4kw Peripheral speed: 30m/sec Rpm: 1910 revolution/min or better.	
12.	6- Work head: Swivel head: 0-90° With variable spindle speed 55-312 rev./min. with different ranges	
13.	7-Work accuracy: Surface straightness: 0.0025 mm/ 400mm, 0.004mm/650mm, Roundness on live spindle:0.001mm to 0.003mm	
14.	8. Guideways coating -Turcite –B/ equivalent/ better slide way coated on moveable slides to prevent stick slip motion.	
15.	9- Working head, Wheel head rotating spindle with anti-friction bearing or hydrodynamic super precision bearings or better.	
16.	10- Internal grinding attachment : Spindle size: Ø 60 or Ø 80X250mm Grinding internal bore: Ø 15 to Ø 100 mm with Suitable quils. Collets for mounting wheel Ø 3 & 6 mm (for ø 60 or 80x250 spindle or suitable with supplied spindle). Spindle RPM:18000 and above With Cooling arrangement for internal grinding.	
	Accessories along with Machine	
17.	Oil circulation and filtration unit for grinding wheel head.	
18.	3 point steady rest	
19.	3 jaw/4 jaw true chuck 6' with 6' chuck flange.	
20.	Face plate Ø 150 minimum	

21.	Set of collets Ø 5 mm to 25 mm.(with 0.5 step or maximum 1 mm)	
22.	Adaptor Sleeve & drawbar for collets of above size	
23.	Revolving centre MT3/MT4/MT5 suitable for machine.	
24.	Set of carbide tipped dead centers (2 nos.)	
25.	Set of carbide tipped half centers (2 nos.)	
26.	Additional Grinding wheel flange with balancing blocks	
27.	Wheel Balancing Stand (Roller type)	
28.	Wheel Balancing arbour	
29.	Wheel angle dressing device	
30.	Radius dressing device (Concave & Convex)	
31.	Dial indicator holding arrangement on main table for taper correction (with DIAL)	
32.	Table fine feed attachment	
33.	Machine lamp	
34.	Paper band cum Magnetic filter unit with special coolant tank	
35.	Lead screw/Ball Screw or better for In-Feed Slide	
36.	Digital Read out unit (DRO) for In-feed slide - 0.001 mm least count.	
37.	Micro Feed/ Fine feed on the wheel head slide - 0.001 mm least count.	
38.	Automatic Centralised lubrication system	

Radial Drilling Machine

SL No.	Description	Unit	Requirement	Bidder's Compliance
1	Capacity			
	Drilling in Steel (50 kgf/mm ²)	mm	50	
	Drilling Cast iron	mm	60	
	Tapping in steel - metric fine threads	Type	M56 x 2.5	
	Tapping in Cast Iron - metric fine threads		M48	
	Tapping in steel	inch	BSW 1(3/4)	
	Tapping in Cast Iron	inch	BSW 1(1/2)	
2	Drill head			
	Taper in spindle	Type	MT-5	
	Number of spindle speeds	Qty.	12	
	Speed Range	RPM	40 - 1800	
	Number of feeds	Qty.	6	
	Feed range	mm/Rev	0.125 to 1.25	
3	Working Range			
	Column sleeve diameter	mm	350	
	Width of arm guideways	mm	252	
	Drilling radius, maximum	mm	1790	
	Drilling radius, minimum	mm	530	
	Quill traverse	mm	325	
	Base plate to spindle - Maximum	mm	1420	
	Base plate to spindle - Minimum	mm	355	
	Drilling head traverse	mm	1260	
	Arm traverse	mm	740	

4	Power			
	Power. Main motor	kW	3.6	
	Power. Arm motor	kW	1.5	
	Hydraulic pump motor	kW	0.37	
5	The machine shall be supplied with the Standard Accessories as detailed under:			
5.1	Box table 1000 x 750 x 500 mm and additional base plate in various configurations to be provided			
5.2	Ergonomically grouped controls for easy and convenient operation			
5.3	Coolant Equipment			
5.4	12 Spindle speeds for drilling, reaming, tapping operations			
5.5	6 auto feed automatic spindle feed with precision depth stop			
5.6	Manual feed coarse and smooth			
5.7	Spindle reversal through clutch for tap withdrawal			
5.8	Double column construction for rigidity and effortless centering			
5.9	Electro-hydraulic clamping through operation of single push button			
5.10	Hardened and precision ground gears in the main drive			
5.11	Hardened and precision ground spindle sleeve			
5.12	Reduction Sleeves (MT5/MT1, MT5/MT2, MT5/MT3, MT5/MT4)			
5.13	Machine Lamp			
5.14	Tapping Attachment (M12mm – M48mm)			
5.15	Machine Vice with Swivel Base (dia. 200 mm)			
5.16	Drill Drift (1 set – 4 nos)			
5.17	Set of T - Bolts and Nuts (1 set – 4 nos)			
5.18	Drill Chuck - taper shank self-centering (dia. 5 - 20 mm)			
5.19	Set of Drill Bits (dia. 16 mm) (1 set – 4 Nos.)			
5.20	Set of HSS Twist Drill Bits (dia. 20, 30, 40, 50 mm - one each)			
5.21	Rigid construction			
5.22	Light centering of spindle.			
5.23	Precise depth release.			
5.24	Shock-free engagement of taps through clutch and spindle reverse for withdrawals			
5.25	Machine with drilling capacity 50 mm (Steel) / 60 mm (CI)			
5.26	Foundation Bolts and Wedges 1-Set			
5.27	Machine Instruction manual 1-Set (Soft copy & Hard copy)			
5.28	Machine Maintenance manual and Spare manual 1-Set (Soft copy & Hard copy)			
5.29	Maintenance tool kit 1-Set			
5.30	Installation Accessories and 1 set of hand tools, service tools & clamp set			
5.31	Electrical equipment complete with wiring suitable for 3 phase, 415 V, 50 cps, AC supply			
5.32	All accessories and consumables (including lubricant, coolant etc.) which shall require to run the machine smoothly along with the machine			

Absorption and Stripping Equipment

SL No.	Description	Bidder's Compliance
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1	Made up of different glass columns, with S.S. feed tank, 3 pumps, 3 rotameters, nitrogen cylinder, dissolved oxygen meter. With piping arrangement mounted on Suitable Frame Structure.	
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Shearing Machine

Parameter	Specifications	Bidder's Compliance
Max Shear Width	300mm	
Blade Length	300mm	
Cutting Capacity (Square) Rod	10 to 13 mm	
Cutting Capacity (Sheet)	6 mm	
Cutting Capacity (Flat)	70 X 6 mm	
Usage/Application	Sheet Cutting	
Operation	Manual Hand Operated	
KEY FEATURES:		
Angle Iron Cutting Cap: - 25,32,40,50 deg. (thickness Up to 6mm.)		
Last Longer		
Interchangeability		
Tool Steel Hardened		
Capacity of blade length: - Size: 12 inch		
12 Inch Manual Hand Plate Shear for Sheet Metal, Rebar and Round Stock		
This multi-function 12 inch metal shear cutter is designed to shear carbon steel plates and bars. It is able to cut sheet metal, rebar and round stock as well. Its blade length is 12 inch (304.8 mm) and cutting thickness can reach to 1/4 inch (6 mm) maximum, 3/16 inch (4.75 mm) thickness at full length.		
Features:		
Cutting blades made with hardened steel, able to shear carbon steel plate		
The metal shear owns an adjustable hold-down clamp inside, this helps to secure material more firmly		
Long handle saves your time and energy. Level arm with compensating spring, easy cutting across the entire length		
Solid steel frame ensures stability while cutting		
Screw holes at the bottom, can be fixed onto workbenches		
Designed to cut different metal forms including sheet metal, rebar and round stock		
Specification:		
Blade Length: 12" (304.8 mm)		
Capacity:		
Sheet Steel Thickness: 1/4" (6 mm)		
Flat Steel Size: 2-3/4" x 1/4" (70 x 6 mm)		
Rod Steel: 1/2" (13 mm)		
Maximum Thickness at Full Length: 3/16" (4.75 mm)		
Gross weight: 59.9 lb. (27.2 kg)		
Package dimensions (L x W x H): 29.9" x 18.9" x 7.5" (76 x 48 x 19 cm)		
Package Content:		
1 X 12 Inch Manual Metal Sheet Cutter		

Surface Grinding Machine/Hydraulic Surface Grinding Machine

Parameter	Specifications	Bidder's Compliance
Grinding Length	400mm to 600mm	
Grinding Width	200mm to 300mm	
Distance between Table & Spindle Centre (Max.)	400mm to 600mm	
Working Surface off table(Length)	410mm to 610mm	
Working Surface off table(Width)	210mm to 310mm	
Weight carrying capacity of Table	180Kg (approx) to 300Kg (approx)	
Max.Longitudinal movement	410mm to 630mm	
Max Cross movement	210mm to 310mm	
T-slots No.	1	
T-slots Width	14 mm to 18 mm	
Minimum vertical movement	Min.280 mm	
LONGITUDINAL MOVEMENT		
Max. Table Speed	1-5 m/min to 18 - 30m/min	
CROSS MOVEMENT		
Auto cross feed at each Table reversal	0.20-0.30mm/stroke to 6-8mm/stroke	
Manual Feed rate per turn	1 mm	
Least count of Hand wheel	0.01 mm	
VERTICAL MOVEMENT		
Automatic vertical traverse rapid	0.15m/min. to 0.3m/min	
Least count of Hand wheel	0.002 mm	
GRINDING WHEEL		
Diameter x Thickness x Bore	200 x 20 x 76.2mm/180 x 18 x 31.75mm	
Speed	2440 - 2800RPM approx. To 3000 – 3300 RPM approx.	
MOTORS		
Grinding spindle	2 H.P. to 3 H.P.	
Coolant pump	0.1 H.P. to 0.15 H.P.	
Vertical rapid motor	0.4 H.P to 0. 5 H.P.	
HYDRAULIC SYSTEM		
Working pressure	10 K g / Cm 2 to 12 K g /C m 2	
Power of Hyd. Pump Motor	1 HP	
Tank capacity	60Lit. to 75 Lit.	
Feed presser regulator		
STANDARD ACCESSORIES		
Hardened & Ground Precision Screw less Grinding vice -100mm Jaw Width – 1 No.		
Permanent magnetic chuck 250 X 120mm – 1 No.		
Coolant tank with magnetic filter / Separator – 1 Set		
Machine light suitable for 415 V operation with machine lamp – 1 Set		

Grinding wheel – 2 Nos.	
Grinding wheel flange unit (wheel collet) – 1 No.	
Table guard - 1 No.	
Set of necessary tool kit - 1 Set	
Hydraulic system. - 1 Set	
Radius dressing attachment - 1 No.	
Micro (Fine) feed for cross slide and vertical movement - 1 No.	
Multi-Diamond Dresser with Holder - 1 No.	
Instruction & spare parts manual - 1 No.	

Hand Drill Machine

Hand drill 6mm capacity with drill chuck (Electric).

Horizontal Milling Machine

Sr. No.	Technical Specification	Bidder's Compliance
1.	<p>Technical Specifications:</p> <p>Overall Table Size (L x W) : 1500 X 300 mm or more</p> <p>Clamping Area (L x W) : 1300 x 300 mm or more</p> <p>T-slots No. and Width : 3/16 mm or better</p> <p>Safe weight on Table (Max.) : 600 kg</p> <p>AUTOMATIC MOVEMENT</p> <p>Longitudinal Traverse : 800 mm or more</p> <p>Cross Traverse : 230 mm or more</p> <p>Vertical Traverse : 400 mm or more</p> <p>SPINDLE DRIVE</p> <p>Spindle taper : ISO 40 / ISO 50</p> <p>Speed Range (Min.) : 45 rpm or less</p> <p>Speed Range (Max.) : 1800 rpm or more</p> <p>Spindle motor Power : 5.5 kw (cont.) or more</p> <p>No. of Feeds : 18 Nos. or more</p> <p>Feed Range Longitudinal & Cross : 16 - 800 mm/min. or better</p> <p>Feed Range Vertical : 4 - 200 mm/min. or better</p> <p>Feed Motor Power : 1.5 kw (cont.) or more</p> <p>Rapid traverse Longitudinal & Cross : 3200 mm/min. or more</p> <p>Rapid traverse Vertical : 800 mm/min. or more</p> <p>OTHER FEATURES OF THE MACHINE</p> <ol style="list-style-type: none"> 1. The Manufacturer should quote Latest proven model for the machine. 2. Structural elements should be strongly ribbed, rigid and compact with vibration free and smooth machining. 3. The Table, Cross slide, and Knee slide should dovetail guide ways. 4. The dovetail guide ways should amply dimensioned to resist extreme machining loads. 5. The guide ways should be protected constantly from the ingress of swarf and coolant. 6. Light finger tip push button controls, conveniently grouped operating and setting 	

	<p>controls should ensure Fatigueless work. Electrical circuit provides interlocks should ensure Safety against malfunctioning.</p> <ol style="list-style-type: none"> 7. Column mounted electrical cabinet. 8. Large tray on the base plate to collect chips and coolant. 9. Automatic Centralised lubrication for guide ways and lead screws, splash lubrication for speed and feed gearing. 10. The coolant electric pump mounted at the rear of the machine base should ensures copious flow of coolant to the work zone. 11. The coolant should be discharged into the built-in coolant tank in the machine base. 12. Spindle Speed selection should be through easy lever control. 13. The Catalogue of the model offered and the list of users of such model supplied by the Manufacturer are to be furnished along with the offer itself. 14. The test charts / methods adopted for confirming the (ISO) geometrical accuracies of the machine are to be furnished by the Manufacturer. <p>STANDARD / SPECIAL ACCESSORIES (For each machine)</p> <ol style="list-style-type: none"> 1. Centralised lubrication System. 2. Foundation kit including leveling pads. 3. Work lamp & Panel lamp are must be of Fluorescent or latest type only 4. Arbor support bearing brackets. 5. 2 sets of draw bolt with nut. 6. Initial Fill of Consumables. 7. Tool Cabinet with 5 Normal extension drawers, Outer dimensions 575 L X 815 W X 897 H mm approx. with lock and key facility of any reputed make. 8. Coolant Equipment. 9. Anti vibration elements. 10. Milling Arbors ISO 40 / ISO 50 Dia 22 x 500 mm 11. Milling Arbors ISO 40 / ISO 50 Dia 27 x 500 mm 12. Milling Arbors ISO 40 / ISO 50 Dia 32 x 500 mm 13. Milling Arbors ISO 40 / ISO 50 Dia 40 x 500 mm 14. Milling Arbors ISO 40 / ISO 50 Dia 50 x 500 mm 15. Stub Arbors ISO 40 / ISO 50 Dia 22 x 19 mm 16. Stub Arbors ISO 40 / ISO 50 Dia 27 x 21 mm 17. Stub Arbors ISO 40 / ISO 50 Dia 32 x 24 mm 18. Stub Arbors ISO 40 / ISO 50 Dia 40 x 27 mm 19. Machine Vice with swivel Base 200 mm with opening Min.100mm to 175mm Max. 20. Self centering vice 50-150 mm 21. Collet Holder ISO 40 / ISO 50 22. Conical type collets Dia 5 to 20 mm 23. Reduction Sleeve Type B ISO 40 / ISO 50 MT 2 24. Reduction Sleeve Type B ISO 40 / ISO 50 MT 3 25. Reduction Sleeve Type B ISO 40 / ISO 50 MT 4 26. Suitable Main power sorce cable (copper) Armoured and Earth wire (COPPER) with proper rating and size with double earthing should be provided from machine to nearest power panel. (The length of the cable 25 mtrs). Make of power cable should be polycab / Universal / Havell's. Excavation, Grouting, Plastering and termination of cable should be carried out by the supplier. 27. Compatible to Machine T-slot, Studs (Length 100, 150 & 200 mm):20 Nos. each 	
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	<p>Length.</p> <p>28. Compatible to Machine T-slot, T Nuts, Washer & Long Hex. Nuts (Metric): 40 sets.</p> <p>29. Special equipments & accessories required for running the machine effectively, if any other than the above items covered of this specification should be quoted by Manufacturer separately. Also note that option offered at additional cost. If not specified, will be assumed as standard.</p>	
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Demarcation Equipment

Universal Cylindrical Grinding Machine

Sr. No.	Technical Specification	Bidder's Compliance
39.	Operating Conditions	
40.	Altitude: 1000 meters above MSL	
41.	Humidity: 35-95%	
42.	Ambient Temp: 4-45 °C	
43.	Power supply: 415 volts \pm 15V, 50 Hz \pm 3%, 3 phases AC Supply.	
44.	Pneumatic Pressure: 4-6 Kg/cm ² (The equipment shall work from any pressure between 4-6 Kg/cm ²) as per necessity.	
	TECHNICAL SPECIFICATION	
45.	Centre distance: 650mm minimum	
46.	Centre Height: 150mm minimum	
47.	Longitudinal side: Max.travel=Centre distance +50mm Speed: 50-5500mm/min. Reversal dwell: 0-6s Minimum increment on diameter: 0.00125mm or better Swivel of table: +/- 70 or better	
48.	Wheel head side: Rapid approach: 45mm minimum Infeed1: 0.012-6mm/min Incremental feed: 0.001-0.05mm Wheel head Swivel: 60° towards Work Head & 45° away from Work Head	
49.	5-Wheel head: External grinding wheel size: diameter X Width X bore = 300/400 X40 X127mm Power requirement: 4kw Peripheral speed: 30m/sec Rpm: 1910 revolution/min or better.	
50.	6- Work head: Swivel head: 0-90° With variable spindle speed 55-312 rev./min. with different ranges	
51.	7-Work accuracy: Surface straightness: 0.0025 mm/ 400mm, 0.004mm/650mm, Roundness on live spindle:0.001mm to 0.003mm	

52.	8. Guideways coating -Turcite –B/ equivalent/ better slide way coated on moveable slides to prevent stick slip motion.	
53.	9- Working head, Wheel head rotating spindle with anti-friction bearing or hydrodynamic super precision bearings or better.	
54.	10- Internal grinding attachment : Spindle size: Ø 60 or Ø 80X250mm Grinding internal bore: Ø 15 to Ø 100 mm with Suitable quils. Collets for mounting wheel Ø 3 & 6 mm (for ø 60 or 80x250 spindle or suitable with supplied spindle). Spindle RPM:18000 and above With Cooling arrangement for internal grinding.	
	Accessories along with Machine	
55.	Oil circulation and filtration unit for grinding wheel head.	
56.	3 point steady rest	
57.	3 jaw/4 jaw true chuck 6' with 6' chuck flange.	
58.	Face plate Ø 150 minimum	
59.	Set of collets Ø 5 mm to 25 mm.(with0.5 step or maximum 1 mm)	
60.	Adaptor Sleeve & drawbar for collets of above size	
61.	Revolving centre MT3/MT4/MT5 suitable for machine.	
62.	Set of carbide tipped dead centers (2 nos.)	
63.	Set of carbide tipped half centers (2 nos.)	
64.	Additional Grinding wheel flange with balancing blocks	
65.	Wheel Balancing Stand (Roller type)	
66.	Wheel Balancing arbour	
67.	Wheel angle dressing device	
68.	Radius dressing device (Concave & Convex)	
69.	Dial indicator holding arrangement on main table for taper correction (with DIAL)	
70.	Table fine feed attachment	
71.	Machine lamp	
72.	Paper band cum Magnetic filter unit with special coolant tank	
73.	Lead screw/Ball Screw or better for In-Feed Slide	
74.	Digital Read out unit (DRO) for In-feed slide - 0.001 mm least count.	
75.	Micro Feed/ Fine feed on the wheel head slide - 0.001 mm least count.	
76.	Automatic Centralised lubrication system	

Gear Pump Test Rig

SL No.	Description	Bidder's Compliance
1	With S.S. sump tank, S.S. measuring tank, Variable speed DC drive, RPM regulator, RPM indicator, Pressure gauge, vacuum gauge, energy meter. With piping arrangement mounted on Suitable Frame Structure.	

Sensitive Bench Drill Machine

SL No	Details	Specification	Bidder's Compliance
1	Drilling Capacity	1 to 13mm Motorized –with drill chuck and key etc.	
2	Spindle Speed	FOUR SPEED	
3	Speed Range	650 to 2400	
4	Spindle Nose	MT-2	
5	Spindle Centre to Column (Min)	150mm	
6	Spindle Travel (Min)	75mm	
7	Min. Distance Spindle to Table	420mm	
8	Min. Distance Spindle to Base	620mm	
9	Working Surface of Base (Min.)	240 X 190mm	
10	Working Surface of Table (Min.)	205mm	
11	Column Diameter	47mm	
12	Machine Base	300 X 200	
13	Motor	0.75KW/1440RPM	
14	V-Belt Size	FHP-2350	

Plotter

SL No	Details	Specification	Bidder's Compliance
1	Function	Print, Scan	
2	Type	Color G	
3	Media Size	A0 - A4	
4	Print application	Line drawing, CAD, Architecture, Poster, Documents	
5	Resolution	2400*1200 DPI or better	
6	Print speed	Less than 30 sec/page or 1 for A0 (in PPM)	
7	Ink type	At least 4(CYMK)	
8	Scanning Size (inches)	A0-A4	
9	Scan resolution	Upto 600 DPI	
10	Scan speed	200 DPI (mm/sec) or better	
11	RAM	2 GB or better	
12	Input	Nominal 230V max upto 250V and 50 Hz	
13	Max power consumption	Less than 180 Watt	
14	Print Language	JPEG, Adobe PDF, TIFF,	
15	System requirements	Compatible with windows 7, 10 or better	
16	Warm up time	Less than 40 s	
17	Network interface	Standard: Ethernet 10/100Base TX; optional: Wireless LAN(802.11 a/b/g/n) 0r better	
18	USB port	Yes (Print facility should be active fromthat port) G	

Shaping Machine

SL No	Technical Specification	Bidder's Compliance
1	<p>Shaping machine made of high grade cast iron suitable for keyway cutting</p> <p>Type of Mechanism: Gear drive STROKE length: 450 mm Ram length: 840 mm Ram bearing: 610 mm No of RAM Speed: 4 Max Distance from Table to RAM: 370 mm Min Distance from Table to RAM: 50 to 70 mm Motor Power: 2 HP Power supply: AC 3-Phase, 415V +/-10%, 50 HZ Working Surface of Table: 450X320 mm Max Horizontal Travel of Table: 400 mm Max Vertical Travel of Table: 204 mm Angular Movement of Table: 45 Max Tool Shank Size: 20 x 20 Max Vertical Travel of Tool Slide: 130mm Max Swivel of Tool Head: 60 Cross feed range per stroke in mm: 0.2-1 Range of RAM Speed: 20-90 Accessories</p> <ol style="list-style-type: none">1.Key way cutting attachment2. Automatic lubricating pump3. Swiveling Machine Vice4. Tool holder with cutting tool5. Standard tool kit for operation and maintenance of the machine shall be providedG	

Hydraulic Pressure Testing Machine

Hydraulic pressure machine for testing leakage in GI pipe fittings etc.

Vertical Milling Machine

Sr. No.	Technical Specification	Bidder's Compliance
1	<p>1. Field of Application:</p> <p>1.1 The Machine will be used for the Following Application.</p> <p>1.2 Machining of Single jobs and medium series lots.</p> <p>1.3 Standard machining of Press tool plates, Die plates, Mould plates, Fixtures, Precision machining jobs in:</p> <p>1.4 Face, shoulder, pocket milling</p> <p>Machine of:</p> <p>1.5 Forming & stamping Tool components</p> <p>1.6 Die casting, Die components</p> <p>1.7 Injection Mould components</p> <p>1.8 Other Free form machining components</p> <p>2. The machining of following materials must be possible</p> <p>2.1 Ferrous metals and alloys like:</p> <p>2.2 Mild steel plates</p> <p>2.3 Structural and constructional steel</p> <p>2.4 Tool steel, low – medium high alloyed</p> <p>2.5 Stainless steel</p> <p>2.6 Casting steel low alloyed</p> <p>2.7 Cast iron, Grey cast iron & Nodular cast iron ferritic/pearlitic</p> <p>3. Non Ferrous Metals and Metal alloys like:</p> <p>3.1 Aluminum and Aluminum alloys</p> <p>3.2 Copper and Copper alloys and Brass</p> <p>3.3 Plastic material and Hardened Resins bound components</p> <p>4. Technical Data</p> <p>4.1 Work Area Dimensions</p> <p>4.1.1 Table size 1500 X 300 mm or more</p> <p>4.1.2 Clamping Area 1300 X 300 mm or more</p> <p>4.1.3 Longitudinal Travel (minimum) 1000 mm</p> <p>4.1.4 Transverse Travel (minimum) 250 mm</p> <p>4.1.5 Vertical Travel (minimum) 400 mm</p> <p>4.1.6 T slots 18 H7 mm (min), 3 no. (Min.)</p> <p>4.1.7 Table loading capacity 500 Kg. or more</p> <p>5. Feed</p> <p>5.1 No. of Feeds 15 or more</p> <p>6. Feed Range</p> <p>6.1 Longitudinal Feed Range 15-700 mm/min or more</p> <p>6.2 Transverse Feed Range 15-700 mm/min or more</p> <p>6.3 Vertical Feed Range 5- 250 mm/min.</p> <p>7. Rapid Transverse</p> <p>7.1 Min. Longitudinal 2000 mm/ min.</p> <p>7.2 Min. Transverse 2000 mm/min.</p> <p>7.3 Min. Vertical 800 mm/min.</p> <p>8. Machine Spindle & Head Stock:</p> <p>8.1 Spindle Motor 5 KW or more</p> <p>8.2 Feed Motor 1.5 KW or more</p> <p>8.3 Quill Stroke, Manual 60 mm or More</p>	

<p>8.4 Spindle nose taper as per ISO 50</p> <p>8.5 Vertical Milling Head Swivelling to both side 45 degrees (minimum)</p> <p>8.6 No. of speeds 15 or more</p> <p>9. Coolant System: Coolant Tank with Coolant pump.</p> <p>10. Accuracies</p> <p>10.1 Minimum Least count in (cross side, longitudinal & vertical directions) 0.05mm</p> <p>10.2 Squareness & straightness of the vertical movement of the knee to the table surface 0.02 mm per 300 mm</p> <p>10.3 Flatness of the Table Surface 0.04 upto 1000 mm</p> <p>10.4 Parallelism of the Table Surface 0.02 per 300 mm</p> <p>10.5 True Running of the Taper Bore of the Spindle</p> <p> a) Near the spindle Nose 0.01 mm.</p> <p>10.6 True Running of the Taper Bore of the Spindle at a Distance L, L=300mm 0.02 mm</p> <p>10.7 Runout of Spindle Nose Centering Surface 0.01 mm</p> <p>10.8 Squareness of the Spindle Axis to the surface 0.02 per 300 mm</p> <p>11. General Features:</p> <p>11.1 Magnetic clutch brake for Spindle motor and feed motor</p> <p>11.2 Hardened and ground guide ways</p> <p>11.3 Rigid casting body with sufficient ribs for vibration free operation</p> <p>11.4 All gears and shafts should be hardened and ground.</p> <p>12. Accessories</p> <p>12.1 Machine LED Lamp</p> <p>12.2 Anti Vibration Pads</p> <p>12.3 Clamping Kit with step block & strap clamp for clamping job height upto 100 mm – 6 sets</p> <p>12.4 Centralised lubrication system</p> <p>12.5 Rapid Feed in Longitudinal & Tranverse directions</p> <p>12.6 Milling Vice With Swivel Base, Jaw Width 100 mm, opening 150 mm minimum with (qty. 2)</p> <p>12.7 Chip Trolly 1 set</p> <p>13. Tool Holding & Cutting Tools</p> <p>Tool Holding: Suitable for spindle nose taper ISO 50</p> <p>Cutting Tools: From reputed suppliers such as (Mitsubishi Materials/ Sandvik/ Seco Tool)</p> <p>14. Important Note for CARBIDE Tooling</p> <p>A) Cutting tool inserts should be suitable “Coated Cemented Carbide: grades from reputed suppliers such as (Mitsubishi Materials/ Sandvik/ Seco Tool or equivalent)</p> <p>A.1) Light to heavy machine of un-alloyed & low alloy steels [Grade ISO P30 (P10-P40)] equivalent.</p> <p>A.2) Light Roughing of Steel [ISO H25 (H10-H25) equivalent]</p> <p>B) Make and equivalent ISO Grade of the tools offered should be mentioned here.</p> <p>C) Make of Cutting Tool Holders offered should be mentioned here.</p> <p>15. Machine Manuals</p> <p>-Mechanical maintenance manual 2 sets each (one hard copy and one soft copy)</p> <p>-Electrical maintenance manual 2 sets each (one hard copy and one soft copy)</p> <p>-Detailed Layout plan</p> <p>-Operating and Programming Instruction</p> <p>-Quality Test and Accuracy Test Chart Records</p> <p>-Circuit Diagrams</p>	
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	-Maintenance / Repair Charts -Lubrication Chart & Lubricant List -Instruction manual for supplied Coolant Concentrate, 1st Filling and Coolant Maintenance	
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Power Hacksaw Machine

21” or more length blade with Standard and optional accessories.

Co-ordinate Measuring Machine

SL No.	Description	Bidder's Compliance
1	Description: i. CNC 3D Coordinate measuring machine (Bridge type) for applications like geometric dimension and tolerance (GD&T) measurement (Perpendicularity, Parallelism, concentricity, angularity and run-out), linear measurement, 2D and 3D multi axes angle measurement, Measurement of surface and profile form (Flatness, roundness, cylindricity, profile of line and surface) measurement, CNC mode Programming, Manual and CNC mode of inspection, Part To Part comparison, CAD model to Part comparison. ii. Result output facility in different format like text, pdf, excel with details of dimensions as nominal value, measured value, tolerance band and magnitude of deviation.	
2	Measurement i. X Axis: 500 mm (Minimum) ii. Y Axis: 600 mm (Minimum) iii. Z Axis: 400 mm (Minimum) Note: X and Y axis are interchangeable.	
3	Length Measuring Error (MPE _L) as per ISO 10360-2 (Temperature range 18-22 degree C): \leq (less than or equal to) : $2.5+L/300 \mu\text{m}$	
4	Probing Error (MPE _P) as per ISO 10360-2: \leq (less than or equal to) : $2.5 \mu\text{m}$	
5	Resolution: \leq (less than or equal to): $0.1 \mu\text{m}$	
6	3D Speed of CMM : minimum 400 mm/s	
7	3D Acceleration: minimum 700 mm/s ²	
8	Material of Construction i. Table material must be “Granite” for providing a durable & secure surface for parts. ii. X, Y and Z measuring system axis shall be of Aluminium alloy/Ceramic/Granite. iii. All the 3 axis must be supported by Air Bearings and drive motors.	
9	Control Panel i. Computer independent portable standard panel having Single graduated speed control joystick for easy and precise movement of all 3 axes. Measurement facility with manual and CNC (auto) mode. ii. Variable Speed control in CNC mode & Manual mode. iii. Panel must have switches for selecting X, Y, Z Axis movement independent to each other Axis, emergency stop, start, run & reset buttons.	
10	Probe Head i. Motorised articulating probe head with a resolution of angle indexing in between of 2.5 Degree to 7.5 Degree or continuous/infinite indexing capability in both A & B axes. ii. Probe head indexing minimum on A axis 90°, B Axis: $\pm 180^\circ$ or continuous/ infinite indexing.	
11	Probe i. Touch Trigger Probe, the probe shall be compact and modular five-way touch trigger probe, ideal for fast and high accuracy measurement. ii. Probe shall have capacity to carry upto 100 mm length of stylus.	

	iii. Collision Protection: built-in protection should be provided in the system against the damages caused by the collision with the component under inspection.	
12	Miscellaneous i. Component weight carrying capacity: minimum 250 KG. ii. Joystick operations with independent axis lock facility. iii. Measurement facility with manual and CNC (auto) mode. iv. Working temperature range: 18° - 22° Centigrade v. Granite table having metal threaded inserts (Preferably M8) for clamping the components.	
13	SOFTWARE i. Application Software should be latest and compatible for multi sensors (contact & non-Contact probe sensors) and have license for full age of the machine ii. Capable to measure all the parameters mentioned at Sl no 1. iii. Capability of inspection, Analysis & Reporting of measured data in different format like text, pdf, excel, with details of dimensions as nominal value, measured value, tolerance band and magnitude of deviation. iv. Automatic generation of probe path and measuring parameters for CNC program from the CAD model. v. Storage of probe calibration data: Software must allow to store minimum 10 probe configurations calibration data. vi. Measurement of 2D Curves & 3D Curves against nominal data; The nominal data of the curve can be input manually by keying in the data of drawing or directly from the CAD model files. Then the measurement is done against this data. Graphical presentation of nominal curves, measured curves & deviations. vii. Digitizing /Measurement of 2D, 3D Curves and features (details/data) & digital output format of this measured data should be compatible to import by any CAD software. viii. Capability to program a pattern/Array of drawing features. ix. The software must be capable to create/generate an imaginary feature (eg. Plane, line, circle, point, sphere) at desired position without probing to evaluate the imaginary Drawing Dimension.	
14	COMPUTER SYSTEM: Computer System utilizing each aspect of CMM machine shall be given by OEM compatible with the machine software for normal operation with minimum following configuration; i. Minimum i-7 processor ii. Latest Operating system of Windows Pro with genuine license compatible with machine software iii. Minimum 16GB RAM iv. Minimum 1 TB SSD v. Minimum 24" HD Touch Screen Monitor vi. DVD Reader/Writer, Key Board, Optical Mouse along with necessary cables vii. Laser Printer – 01 No. viii. Graphic card – Minimum 4 GB to run CAD based inspection ix. Online UPS: UPS for with minimum 15 minutes backup for Overall Machine	
15	Air dryer (Refrigerated type) With suitable Oil & line Filter.	
16	Certified Calibration sphere shall be provided along with machine.	
17	Automatic Tool/ stylus changer rack with minimum 2 Nos Module	
18	Anti-vibration Pads shall be provided along with machine.	
19	Power Supply: 220 V AC \pm 10% , 50 Hz \pm 2% System must have capability to handle voltage, current and frequency fluctuation, necessary protection to be provided.	
20	Standard stylus kit with compatible stylus holder; i. M3 To M2 convertor-2 Nos (If the threads of the supplied styluses, extensions and stylus holder are different then suitable convertor shall be supplied accordingly.) ii. Extensions 10 mm & 20 mm: 2 Nos each iii. Extension 50 mm: 1 No	

	<p>Essential</p> <p>iv. Stylus Dia-1mm & minimum Length 10 mm - 2 No</p> <p>v. Stylus Dia -1.5mm & length -10 mm: 2 Nos</p> <p>vi. Stylus Dia -2mm & length -20 mm: 4 Nos</p> <p>vii. Stylus Dia -3 mm & length -20 mm: 2 Nos</p> <p>viii. Stylus Dia 4 mm & length 50 mm: 1 No</p> <p>ix. Stylus Dia -8 mm & minimum length 10 mm: 1 No</p> <p>x. Stylus Dia 10 mm & minimum length 10 mm : 1 No</p> <p>xi. Stylus Dia -12 mm & minimum length 10 mm: 1 No</p> <p>xii. Star Stylus connector set: 1 No</p> <p>xiii. Disc type stylus - minimum Dia 14 mm - 1 No</p> <p>xiv. Disc type stylus - minimum Dia 21 mm - 1 No</p> <p>xv. Stylus should be lightweight made of steel / carbon fiber / ceramic having Ruby/ceramic ball.</p>	
	<p>Documentation.</p> <p>Detailed layout plan and prospect of machine to be given for installation purpose</p> <p>ii. Operating instruction manual & Installation and Commissioning instructions shall be provided</p> <p>iii. Quality Test records of the machine shall be provided</p> <p>iv. Maintenance/repair charts, Preventive maintenance instructions manual shall be provided</p>	

Screw Pump

Screw pump with 1 HP electric motor.

Breaker Machine

SL No	Description	Bidder's Compliance
1	Wt of Concrete breaking machine (KG)	Less than or equal to 30 Kgs
2	The Breaking / chipping hammer to be supplied with adjustable bits	Yes
3	Power Requirements	230 V 50 Hz, Single phase
4	Power Rating in Watt	2000 Watts or lesser
5	Chiseling impact rate in bpm	750-1900
6	Chiselling impact force in Joules	20-50
7	Noise level at 1 m distance when working in dB	85-125
8	Material of bit supplied	High Tensile Steel
9	Bit Diameter should match with size of bit locker of equipment	Yes
10	Protective carry case to be supplied which is designed so that same fully protect the equipment getting damaged and for easy handling of equipment during transit	Yes
11	Material of the protective carry case	Hard durable plastic
12	Warranty in Years	Minimum 3 years
13	The equipment shall be light in weight and shockproof body	Yes
14	Electric cord not less than 4m in length , 10/15 Amp 3pin	Yes
15	Dust seal to protect Equipment from entering of dust inside	Yes

16	Easy to operate suitable on/off Switch	Yes	
17	One flat bit and one pointed bit to be supplied with machine	Yes	
18	Number of pairs of spare(extra) pointed bits to be supplied with Machine	1	
19	The bit length pair of pointed bits supplied as spare (extra) should be such that length of the one bit should be more than 28 cm and other should be more than 41 cm	Yes	
20	Number of additional pairs of flat bit supplied	1	
21	One set of Dust Cap and Ear Plug to be supplied for the use of operator	Yes	
22	Product instruction manual shall be supplied with the machine	Yes	
23	Make and model of the offered machine along with catalogue to be submitted alongwith the Bid		

Band Saw Machine

Parameter	Specifications	Bidder's Compliance
Cutting Capacity	a. Round Tube = Minimum 300 MM b. Square Tube = Minimum 350 MM c. Rectangular Tube = Minimum 350 MM d. Solid Square / Round Bars = 50 to 75 MM	
Material to be Cut	MS and Stainless Steel	
Blade Speed	20 to 100 Mtr / Min Approx.	
Main Motor Power	5 HP Minimum	
Hydraulic Motor	01 HP Minimum	
Coolant Motor	01.5 HP Minimum	
Power Supply	415V - 50Hz - 3Phase	
Protection Degree	IP-54	
Bandsaw Blade Material	Bi-Metallic , Grade M-42 or Higher grade	
Clamping Type	Hydraulic Vice	
Gear Box	Heavy Duty Worm Gear Box	
Speed Control	Through VFD controlled Driver Assembly	
Cooling System	Hydraulic power pack with sufficient oil tank capacity and necessary control elements is provided on the machine	
Other Mandatory Features		
Cutting head up-down movement should be jerk free		
Cutting head should return much above the bar after cutting to safe height		
Rapid movement of cutting head upto the bar before cutting starts		
Automatic height adjustment for saw frame		
Variable Pressure Control for Cutting Feed		
Push Button Type Operating Panel Board		
Moveable Blade Support Guide		
Blade Tensioning Arrangement		

High pressure coolant jets should pass through blade guide	
Powerised cleaning Wire Brush Unit	
Safety Feature	
Automatic machine stop when blade fails	
Blade guards for operator safety near clamping area	
Standard Accessories	
The Firm Shall supply the Standard accessories along with the machine	
Roller Support Stand, minimum Two meter long	
Swarf Conveyor Assembly	
Hydraulic Bundle Cutting Attachment	
First Fill Of Oil	
Machine Lamp	
Saw Blades (Different types if applicable)	
Tool Kit	
Operating & Instruction Manual	
Maintenance Manual & Complete Spare parts list	
Wire Brush 6" Hard 20 Nos each	
Feed control valve	
Hand Lubrication Pump	

HDPE Butt Fusion Welding Machine

Portable Drilling Machine

Horizontal Milling Machine

Sr. No.	Technical Specification	Bidder's Compliance
2.	Technical Specifications: Overall Table Size (L x W) : 1500 X 300 mm or more Clamping Area (L x W) : 1300 x 300 mm or more T-slots No. and Width : 3/16 mm or better Safe weight on Table (Max.) : 600 kg AUTOMATIC MOVEMENT Longitudinal Traverse : 800 mm or more Cross Traverse : 230 mm or more Vertical Traverse : 400 mm or more SPINDLE DRIVE Spindle taper : ISO 40 / ISO 50 Speed Range (Min.) : 45 rpm or less Speed Range (Max.) : 1800 rpm or more Spindle motor Power : 5.5 kw (cont.) or more No. of Feeds : 18 Nos. or more Feed Range Longitudinal & Cross : 16 - 800 mm/min. or better Feed Range Vertical : 4 - 200 mm/min. or better Feed Motor Power : 1.5 kw (cont.) or more	

	<p>Rapid traverse Longitudinal & Cross : 3200 mm/min. or more</p> <p>Rapid traverse Vertical : 800 mm/min. or more</p> <p>OTHER FEATURES OF THE MACHINE</p> <ol style="list-style-type: none"> 15. The Manufacturer should quote Latest proven model for the machine. 16. Structural elements should be strongly ribbed, rigid and compact with vibration free and smooth machining. 17. The Table, Cross slide, and Knee slide should dovetail guide ways. 18. The dovetail guide ways should amply dimensioned to resist extreme machining loads. 19. The guide ways should be protected constantly from the ingress of swarf and coolant. 20. Light finger tip push button controls, conveniently grouped operating and setting controls should ensure Fatigueless work. Electrical circuit provides interlocks should ensure Safety against malfunctioning. 21. Column mounted electrical cabinet. 22. Large tray on the base plate to collect chips and coolant. 23. Automatic Centralised lubrication for guide ways and lead screws, splash lubrication for speed and feed gearing. 24. The coolant electric pump mounted at the rear of the machine base should ensures copious flow of coolant to the work zone. 25. The coolant should be discharged into the built-in coolant tank in the machine base. 26. Spindle Speed selection should be through easy lever control. 27. The Catalogue of the model offered and the list of users of such model supplied by the Manufacturer are to be furnished along with the offer itself. 28. The test charts / methods adopted for confirming the (ISO) geometrical accuracies of the machine are to be furnished by the Manufacturer. <p>STANDARD / SPECIAL ACCESSORIES (For each machine)</p> <ol style="list-style-type: none"> 30. Centralised lubrication System. 31. Foundation kit including leveling pads. 32. Work lamp & Panel lamp are must be of Fluorescent or latest type only 33. Arbor support bearing brackets. 34. 2 sets of draw bolt with nut. 35. Initial Fill of Consumables. 36. Tool Cabinet with 5 Normal extension drawers, Outer dimensions 575 L X 815 W X 897 H mm approx. with lock and key facility of any reputed make. 37. Coolant Equipment. 38. Anti vibration elements. 39. Milling Arbors ISO 40 / ISO 50 Dia 22 x 500 mm 40. Milling Arbors ISO 40 / ISO 50 Dia 27 x 500 mm 41. Milling Arbors ISO 40 / ISO 50 Dia 32 x 500 mm 42. Milling Arbors ISO 40 / ISO 50 Dia 40 x 500 mm 43. Milling Arbors ISO 40 / ISO 50 Dia 50 x 500 mm 44. Stub Arbors ISO 40 / ISO 50 Dia 22 x 19 mm 45. Stub Arbors ISO 40 / ISO 50 Dia 27 x 21 mm 46. Stub Arbors ISO 40 / ISO 50 Dia 32 x 24 mm 47. Stub Arbors ISO 40 / ISO 50 Dia 40 x 27 mm 48. Machine Vice with swivel Base 200 mm with opening Min.100mm to 175mm Max. 	
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	<p>49. Self centering vice 50-150 mm</p> <p>50. Collet Holder ISO 40 / ISO 50</p> <p>51. Conical type collets Dia 5 to 20 mm</p> <p>52. Reduction Sleeve Type B ISO 40 / ISO 50 MT 2</p> <p>53. Reduction Sleeve Type B ISO 40 / ISO 50 MT 3</p> <p>54. Reduction Sleeve Type B ISO 40 / ISO 50 MT 4</p> <p>55. Suitable Main power source cable (copper) Armoured and Earth wire (COPPER) with proper rating and size with double earthing should be provided from machine to nearest power panel. (The length of the cable 25 mtrs). Make of power cable should be polycab / Universal / Havell's. Excavation, Grouting, Plastering and termination of cable should be carried out by the supplier.</p> <p>56. Compatible to Machine T-slot, Studs (Length 100, 150 & 200 mm):20 Nos. each Length.</p> <p>57. Compatible to Machine T-slot, T Nuts, Washer & Long Hex. Nuts (Metric): 40 sets.</p> <p>58. Special equipments & accessories required for running the machine effectively, if any other than the above items covered of this specification should be quoted by Manufacturer separately. Also note that option offered at additional cost. If not specified, will be assumed as standard.</p>	
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Turret Ram Milling Machine

Sr. No.	Technical Specification	Bidder's Compliance
1	<p>Table size: 254 X 1270 mm</p> <p>T slot of table (qty X size) : 3 X 16</p> <p>Longitude manual (X axis): 890 mm</p> <p>Cross travel (Y axis): 406 mm</p> <p>Vertical travel of Knee (Z axis): 406 mm</p> <p>RAM travel: 560 mm</p> <p>Quill travel: 127 mm</p> <p>Spindle nose to table surface: 100-506 mm</p> <p>Over swivel on turret: 360 deg</p> <p>Head swivel (R and L): +-45 deg</p> <p>Head tilt (Up and down): +-45 deg</p> <p>Spindle to column: 159-719 mm</p> <p>Spindle motor: 3 HP</p>	

Silicon Carbide Grinder

Sr. No.	Technical Specification	Bidder's Compliance
1	<p>Wheel head tilting angle-45 Degree - +90 Degree</p> <p>Wheel head swiveling angle in the horizontal plane 360 Degree</p> <p>Grinding capacity 3"dia. to 28"dia.</p> <p>Motor of Grinding wheel 1 HP/ 440V 3Phase</p> <p>Motor of Cooling system 1/8 HP</p> <p>Standard volume 58.1"x33"x57"</p> <p>Net weight 280 kg</p> <p>Gross weight 360 kg</p>	

Profile Projector

SL No.	Description	Requirement	Bidder's Compliance
1	Screen & Optical Projection System		
1.1	The profile projector shall be equipped with a fine-grain ground glass screen with a minimum diameter of 300 mm.		
1.2	The screen material shall allow for high-quality image projection with minimal distortion.		
1.3	The system must have a vertically aligned lens axis to ensure accurate profile measurements with minimal parallax error.		
2	Electronic Protractor		
2.1	The system must include a digital electronic protractor for precise angular measurement of features such as tapers, chamfers, and inclines. It shall have the following features:		
2.2	Switchable display between degree and decimal values		
2.3	Resolution of at least 1 arc minute (0.01 degrees)		
2.4	Measurement Range of ± 360 degrees		
2.5	ABS/INC modes with a zero-setting function for reference adjustments		
3	Magnification System		
3.1	The system shall include a three-position turret for accommodating multiple magnification lenses, allowing quick switching between different zoom levels.		
3.2	Standard magnification shall be 10X.		
3.3	Optional magnifications shall include 20X and 50X		
3.4	The on-screen accuracy must be at least 0.05% for both profile and surface measurements.		
4	Work Stage & Measurement Capabilities		
4.1	The profile projector shall be equipped with a rigid work stage, capable of smooth movement in the X and Y axes.		
4.2	Table surface dimensions shall be at least 350 mm x 280 mm, with T-slots for securely mounting fixtures and workpieces.		
4.3	The measurement range shall be 200 mm (X) \times 150 mm (Y) or higher.		
4.4	The focusing travel must be 100 mm to ensure clear imaging across different sample thicknesses		
4.5	The resolution shall be at least 0.001 mm to support high-precision measurements		
4.6	The system must integrate built-in linear encoders to ensure direct, accurate displacement measurement.		
5	Digital Measurement & Display System		
5.1	The system must feature an advanced digital readout (DRO) system with a user friendly interface for quick and precise measurement. The DRO shall provide:		
5.2	Zero-setting capability for easy reference point establishment		
5.3	Unit conversion between Inch and MM.		
5.4	ABS/INC measurement modes for flexibility in reference positioning		
5.5	Geometric measurement functions, including: <ul style="list-style-type: none"> X and Y coordinate measurement Angular measurement with high precision. 		

	<ul style="list-style-type: none"> Distance calculation between features Measurement of lines, circles, and skew angles. 	
6	Illumination & Cooling System	
6.1	<p>The system must provide adequate illumination to ensure high-contrast, shadow-free projection. It shall include at least:</p> <ul style="list-style-type: none"> One profile lamp, 150W, 24V halogen, for clear contour visibility. Two surface lamps, 150W, 24V, to enhance feature clarity. Independent fan cooling for each bulb to prevent overheating. Soft-start SMPS technology to extend lamp life and reduce thermal stress. Twin-beam direct surface illumination for improved contrast. Adjustable intensity controls for background and foreground lighting to suit different materials and surface textures. 	
7	Power Supply & Energy Requirements	
7.1	<ul style="list-style-type: none"> The system shall be compatible with a single-phase AC supply, 230V, 50Hz. Power consumption shall not exceed 550W. The vendor shall ensure stable power supply to the machine by providing stabilizer, if required. (i.e) the vendor shall supply stabilizer of suitable rating along with the profile projector. 	
8	Accessories	
8.1	<p>To enhance functionality, the system shall support the following accessories:</p> <ul style="list-style-type: none"> Suitable advanced overlay charts for measurement of V-notch and U-notch profile of charpy impact test samples (made in accordance to ASTM E23) Additional desktop PC with following specification: <ul style="list-style-type: none"> Processor Intel Core i7 RAM 32 GB Hard drive min. 1TB SATA and one external hard disk of 1TB On Board Graphic Card CD-RW/DVD-ROM Win 11 (64 Bit) with pre-installed original version of MS office 365 Keyboard, Mouse 27 inch LED monitor - 2 Nos Supply 230V AC 50Hz Table of 1600mm x 800mm dimension for the PC & accessories Ergonomic operator's chair 	

SLIP GAUGE AS JOHNSON METRIC SET

SL No	Technical Specification	Bidder's Compliance
1	Material - Alloy Steel Grade As -1 metric set. 87 Pieces Set	

Slotter Machine

Sr. No.	Technical Specification	Bidder's Compliance
1	<p>Slotting Machine: stroke length 400 mm or more with standard accessories as per technical specification.</p> <p>Slotting Machine: all geared type, stroke length 400 mm or more complete unit with belt guard, pulley etc. with standard accessories & electrical fitting: as per technical specification.</p> <p><u>Technical Specifications</u></p> <ol style="list-style-type: none">1. Stroke Length: 400 mm or more.2. Working Stroke: 400 mm3. Ram Adjustment: 300 mm4. Maximum dia of job to be accommodated on table: 1200 mm or more.5. Height between table & head: 500 mm.6. Auto longitudinal feed should be available.7. Auto cross feed should be available.8. Table dia: 750 mm or more9. Motor: minimum 5 hp10. Tool Holder fitted in it.11. Auto rotary table feed.13. Centralised Auto Lubrication system with pump.15. Manual indexing system available.16. No rotary parts should be exposed open. <p><u>Accessories:</u></p> <ol style="list-style-type: none">1. Machine vice-----012 Tilting head + - 5 deg----- 013. Coolant pump with tank --- 014. Four jaw chuck with back plate suitable to table.5. Index plate----- 01set6. Led machine lamp with bulb fittings ----- 017. Leveling & Foundation bolt 01 set8. Handle to adjust ram position - 029. Tool set for keyway cutting tool holder-08mm, 10mm, 12mm, 16mm, 20mm -01no. each with tool hexgonal and spline tools various sizes -01 each10. Set of foundation bolts. <p><u>Mandatory Spares</u></p> <p>All the required Electrical, mechanical, mandatory spares for three years normal operation of the machine should be supplied.</p> <p>The vendor shall submit recommended spares list along with price list required.</p>	

Electric Pressure Test Pump Machine

Electric Pressure Test Pump Machine with 1 HP motor.

Technical Specifications for the equipment of Govt. Polytechnics:

Calibration of emission control systems

SL No	Technical Specification	Bidder's Compliance
1	<p>Technical Specifications:</p> <p>RACK & PINION STEERING SYSTEM</p> <p>The working of Rack & pinion steering system is shown with the help of actual parts assembled on frame. All the necessary parts of rack & pinion steering system are shown in actual working form. This model helps the student to understand the working of the steering system very easily. It is specially made dissectible for demonstration purposes.</p> <p>TECHNICAL SPECIFICATION:</p> <ul style="list-style-type: none">• This model is completely assembled and cut sectioned of necessary parts.• Assembly can drive by manually.• Easily understand to the demonstration purposes.• Well painted & good finishing. <p>POWER STEERING SYSTEM</p> <p>The Power Steering System Trainer is mounted on a heavy-duty iron stand and designed to demonstrate the construction and working principle of a modern electro-hydraulic power steering system. It enables students to study the function and interaction of the following components:</p> <ol style="list-style-type: none">1. Steering Wheel – Standard automotive steering wheel for control input.2. Steering Column – Connects the steering wheel to the steering gear mechanism.3. Fluid Pressure Lines – High-pressure and return lines for hydraulic fluid circulation.4. Electric Motor – Provides power assistance to reduce steering effort.5. Rack & Pinion Gear (internal) – Converts rotary motion of steering wheel into linear motion for wheel steering.6. Oil Reservoir – Stores hydraulic fluid for system operation. <p>SHOCK ABSORBERS</p> <p>Cut sectioned of Shock absorbers with actual parts. Shock Absorber having with Metal Body</p> <p>COMPONENT:</p> <ul style="list-style-type: none">• Damper• Hydraulic Oil Area• Rubber Seal• Fluid return valve <p>FEATURES:</p> <ul style="list-style-type: none">• Telescopic and Coil Spring Shock Absorber• Mounted on Wooden Base/Metallic Sturdy frame. <p>Non-working Demonstration Purpose model</p> <ul style="list-style-type: none">• Attractive colour codes for study.	

2 stage Reciprocating Compressor Test Rig

SL No	Technical Specification	Bidder's Compliance
2	Technical Specifications: Compressor Type: <ul style="list-style-type: none"> ▪ Multi-stage, air-cooled reciprocating compressor ▪ Typically 2-stage or 3-stage configuration Compressor Capacity: <ul style="list-style-type: none"> ▪ Free Air Delivery (FAD): ~100 – 300 LPM (varies by setup) ▪ Discharge Pressure: Up to 10 – 12 kg/cm² Motor: <ul style="list-style-type: none"> ▪ Power: 2 HP, 220V AC, 50Hz, single-phase or threephase Measurement Instruments: <ul style="list-style-type: none"> ▪ Pressure gauges at suction, intermediate, and delivery stages ▪ Temperature sensors at key compression stages ▪ Air flow measurement using an orifice meter or rotameter Cooling System: <ul style="list-style-type: none"> ▪ Intercooler provided between stages ▪ Air-cooled available Receiver Tank: <ul style="list-style-type: none"> ▪ Capacity: Typically 25 – 50 litres ▪ Stores compressed air for measurement stability Frame: <ul style="list-style-type: none"> ▪ Mild Steel, powder-coated, compact, vibration-free mounting Utilities Required: <ul style="list-style-type: none"> ▪ Power supply: 440V AC, 50Hz 	

Izod & Charpy impact testing machine

SL No	Technical Specification	Bidder's Compliance
3	Technical Specifications: Templates for checking 10 x 10 mm cross section of Izod / Charpy test specimen. Depth notch gauge including V & U notch gauges for checking depth below V/U notch, angle and radius. Izod support for 0.450" dia Izod round specimen. Self centering tong for quick and accurate setting of Charpy test specimen. 'V' notch milling cutter. 'U' notch milling cutter.	

Surface Grinder

Parameter	Specifications	Bidder's Compliance
Grinding Length	400mm to 600mm	
Grinding Width	200mm to 300mm	
Distance between Table & Spindle Centre (Max.)	400mm to 600mm	
Working Surface off table(Length)	410mm to 610mm	
Working Surface off table(Width)	210mm to 310mm	
Weight carrying capacity of Table	180Kg (approx) to 300Kg (approx)	
Max.Longitudinal movement	410mm to 630mm	

Max Cross movement	210mm to 310mm	
T-slots No.	1	
T-slots Width	14 mm to 18 mm	
Minimum vertical movement	Min.280 mm	
LONGITUDINAL MOVEMENT		
Max. Table Speed	1-5 m/min to 18 - 30m/min	
CROSS MOVEMENT		
Auto cross feed at each Table reversal	0.20-0.30mm/stroke to 6-8mm/stroke	
Manual Feed rate per turn	1 mm	
Least count of Hand wheel	0.01 mm	
VERTICAL MOVEMENT		
Automatic vertical traverse rapid	0.15m/min. to 0.3m/min	
Least count of Hand wheel	0.002 mm	
GRINDING WHEEL		
Diameter x Thickness x Bore	200 x 20 x 76.2mm/180 x 18 x 31.75mm	
Speed	2440 - 2800RPM approx. To 3000 – 3300 RPM approx.	
MOTORS		
Grinding spindle	2 H.P. to 3 H.P.	
Coolant pump	0.1 H.P. to 0.15 H.P.	
Vertical rapid motor	0.4 H.P to 0. 5 H.P.	
HYDRAULIC SYSTEM		
Working pressure	10 K g / Cm 2 to 12 K g /C m 2	
Power of Hyd. Pump Motor	1 HP	
Tank capacity	60Lit. to 75 Lit.	
Feed presser regulator		
STANDARD ACCESSORIES		
Hardened & Ground Precision Screw less Grinding vice -100mm Jaw Width – 1 No.		
Permanent magnetic chuck 250 X 120mm – 1 No.		
Coolant tank with magnetic filter / Separator – 1 Set		
Machine light suitable for 415 V operation with machine lamp – 1 Set		
Grinding wheel – 2 Nos.		
Grinding wheel flange unit (wheel collet) – 1 No.		
Table guard - 1 No.		
Set of necessary tool kit - 1 Set		
Hydraulic system. - 1 Set		
Radius dressing attachment - 1 No.		
Micro (Fine) feed for cross slide and vertical movement - 1 No.		
Multi-Diamond Dresser with Holder - 1 No.		
Instruction & spare parts manual - 1 No.		

Tool and Cutter Grinder Machine

SL No.	Description	Unit	Requirement	Bidder's Compliance
1	Centre height	mm	120-150	
2	Swing Diameter	mm	250 - 300	
3	Swing with raising block	mm	350 - 400	
4	Distance between tailstock centres	mm	700- 800	
5	Distance between work head & tailstock Centre	mm	600 - 650	
6	Table			
6.1	Longitudinal travel	mm	500 - 600	
6.2	Clamping area	mm	(900 - 1000) x (100 - 200)	
6.3	Cross traverse	mm	250 - 300	
6.4	L.C of Cross Motion of Table	mm	0.02	
6.5	Swivel of the table with centre locking	deg.	Plus / Minus 45	
6.6	Fine Swivel with end locking	deg.	Plus / Minus 9	
7	Tilting Wheel Head			
7.1	Eccentricity with central line of column	mm	40	
7.2	Vertical adjustment	mm	250-300	
8	Spindle Axis			
8.1	Above the axis of centres	mm	200-230	
8.2	Below the axis of centres	mm	60-80	
9	Swivel			
9.1	Vertical plane	deg.	Plus / Minus 20 - 25	
9.2	L. C of the Wheel Head Vertical Motion	mm	0.01	
9.3	Vertical Travel of the Wheel Head	mm	290	
9.4	Horizontal plane	deg.	360	
9.5	Wheel speed in either sence of rotation	rpm	2800 / 5600 or better	
9.6	Maximum dia. of grinding wheel	mm	200	
9.7	Motor Power	kW	0.75 or better	
10	Work Head			
10.1	Spindle bore taper		MT5	
10.2	Taper on Wheel Head Spindle		01:05	
10.3	Tail stock taper		MT2	
11	Internal Grinding			
11.1	Dia. Range Min. / Max	mm	14 / 56	
11.2	Max. Spindle speed	rpm	18000 - 25000 or better	
11.3	Total power	kW	3 or better	
12	Accessories:			
12.1	Cylindrical grinding attachment			
12.2	Internal grinding attachment			
12.3	Universal vice for surface grinding			
12.4	Radius grinding attachment			
12.5	Radius truing attachment			
12.6	Hydraulic equipment for table movement			

12.7	Fine cross feed attachment	
12.8	PTFE coated guide way for cross movement	
12.9	Tape relief grinding attachment	
12.10	Rough reamer / core drills relief grinding attachment	
12.11	Attachment for grinding and relief of disc cutter	
12.12	Spiral milling and hob grinding attachment	
12.13	Twist drill sharpening attachment	
12.14	Permanent magnetic chuck	
12.15	Dust Exhausting device	
12.16	Water cooling device	
12.17	3-Jaw chuck	
12.18	Indexing unit	
12.19	Collet chucking attachment	
12.20	Attachment for grinding carbide tip tools	
12.21	Precision radius grinding attachment.	
12.22	DRO for all slides with display unit	
12.23	Grinding wheel guards	
12.24	Grinding wheel flanges(different sizes)	
12.25	Machine Lamp	
12.26	Diamond Tool with holder	
12.27	One set of manuals	
12.28	One set of Service Tools	
12.29	Different Grinding wheel (Cup, saucer, taper, straight etc.)	
12.30	Anti-vibration pads	
12.31	Indexing Head attachment with spring loaded center	

Computerised Hydraulic grip universal testing machine 6 pillar model

SL No	Technical Specification	Bidder's Compliance
6	<p>Technical Specifications:</p> <p>The apparatus follows the Searle's method, a widely accepted and accurate technique for measuring Young's Modulus.</p> <ul style="list-style-type: none"> • The sturdy iron frame provides exceptional stability and durability, ensuring reliable measurements and long-term use. • Equipped with high-precision components, including micrometres, adjustable pointers, and precision scales, for accurate data collection. • The apparatus includes a secure sample holder or clamping mechanism for fixing the test material in place during experiments. • Precise fine adjustment controls enable users to make small adjustments for precise measurements of extension and load. <p>TECHNICAL DATA:</p> <ul style="list-style-type: none"> • Product Dimensions: 406.4 x 406.4 x 406.4 mm • Product Height: 406.4 mm • Product Width: 406.4 mm • Size Along Diagonal/Diameter: 381 mm <p>Universal Testing Machine Computerised, Capacity, 100 TON(1000Kn)</p> <p>Loading accuracy as high as $\pm 1\%$ of the indicating value. 6 pillar Hydraulic Grip . The power pack has a directly driven pump which generates a maximum pressure of 200 kgf/cm². The hydraulic pump produces a continuous non-pulsating oil flow. Hence the load application is very smooth. A pressure compensated flow control valve is provided which controls oil flow to the main cylinder. This maintains a constant rate of piston movement and hence straining rate is kept constant. This valve is hand operated and gives infinitely variable oil flow to obtain different rates of straining. has a micro processor based electronic panel, Precision strain gauge type pressure transducer for load measurement, Rotary encoder with rack for crosshead displacement/Extension indication, RS 232 COM port for PC interface, Data entry for specimen dimension, serial number, gauge length. Unit selection for load, displacement. Results include Load vs Displacement Curve, Maximum displacement, UTS, % Elongation, are controlled for precision and accuracy during every stage of manufacturing. The machines are calibrated in accordance with IS standards.</p> <p>UTM comply with grade 1 of IS : 1828 - 1991. An accuracy of $\pm 1\%$ is guaranteed from 20% of the load range selected to full load. Below 20% of the selected range the maximum permissible error is 0.2% of the full load reading. Suitable for operation on 440 V, 50 Hz, three phase, AC supply.</p> <p>Specification:- Resolution:- 0.01 kN; Max Clearance for tensile test:- 50 – 700 mm; Max Clearance for Compression test:- 0 – 700 mm; Clearance between columns:-565 mm; Ram Stroke:- 250 mm Frame stiffness :1500 KN / mm; Straining/piston speed at no load:- 0–50 mm/min, For Tension Test Clamping jaws for round specimens:- 8 – 25 mm and 25-45mm, Clamping jaws for flat specimens thickness:- 0 - 30mm, Flat specimen width:- 70mm; For Compression Test: Pair of compression plates:- 220 mm, For Transverse Test:, Table with the adjustable rollers, Width of rollers:- 140 mm, Diameter of rollers:- 50 mm, , Radius of punch tops:- 16mm, 22mm. Crosshead geared motor:- 1 HP Power pack motor:- 2.0 HP, Dimension (approx):- L – 2270 mm, W – 750 mm, H – 2540 mm. Weight (approx) : 2500 kg, NABL Calibration with traceability Certificate.,</p>	

ALL GEARED HEAD LATHE MACHINE WITH ALL ASSESORIES

SL No.	Machine Description	Bidders specification	Bidder's Compliance
A	MAKE & Model No. / ID for the offered Machine		
1	Work Area Dimensions		
1.1	Swing over machine bed : 400 mm or more		
1.2	Swing over cross slide : 200 mm or more		
1.3	Distance between centers : 1000 mm or more		
1.4	Turning length: 900 mm or more		
1.5	Width of bed : 250 mm or more		
1.6	Height for centres: 200 mm or more		
2	WORK SPINDLE		
2.1	Spindle bore : 80 mm or more		
2.2	Type & size of spindle nose (ASA): A2-5 or better		
3	CARRIAGE		
3.1	Cross Slide Travel: Min. 200 mm		
3.2	Compound slide Travel: Min. 100 mm		
3.3	Tool Shank Section: Min. 20x20 mm		
4	ACCURACIES [As per IS 1878 (Part 1, 1993)] / DIN 8605 or equivalent [Bidder to provide "Test Chart" for the offered machine]		
4.1	RUNOUT		
4.1.1	Measurement of runout of spindle nose 0.01mm or better		
5	TOOL POST		
5.1	Quick Change Tool Post : Min. 20X20 mm		
6	TAIL STOCK WITH HAND WHEEL		
6.1	Stroke of quill /Spindle Travel: Min. 100 mm		
6.2	Taper socket/ Taper of sleeve: Min. MT-4 or better		
6.3	Tail Stock Barrel diameter/Quill diameter: Min 60 mm		
7	DRIVE		
7.1	Type of Drive: Geared / VFD (<i>Bidder to mention the type of Drive</i>)		
7.2	No. of speeds: Min 8 No.		
7.3	Speed minimum range = Range 40 rpm to 50 rpm		
	Speed maximum range = Range 1500 rpm to 2000 rpm		
7.4	No. of feeds: 24 or better		
7.5	Feed range(Longitudinal): 0.05 – 2.0 mm/rev or better		
7.6	Feed range(cross):0.05 to 0.62 mm/rev or better		
8	THREAD PITCHES WITH STANDARD CHANGE GEAR SET		
8.1	BS threads:4-48 T.P.I or better		
8.2	All standardized metric threads: 0.5 – 6 mm pitch		
8.3	Lead screw diameter: Min 32 mm		
8.4	Lead screw pitch: 6 mm		
8.5	Motor Power: Min. 3.0 kW or better		
9	COOLANT TANK WITH PUMP		
9.1	Tank capacity suitable to machine capacity		
9.2	Coolant Pump suitable to machine		
10	STANDARD ACCESSORIES		
10.1	2 Fixed Machine centres		
10.2	Square Tool Post		

10.3	Chip collecting tray		
10.4	Oil Can		
10.5	Set of Allen keys		
10.6	Set of Spanners		
10.7	Metric gears/Inch Gears		
10.8	Machine Break and Foot Brake		
10.9	Machine Lamp		
10.10	Three Jaw Chuck diameter 200mm		
10.11	Four Jaw Chuck diameter 200 mm		
10.12	Collet chuck & collets (from 4 to 26 mm in steps) with 1mm step		
10.13	Emergency stop		
10.14	Main switch and control panel		
10.15	Reduction Sleeve MT5 /MT2 , MT5/MT3, MT5/MT4		
10.16	Face plate		
10.17	Anti Vibration Pad		
10.18	Arrangement for engagement and disengagement of power feed		
10.19	Machine must have safety feed over load feature		
10.20	Combine (straight and v) Bed with Hardness 300 BHN (min).		
10.21	Drive plate for carrier		
10.22	Quick change tool post		
10.23	Splash guard		
10.24	Chuck Guard		
10.25	Taper Turning attachment		
10.26	Follow rest		
10.27	Steady rest		
10.28	Lathe carriers or equivalent		
10.29	Revolving centres		
11	CUTTING TOOLS to be supplied		
11.1	SHANK SIZE : AS PER THE TOOL POST OPENING SIZE		
11.2	Minimum 20X20mm Shank		
11.3	TOOL HOLDER SPECIFICATION:		
11.4	PCLNR/PDJNR 2 Nos.		
11.5	MDJNR 1 Nos.		
11.6	SVJBR 1 Nos.		
11.7	CNMG INSERTS 10 Nos.		
11.8	DNMG INSERTS 10 Nos		
11.9	VBMT INSERTS 10 Nos.		
11.10	External Thread Tool holder of 2 mm Pitch 1No, with inserts 10 Nos.		
11.11	Boring Bar DIA 12mm (SCLCR) 1 No., with inserts 10Nos		
	Boring Bar DIA 12mm (SDQCR) 1 No., with inserts 10Nos		
11.12	Boring Bar DIA 16mm (SCLCR), with inserts 10 Nos.		
	Boring Bar DIA 16mm (SDQCR) 1 No., with inserts 10Nos		
11.13	Grooving Tool holder (TTER3), with inserts (3mm width), 10 Nos		
11.14	Internal Thread cutting holder(DIA 12MM), with inserts (2mm pitch), 10 Nos.		
11.15	Keyless chuck (MT3) – 1 No.		
11.16	Sleeve (MT3-4) 1 No.		
11.17	Sleeve (MT2-3) – 1 No.		
11.18	Knurling Tool – 1No.		

11.19	Drill Bit set of 0.5 mm step(2-12mm) – 1 Set		
11.20	Reamer (5-12mm) H7 of 1mm step – 2 Nos. each		
11.21	The Supplier required to provide 1 st fill coolant and Hydraulic Oil		
12	Documentation		
12.1	Machine Manuals		
12.1.1	Mechanical maintenance manual 2 sets each (one hard copy and one soft copy)		
12.1.2	Electrical maintenance manual 2 sets each (one hard copy and one soft copy)		
12.1.3	Detailed Layout plan		
12.1.4	Operating and Programming Instruction		
12.1.5	Installation and Commissioning instructions		
12.1.6	Quality Test and Accuracy Test Chart Records		
12.1.7	Circuit Diagrams		
12.1.8	Maintenance / Repair Charts		
12.1.9	Preventive Maintenance Instructions		
12.1.10	Lubrication Chart & Lubricant list		
12.1.11	Detailed packing list of all Items and devices and detailed prospect of machine & all other Accessories to be enclosed in the respective boxes. Lifting instruction to be shown in packing list.		
13	Installation & Commissioning		
13.1	The final leveling adequacy shall be ensured by the supplier while installation of the machine before starting of the actual operation at customers site.		
13.2	The machine to be inspected as per accuracy chart before dispatch at supplier site. The suppliers to prove out the “Test Components” in all aspects. Acceptance and Qualification during Pre Dispatch Inspection (PDI) at supplier end. Release of machine for dispatch after successful completion of acceptance test, post PDI.		
13.3	The complete installation and commissioning must be carried out by the supplier for all the machines at the final destination/premises. A final accuracy test to be conducted by the purchaser/consignee. Final accuracy test report is to be signed jointly by Purchaser/consignee and supplier. Final acceptance would be given after conducting the accuracy test at the installation location.		
14	Training		
14.1	To be provided for one machine at each of the final destinations		
14.2	Operator training – 3 days.		
14.3	Maintenance course mechanical, electrical and electronics – 2 days.		

Apparatus for determination of Co-efficient of friction of flow through pipes.

SL No	Technical Specification	Bidder's Compliance
8	<p>Technical Specifications:</p> <ul style="list-style-type: none"> ▪ Test Pipe Material: Transparent Acrylic / Stainless Steel/ GI ▪ Pipe Diameters: ▪ Varying pipes typically provided: 12 mm &, 25 mm ▪ Length: ~1 meter per pipe section (can vary by setup) ▪ Flow Range: Typically, 0.5 – 25 LPM (depends on pump capacity) <p>Flow Control and Measurement:</p> <ul style="list-style-type: none"> ▪ Flow Control Valve: Needle valve or gate valve to regulate flow rate <p>Flow Measurement:</p> <ul style="list-style-type: none"> ▪ Graduated measuring tank with stopwatch ▪ Optional: Direct flowmeter for continuous measurement <p>Pressure Measurement:</p> <ul style="list-style-type: none"> ▪ Pressure Tapping Points: Provided along the length of the pipe <p>Manometers:</p> <ul style="list-style-type: none"> ▪ Type: U-tube manometers ▪ Quantity: Multiple (typically 4–6) to measure head loss at various sections ▪ Manometric Fluid: Water/Mercury (water is standard in labs) <p>Sump Tank:</p> <ul style="list-style-type: none"> ▪ Material: Stainless Steel/FRP ▪ Capacity: 40 – 60 Litres ▪ Function: Stores water for recirculation <p>Discharge Measuring Tank:</p> <ul style="list-style-type: none"> ▪ Type: Graduated tank with scale ▪ Capacity: 20 – 30 Litres ▪ Measurement: Time-volume method using stopwatch <p>Pump:</p> <ul style="list-style-type: none"> ▪ Type: Centrifugal Pump ▪ Motor: 0.5 HP, Single Phase, 220V AC, 50Hz ▪ Purpose: Maintains continuous flow in the circuit <p>Piping System:</p> <ul style="list-style-type: none"> ▪ Provided with multiple pipes of different diameters for friction loss studies ▪ Arranged with bypass and quick-connect fittings <p>Frame & Construction:</p> <ul style="list-style-type: none"> ▪ Material: Mild Steel with excellent finish ▪ Design: Compact, mobile frame with durable construction <p>Utilities Required:</p> <ul style="list-style-type: none"> ▪ Electrical Supply: 220V AC, 50Hz, Single Phase ▪ Water Supply: Provided in closed-loop system <p>PURPOSE : To draw the Moody's Friction Factor Diagrams for different diameter and material of the pipe.</p> <p>* To find and compare Friction Factor for different types of pipe.</p> <p>CONSISTS OF :</p> <ul style="list-style-type: none"> * A set of pipes of diameters of 1/2", 3/4" & 1" (G.I) - (3 lines) Class "B" pipe , with manometer tapping connection at a distance of 1.5 meter and double column Acrylic U Tube manometer for measurement of pressure drop in each pipe. The above pipelines are mounted on a Sturdy stand. * A Centrifugal pump of capacity 1 hp and a starter. * All interchangeable pipe connections with wheel valve, brass fittings and flexible tubing for mano-meter. * Imported Italian Ball Valve at pressure tapping and Manometer for longer life/reliability and no Drain Cocks are used. * Most of the Fittings used are of S.S & Brass only. * Sump Tank and collecting tank with drain valve, and piezometer for collecting tank with Butterfly Valve for quick operation & overflow facility. * With S.S. Tanks (Close Circuit). 	

BERNOULLI'S APPARATUS

SL No	Technical Specification	Bidder's Compliance
9	<p>Bernoulli's Specification</p> <ul style="list-style-type: none"> ▪ Test Section: Transparent acrylic converging-diverging duct ▪ Typical diameters: 25 mm (inlet), 15 mm (throat), 25mm (outlet). ▪ Pressure Measurement: Multi-point U-tube manometer setup. ▪ Multi-point pressure tapping (7 points along the duct) ▪ Manometric fluid: Water ▪ Flow Measurement: Graduated discharge tank with stopwatch. ▪ Sump Tank: 40–60 L capacity, closed-loop system. ▪ Pump: 0.5 HP centrifugal pumps for continuous waterflow. ▪ Flow Control: Flow regulating valve provided. ▪ Frame: Compact, mild steel, powder-coated structure. ▪ Power Supply: 220V AC, 50Hz, single-phase. <p>To understand the pressure gradient in converging and diverging section of pipe.</p> <p>CONSISTS OF :</p> <ul style="list-style-type: none"> * Converging and diverging section of venturi meter made of transparent perspex with piezometer tappings along the pipe line. * A mano block centrifugal pump of capacity 1/2 HP with a starter. * Sump and collecting/ balancing tanks with overflow pipe line. * Starter, piezometers and other accessories mounted on a control panel. * With S.S. Tanks (Close Circuit) . 	

Bomb Calorimeter

Bomb Calorimeter (for solid & liquid fuels) & Junkers Gas Calorimeter

SL No	Technical Specification	Bidder's Compliance
10	<p>A. BOMB CALORIMETER</p> <ul style="list-style-type: none"> □ As per IP-12 & ASTM D 4809 IS 1448(P-6), IS 1350 complete with one stainless steel bomb 300cc. □ capacity with crucible (18/8), jacket with motorized stirrer, calorimeter vessel, briquette press, firing unit, pressure gauge with copper pipe fittings, 2 mtrs nichrome wire 40 swg & digital thermometer. <p>B. BOYS GAS CALORIMETER (FOR GASEOUS FUEL) :</p> <p>Aim : To determine the Calorific Value of Gaseous Fuel Domestic Gas).</p> <p>Consists of :</p> <ul style="list-style-type: none"> * Double walled S.S vessel thickly insulated with glass wool in the annular space. * Double pass copper coil and shell assembly through which the burnt fuel passes through. * The chimney through which the burnt fuel passes from the burner kept beneath this. * The top of the shell is insulated with the thick wooden cover and provided with spouts through which the burnt fuel passes through. * The provision is made to circulate the water through the copper coil, and to measure the flow rate directly on the Rotameter. Supplied with Mini Gas Cylinder with Burner and Control Valve to burn the fuel. * Rotameter is provided for measurement of Flow Rate of Gas. * Digital Temperature Indicator with temperature sensor provided to measure the temperature difference in circulating water, and temperature difference in the burnt fuel. * The provision is made to fix the Gas burner on the scissor jack and to adjust the height to bring the flame close to the chimney portion. 	

CONRADSON CARBON RESIDUE APPARATUS - FOUR TEST

SL No	Technical Specification	Bidder's Compliance
11	Technical specification:	

Cracks detection using (i) Visual inspection and ring test (ii) Die penetration test (iii)**Magnetic particle test**

SL No	Technical Specification	Bidder's Compliance
12	<p>Cracks detection using (i) Visual inspection and ring test (ii) Die penetration test (iii) Magnetic particle test</p> <p>Salient Features</p> <p>Portable equipment for magnetic particle inspection</p> <p>Delivers AC for surface and HWDC for sub-surface flaw detection</p> <p>Articulating and double-jointed legs contour easily to any shape to assure good contact</p> <p>Handy and LightWeight, safe for Operators</p> <p>Strong and rugged constructions</p> <p>Built standard for continuous inspection</p> <p>Inspect weld joints also</p> <p>Lifting Capacity - 27 Kgs, In DC & 5 Kgs in AC mode</p> <p>A/D. AC / HWDC 220 V 50Hz</p> <p>Puffer Bulb for powder spray - 1No.</p> <p>Pie Gauge/Field Indicator – 01 No.</p> <p>Yoke Carrying Case - 1 No.</p> <p>Operational Manual - 1 No</p> <p>Red Dry Powder for MPI - ½ Kg.</p> <p>2. Visual inspection microscope with accessories for demonstration</p> <p>Base size :380mm X 250mm</p> <p>Frame diameter : 50mm</p> <p>Load table size :180mm X 120mm</p> <p>3. Dye penetration test kit with accessories for demonstration</p> <p>cleaner, penetrant, and developer for complete testing. High Sensitivity: Effectively detects surface-breaking defects</p>	

Flash & Fire Point Tests Using Pensky Martin Apparatus

SL No	Technical Specification	Bidder's Compliance
14	<p>Technical specification:</p> <p>A. A BEL FLASH & FIRE POINT APPARATUS :</p> <p>Purpose : To determine Flash & Fire Point of Oil.</p> <p>Specifications : Abel Flash Point & Fire Point Tester, Electrically Heated Model with Energy Regulator and with Digital Temperature Indicator/Thermometer of suitable Range.</p> <p>B. FLASH & FIRE POINT CLEVELAND APPARATUS</p> <p>C. PENSKY MARTIN FLASH & FIRE POINT APPARATUS :</p> <p>Purpose : To determine Flash & Fire Point of Oil.</p> <p>Specifications : Pensky MartIn Flash Point & Fire Point Tester, Electrically Heated Model with Energy Regulator and with Thermo meter of suitable range.</p>	

Dead Weight Pressure Gauge Tester

SL No	Technical Specification	Bidder's Compliance
13	<p>Specification</p> <p>Pressure Range:</p> <ul style="list-style-type: none"> Typically, up to 0 – 35 kg/cm² <p>Pressure Generation System:</p> <ul style="list-style-type: none"> Hand-operated hydraulic pump (for oil) Screw press for fine pressure adjustments <p>Calibration Weights:</p> <ul style="list-style-type: none"> Precision-machined weights Material: Stainless Steel or Mild Steel Marked with corresponding pressure values <p>Test Gauges:</p> <ul style="list-style-type: none"> Compatible with standard Bourdon tube pressure gauges Provision to connect various gauges for calibration <p>Display & Readings:</p> <ul style="list-style-type: none"> Weights Applied: Direct reading corresponding to the generated pressure Test Gauge Readings: Compared with applied pressure for calibration <p>Frame & Construction:</p> <ul style="list-style-type: none"> Rigid, stable platform with anti-vibration mounts Mild Steel base with powder-coated finish Stainless Steel cylinder and piston for corrosion resistance <p>Working Medium:</p> <ul style="list-style-type: none"> Oil (Hydraulic) is commonly used Some setups may use water or air for low-pressure testing <p>Accessories Provided:</p> <ul style="list-style-type: none"> Complete set of calibrated weights <p>Utilities Required:</p> <ul style="list-style-type: none"> No external power supply required Clean, dust-free workspace recommended <p>* Capacity : Up to 10 Kg / Cm² (with 0.1 Kg / Cm² as Least Count)</p> <p>CONSISTS OF :</p> <ul style="list-style-type: none"> * Calibration of Pressure Gauge against Dead Weight and Piston of known Area. * Piston Type Reciprocating Oil Pump (Hand Operated). * Oil Reservoir for supply of Oil. * Closed Circuit Pressure Pipeline with Pressure Release / Build-up Valve. * Provision for Parallel Gauge Calibration. * Whole Instrument mounted in as sturdy Frame. 	

HEAT BALANCE TEST RIG(CI/SI ENGINE)

SL No	Technical Specification	Bidder's Compliance
15	Technical specification:	

HIGH PRESSURE BOILER WITH MODEL

SL No	Technical Specification	Bidder's Compliance
16	Technical specification: It consists of a tank with a heating system to convert water into steam. The tank has an inlet port for water, a release, a safety valve, a steam transfer pipe and an out let port for water. The outlet port is for removing water to clean the tank. The high pressure steam for a steam engine comes from a boiler. The boiler's job is to apply heat to water to create steam.	

Horizontal Milling Machine

Sr. No.	Technical Specification	Bidder's Compliance
17	Technical Specifications: Overall Table Size (L x W) : 1500 X 300 mm or more Clamping Area (L x W) : 1300 x 300 mm or more T-slots No. and Width : 3/16 mm or better Safe weight on Table (Max.) : 600 kg AUTOMATIC MOVEMENT Longitudinal Traverse : 800 mm or more Cross Traverse : 230 mm or more Vertical Traverse : 400 mm or more SPINDLE DRIVE Spindle taper : ISO 40 / ISO 50 Speed Range (Min.) : 45 rpm or less Speed Range (Max.) : 1800 rpm or more Spindle motor Power : 5.5 kw (cont.) or more No. of Feeds : 18 Nos. or more Feed Range Longitudinal & Cross : 16 - 800 mm/min. or better Feed Range Vertical : 4 - 200 mm/min. or better Feed Motor Power : 1.5 kw (cont.) or more Rapid traverse Longitudinal & Cross : 3200 mm/min. or more Rapid traverse Vertical : 800 mm/min. or more OTHER FEATURES OF THE MACHINE 29. The Manufacturer should quote Latest proven model for the machine. 30. Structural elements should be strongly ribbed, rigid and compact with vibration free and smooth machining. 31. The Table, Cross slide, and Knee slide should dovetail guide ways. 32. The dovetail guide ways should amply dimensioned to resist extreme machining loads. 33. The guide ways should be protected constantly from the ingress of swarf and coolant. 34. Light finger tip push button controls, conveniently grouped operating and setting controls should ensure Fatigueless work. Electrical circuit provides interlocks should ensure Safety against malfunctioning. 35. Column mounted electrical cabinet. 36. Large tray on the base plate to collect chips and coolant. 37. Automatic Centralised lubrication for guide ways and lead screws, splash lubrication for speed and feed gearing. 38. The coolant electric pump mounted at the rear of the machine base should ensures	

	<p>copious flow of coolant to the work zone.</p> <p>39. The coolant should be discharged into the built-in coolant tank in the machine base.</p> <p>40. Spindle Speed selection should be through easy lever control.</p> <p>41. The Catalogue of the model offered and the list of users of such model supplied by the Manufacturer are to be furnished along with the offer itself.</p> <p>42. The test charts / methods adopted for confirming the (ISO) geometrical accuracies of the machine are to be furnished by the Manufacturer.</p> <p>STANDARD / SPECIAL ACCESSORIES (For each machine)</p> <p>59. Centralised lubrication System.</p> <p>60. Foundation kit including leveling pads.</p> <p>61. Work lamp & Panel lamp are must be of Fluorescent or latest type only</p> <p>62. Arbor support bearing brackets.</p> <p>63. 2 sets of draw bolt with nut.</p> <p>64. Initial Fill of Consumables.</p> <p>65. Tool Cabinet with 5 Normal extension drawers, Outer dimensions 575 L X 815 W X 897 H mm approx. with lock and key facility of any reputed make.</p> <p>66. Coolant Equipment.</p> <p>67. Anti vibration elements.</p> <p>68. Milling Arbors ISO 40 / ISO 50 Dia 22 x 500 mm</p> <p>69. Milling Arbors ISO 40 / ISO 50 Dia 27 x 500 mm</p> <p>70. Milling Arbors ISO 40 / ISO 50 Dia 32 x 500 mm</p> <p>71. Milling Arbors ISO 40 / ISO 50 Dia 40 x 500 mm</p> <p>72. Milling Arbors ISO 40 / ISO 50 Dia 50 x 500 mm</p> <p>73. Stub Arbors ISO 40 / ISO 50 Dia 22 x 19 mm</p> <p>74. Stub Arbors ISO 40 / ISO 50 Dia 27 x 21 mm</p> <p>75. Stub Arbors ISO 40 / ISO 50 Dia 32 x 24 mm</p> <p>76. Stub Arbors ISO 40 / ISO 50 Dia 40 x 27 mm</p> <p>77. Machine Vice with swivel Base 200 mm with opening Min.100mm to 175mm Max.</p> <p>78. Self centering vice 50-150 mm</p> <p>79. Collet Holder ISO 40 / ISO 50</p> <p>80. Conical type collets Dia 5 to 20 mm</p> <p>81. Reduction Sleeve Type B ISO 40 / ISO 50 MT 2</p> <p>82. Reduction Sleeve Type B ISO 40 / ISO 50 MT 3</p> <p>83. Reduction Sleeve Type B ISO 40 / ISO 50 MT 4</p> <p>84. Suitable Main power source cable (copper) Armoured and Earth wire (COPPER) with proper rating and size with double earthing should be provided from machine to nearest power panel. (The length of the cable 25 mtrs). Make of power cable should be polycab / Universal / Havell's. Excavation, Grouting, Plastering and termination of cable should be carried out by the supplier.</p> <p>85. Compatible to Machine T-slot, Studs (Length 100, 150 & 200 mm):20 Nos. each Length.</p> <p>86. Compatible to Machine T-slot, T Nuts, Washer & Long Hex. Nuts (Metric): 40 sets.</p> <p>87. Special equipments & accessories required for running the machine effectively, if any other than the above items covered of this specification should be quoted by Manufacturer separately. Also note that option offered at additional cost. If not specified, will be assumed as standard.</p>	
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Impact of Jet Apparatus

SL No	Technical Specification	Bidder's Compliance
18	<p>Impact of Jet</p> <ul style="list-style-type: none"> ▪ Jet Nozzle Diameter: Typically, 4 mm to 8 mm (interchangeable) <p>Target (Vanes):</p> <ul style="list-style-type: none"> ▪ Types: Flat plate, hemispherical cup, conical plate ▪ Material: Stainless Steel / Aluminium / Acrylic <p>Flow Range: 1 – 15 LPM (depends on pump capacity)</p> <ul style="list-style-type: none"> ▪ Test Section Cover: Transparent acrylic cover to prevent splashing <p>Flow Measurement:</p> <ul style="list-style-type: none"> ▪ Discharge Measuring Tank: ▪ Type: Graduated tank with volume markings ▪ Capacity: 20 – 30 Litres ▪ Flow Measurement: Volumetric (time and volume method) <p>Flow Control:</p> <ul style="list-style-type: none"> ▪ Flow control valve provided for regulating jet velocity <p>Force Measurement:</p> <ul style="list-style-type: none"> ▪ Weight Balancing System: ▪ Lever arm with adjustable counterweights ▪ Direct force measurement by balancing the jet impact force <p>Sump Tank:</p> <ul style="list-style-type: none"> ▪ Material: Stainless Steel / FRP ▪ Capacity: 40 – 60 Litres ▪ Function: Recirculating water storage <p>Pump:</p> <ul style="list-style-type: none"> ▪ Type: Centrifugal Pump ▪ Motor Power: 0.5 HP, 220V AC, Single Phase ▪ Purpose: Provides sufficient pressure and flow for jet formation <p>Construction:</p> <ul style="list-style-type: none"> ▪ Frame: Mild Steel powder-coated, corrosion-resistant ▪ Structure: Compact, sturdy, with protective transparent cover <p>PURPOSE :</p> <p>To determine the impact co-efficient of jet on vane for different types of stationary vanes, viz., Flat, 60° - inclined, semi-circular, with the following accessories :</p> <p>CONSISTS OF :</p> <ul style="list-style-type: none"> * Closed circuit water recirculating system with mano- block pumpset, jet / vane chamber, rotameter, pressure gauge, control valve, jet force indicator, jets of different diameters. * Manoblock pumpset : 1hp, 1Ph / 3Ph. <p>Jet Sizes : 8mm, 5mm, 3mm (approx.)</p> <p>Force Indicator : 1 Kgf capacity.</p> <ul style="list-style-type: none"> * Sump Tank and Jet Tank with front and back of jet chamber made of perspex sheets. One of them is easily removeable for changing jets / vanes. 	

Insulating Slab and metal rod thermal Conductivity Apparatus

SL No	Technical Specification	Bidder's Compliance
18	<p>a. Determination of Thermal Conductivity of Metal (Aluminium).</p> <p>b. To study the temperature gradient along the length of the rod.</p> <p>CONSISTS OF :</p> <p>Aluminium rod 40mm dia. and 400 mm length (approx.).</p> <p>Temperature controller with heater for 220V, AC supply.</p> <p>Temperature measurement by thermo couple and digital temperature indicator.</p> <p>All the above instrumentation mounted on a Control Panel.</p> <p>Circulating water chest at one end with necessary water connection.</p> <p>Rotameter for direct measurement for water flow rate.</p> <p>The whole arrangement is mounted on a self-contained unit.)</p> <p>10a. THERMAL CONDUCTIVITY OF METAL ROD</p> <p>USE: 1. Determination of Thermal Conductivity of Metal (Aluminium).</p> <p>2. To study the temperature gradient along the length of the rod.</p> <p>CONSISTS OF :</p> <p>Aluminium rod 40mm dia. and 400 mm length (approx.).</p> <p>* Temperature controller with heater for 220V, AC supply.</p> <p>* Temperature measurement by thermo couple and digital temperature indicator.</p> <p>All the above instrumentation mounted on a Control Panel.</p> <p>* Circulating water chest at one end with necessary water connection.</p> <p>Rotameter for direct measurement for water flow rate.</p> <p>The whole arrangement is mounted on a self-contained unit.</p> <p>THERMAL CONDUCTIVITY OF COMPOSITE WALLS</p> <p>USES :1. Determination of overall Thermal Conductivity of the Composite material.</p> <p>2. Determination of Thermal Conductivity of individual material.</p> <p>3. To study the temperature gradient along the length.</p> <p>CONSISTS OF : * Aluminium, Graphite/Brass/SS and Cast Iron of 40mm dia and 400mm length (total) approx.</p> <p>* Temperature controller with heater for 220V, AC supply.</p> <p>* Temperature measurement by thermo couple and digital temperature indicator.</p> <p>* Multi - channel temperature indicator with channel selector.</p> <p>* The whole arrangement is mounted on a self-contained unit .</p> <p>* Thermostat to control the heater temperature.</p>	

Metallurgical Microscope Integrated with Computer

SL No	Technical Specification	Bidder's Compliance
20	Technical specification: <ul style="list-style-type: none"> • DIGMATIC MICROMETER HEAD (164-164) Objective Lens - Standard accessory: 2 x, Options: 5x, 10x • Mic Headman. Work piece Height -4.53in 115mm • Transmitted illumination - Steeples brightness adjustment, White LED light source, with green filter • Surface illumination- Oblique single-source type, Steeples brightness adjustment, White LED light source • Cross travel measuring range – • 2 x 2in 50 x 50mm • Table top size -16x6in 52x 152mm • Usable area of stage glass - 3.8x3.8in 96x96mm • Linear measurement method – Mic Heads Optional 	

Minor Losses Apparatus

SL No	Technical Specification	Bidder's Compliance
21	Technical specification: <ul style="list-style-type: none"> • Pipes (2 Nos.): GI material, ½" and 1" diameter • Pipe Test Section: 1 m length • Water Circulation: FHP pump (Crompton / Sharp make) • Flow Measurement: Measuring tank with piezometer, 25 L capacity • Sump Tank: Stainless steel construction, 50 L capacity • Stopwatch: Mechanical or electronic • Control Panel: Includes On/Off switch, mains indicator, and essential controls • Structure: Complete setup mounted on a robust, wellpainted, high-quality frame <p>Utilities Required</p> <ul style="list-style-type: none"> • Water Supply & Drain • Electricity Supply: Single Phase, 220 VAC, 0.5 kW <p>PURPOSE : To determine and compare Pressure Drop across various Pipe Fittings.</p> <p>CONSISTS OF :</p> <ul style="list-style-type: none"> * Set of Pipe Fittings consisting of Convergent, Divergent, 90o Elbow, 90o Bend, Sudden contraction and Expansion * A Centrifugal Pump of Capacity 1.0 HP and a Starter. * Sump Tank and Collecting Tank with Drain Valve, and Piezometer for Collecting tank & Overflow facility. * No Drain Cocks are used. * Mercury & Stop Clock are not in our scope of supply. * With S.S. Tanks (Close Circuit). 	

Morse test apparatus

SL No	Technical Specification	Bidder's Compliance
22	<p>Technical specification:</p> <p>Product Petrol Engine Test Set-up</p> <ul style="list-style-type: none"> ▪ Multi-Cylinder, 4 Stroke, Morse Test with Data Acquisition System (DAQ) with a dedicated computer and engine testing software for real-time monitoring and data logging. <p>Engine</p> <ul style="list-style-type: none"> ▪ 4 Cylinder, 4 Stroke petrol, Water Cooled ▪ Loading Device Rope Brake dynamometer Air Intake Box ▪ MS Fabricated with Orifice meter and Manometer (Orifice diameter 43 mm) <p>Fuel Tank</p> <ul style="list-style-type: none"> ▪ Dual Capacity 10 Ltrs. With Glass Fuel Metering Column <p>Calorimeter</p> <ul style="list-style-type: none"> ▪ Type Pipe in pipe <p>Fuel Flow transmitter</p> <ul style="list-style-type: none"> ▪ Range 0-500mm WC <p>Air flow transmitter</p> <ul style="list-style-type: none"> ▪ (-)250mm WC <p>Temperature Sensor</p> <ul style="list-style-type: none"> ▪ Thermocouple, Type K with transmitter <p>Rota-meter</p> <ul style="list-style-type: none"> ▪ Engine cooling 100–1000 LPH : Calorimeter 25–250 LPH <p>Pump</p> <ul style="list-style-type: none"> ▪ Monoblock type <p>Utilities Required:</p> <ul style="list-style-type: none"> ▪ Power Supply: 220V AC, 50Hz, single-phase for instruments. ▪ Fuel Supply: Petrol as per engine requirement. ▪ Cooling Water: Continuous flow of 3–5 LPM for engine cooling. ▪ Exhaust System: Proper exhaust ducting for safe gas release. ▪ Lubrication: Suitable engine oil as specified. ▪ Compressed Air (Optional): For engine starting if required 	

Moulding & Casting equipments

SL No	Technical Specification	Bidder's Compliance
23	<p>Specification of Muffle Furnace ceramic rod based 1500°C</p> <ol style="list-style-type: none"> 1. Furnace sh : Box Furnace 2. Furnace stands cum control : Furnace is Top opening 3. Furnace hot zone volume : 8-8-12 inch 4. Shell Construction : Double Wall High quality fabrication of M. S. Body M. S. sheet structure with Proper stiffeners and neat powder coat painting 5. Door Construction : Sophisticated system to avoid heat loss made by Mild steel door with proper insulation 6. Insulation : High alumina Bricks A-29 Grade Cumi make & 90% Alumina Tata make back up by mechanically Pressed Zirconium Blanket ceramic fiber. <p>HEATING SYSTEM</p> <ol style="list-style-type: none"> 1. Heating elements : Silicon carbide rood (8 numbers with even Distribution in two side) 2. Make : Silicarb make preferable 3. Power control : Must be through the phase angle controlled Thyristor Drive (SEMIKRON, ITALY, preferable) WITH complete unit 4. Type of element : 18 mm Ø Solid type 5. Hot zone length : 200 mm 6. Total length of element : 650 mm 7. Resistance of the element : 1.24 ohms 8. Heating rate : 0 to 150C/ per Min 9. Cooling rate : 10 to 1000C/ hour max 10. Power : 5.5-6.0 kW, Single phases 11. Maximum temperature : 1500°C 12. Working temperature : 1450°C (For continuous operation) 12 hours 13. Electrical line requirement : 40A – MCB (Single phase with neutral) <p>CONTROL SYSTEM</p> <ol style="list-style-type: none"> 1. Temperature control : microprocessor based PID control With 30 Adjustable digital over Temp control (OTC) Should be there Simultaneous LED display of Actual And set point temp in either deg C/deg F 30 Seg/30 Pregame 2. Temperature sensor : Pt+Rh13%/Pt – ‘R’ type thermocouple along with Recrystallized alumina beads and sheath 3. Accuracy : ±1°C 4. Power control : control panel (panel) is single-phase 220 volt Safety Controller Main MCB voltmeter And Amp Meter Main indicator and heating indicator 5. Control switches : Mains on, out put on 6. Door such : safety door switch is cut of power To heating <p>Preheating arrangement : The Preheating arrangement supply of one Electric Operated Heating furnace size 6-6-12 in temp 1100 With Digital (PID) Control</p>	

ORIFICE METER FOR DETERMINATION OF CD,CC &CV

SL No	Technical Specification	Bidder's Compliance
24	<p>TECHNICAL SPECIFICATION: -</p> <ul style="list-style-type: none">• Sump Tank - 0.4 X 0.3 X 0.5 m height• Orifice – 8 mm and 10 mm.• Mouthpiece: CC, CD & CV• X-Y gauge for orifice jet co-ordinates.• Measuring tank of suitable capacity OR a calibrated water flow meter.• Sump tank of suitable capacity.• 0.5 HP pumps with valve. <p>SERVICES REQUIRED:</p> <ul style="list-style-type: none">• Flow surface 2 X 1 X 1.5 m Height.• 230 Volts, 5 Amp. Stabilized AC. Power Supply <p>PURPOSE : To determine the co-efficient of discharge for Orifice meter at different flow rates.</p> <p>CONSISTS OF :</p> <ul style="list-style-type: none">* Orifice meter in separate pipe line suitable for 1” BSP pipe with manometer tapping connections at suitable points downstream and upstream of the meters and double column manometer for measurement of pressure drop. The pipe lines are mounted on Sturdy stand.* A Centrifugal Pump of capacity 1HP & a starter.* All pipe connections with flow control valve and flexible tubing for manometer* Sump tank and collecting tank with drain valve, and piezometer for collecting tank.* Starter, manometer, piezometer and all accessories mounted on a control panel.* With S.S. Tanks (Close Circuit).	

Porter Governor, Proell Governor, Hartnell Governor for measuring Radius and Height for different Rotational Speeds, Mass of Balls and Spring Stiffness (in Spring Loaded Governors)

PELTON TURBINE/KAPLAN TURBINE/FRANCIS TURBINE

SL No	Technical Specification	Bidder's Compliance
25	<p>PURPOSE : To evaluate the constant speed and constant head characteristics and also to plot unit quantities.</p> <p>CONSISTS OF :</p> <ul style="list-style-type: none"> * Tanks : Sump Tank & Notch Tank. * Frame : Turbine casing, supply pump-motor to be mounted on rigid frame, with no need for additional foundation. <p>PROVISIONS : a) Pressure gauge for measuring the head over turbine. b) To measure the flow rate of water using Notch. c) To measure the speed of motor using digital RPM Indicator. d) To shut-off the flow of water from the pump. e) Starter & all accessories mounted on separate control panel board. f) S.S. Sphere valve assembly.</p> <p>SPECIFICATIONS :</p> <ul style="list-style-type: none"> *TURBINE : Maximum Output : 1.0 HP (Approx.) No Load Speed : 1500rpm (Approx.) Rotor : 250 mm pitch circle dia. No. of Buckets : 20. Dia of Jet : 16-18 mm. Flow Rate : 150 LPM (Approx.) Head on Turbine : 50 mtrs (Approx.) - Max. Load on Turbine : Rope Brake Loading. * Mechanical Loading and with S.S.Tanks. 	

RADIAL DRILLING MACHINE

SL No.	Description	Unit	Requirement	Bidder's Compliance
1	Capacity			
	Drilling in Steel (50 kgf/mm ²)	mm	50	
	Drilling Cast iron	mm	60	
	Tapping in steel - metric fine threads	Type	M56 x 2.5	
	Tapping in Cast Iron - metric fine threads		M48	
	Tapping in steel	inch	BSW 1(3/4)	
	Tapping in Cast Iron	inch	BSW 1(1/2)	
2	Drill head			
	Taper in spindle	Type	MT-5	
	Number of spindle speeds	Qty.	12	
	Speed Range	RPM	40 - 1800	
	Number of feeds	Qty.	6	
	Feed range	mm/Rev	0.125 to 1.25	
3	Working Range			
	Column sleeve diameter	mm	350	
	Width of arm guideways	mm	252	
	Drilling radius, maximum	mm	1790	
	Drilling radius, minimum	mm	530	

	Quill traverse	mm	325	
	Base plate to spindle - Maximum	mm	1420	
	Base plate to spindle - Minimum	mm	355	
	Drilling head traverse	mm	1260	
	Arm traverse	mm	740	
4	Power			
	Power. Main motor	kW	3.6	
	Power. Arm motor	kW	1.5	
	Hydraulic pump motor	kW	0.37	
5	The machine shall be supplied with the Standard Accessories as detailed under:			
5.1	Box table 1000 x 750 x 500 mm and additional base plate in various configurations to be provided			
5.2	Ergonomically grouped controls for easy and convenient operation			
5.3	Coolant Equipment			
5.4	12 Spindle speeds for drilling, reaming, tapping operations			
5.5	6 auto feed automatic spindle feed with precision depth stop			
5.6	Manual feed coarse and smooth			
5.7	Spindle reversal through clutch for tap withdrawal			
5.8	Double column construction for rigidity and effortless centering			
5.9	Electro-hydraulic clamping through operation of single push button			
5.10	Hardened and precision ground gears in the main drive			
5.11	Hardened and precision ground spindle sleeve			
5.12	Reduction Sleeves (MT5/MT1, MT5/MT2, MT5/MT3, MT5/MT4)			
5.13	Machine Lamp			
5.14	Tapping Attachment (M12mm – M48mm)			
5.15	Machine Vice with Swivel Base (dia. 200 mm)			
5.16	Drill Drift (1 set – 4 nos)			
5.17	Set of T - Bolts and Nuts (1 set – 4 nos)			
5.18	Drill Chuck - taper shank self-centering (dia. 5 - 20 mm)			
5.19	Set of Drill Bits (dia. 16 mm) (1 set – 4 Nos.)			
5.20	Set of HSS Twist Drill Bits (dia. 20, 30, 40, 50 mm - one each)			
5.21	Rigid construction			
5.22	Light centering of spindle.			
5.23	Precise depth release.			
5.24	Shock-free engagement of taps through clutch and spindle reverse for withdrawals			
5.25	Machine with drilling capacity 50 mm (Steel) / 60 mm (CI)			
5.26	Foundation Bolts and Wedges 1-Set			
5.27	Machine Instruction manual 1-Set (Soft copy & Hard copy)			
5.28	Machine Maintenance manual and Spare manual 1-Set (Soft copy & Hard copy)			
5.29	Maintenance tool kit 1-Set			
5.30	Installation Accessories and 1 set of hand tools, service tools & clamp set			
5.31	Electrical equipment complete with wiring suitable for 3 phase, 415 V, 50 cps, AC supply			
5.32	All accessories and consumables (including lubricant, coolant etc.) which shall require to run the machine smoothly along with the machine			

Reciprocating pump test rig

SL No	Technical Specification	Bidder's Compliance
28	<p>Pump Specifications:</p> <ul style="list-style-type: none"> ▪ Type: Single-acting / Double-acting Reciprocating Pump <p>Pump Capacity:</p> <ul style="list-style-type: none"> ▪ Discharge: 10 – 25 LPM (depends on pump size) ▪ Head Range: 10 – 25 meters ▪ Number of Cylinders: Single or Double (based on setup) <p>Material:</p> <ul style="list-style-type: none"> ▪ Pump body: Cast Iron ▪ Piston: Stainless Steel or Brass <p>Measurement Instruments:</p> <ul style="list-style-type: none"> ▪ Pressure Gauges: ▪ Suction Pressure Gauge ▪ Delivery Pressure Gauge ▪ Range: 0 – 4 kg/cm² (typical) <p>Flow Measurement:</p> <ul style="list-style-type: none"> ▪ Graduated measuring tank with stopwatch ▪ Optional: Rotameter / Flowmeter for direct reading <p>Speed Measurement:</p> <ul style="list-style-type: none"> ▪ RPM indicator <p>Sump Tank:</p> <ul style="list-style-type: none"> ▪ Material: Stainless Steel / FRP ▪ Capacity: 40 – 60 Litres ▪ Purpose: Closed-loop recirculating water supply <p>Discharge Measuring Tank:</p> <ul style="list-style-type: none"> ▪ Type: Graduated Tank with Volume Markings ▪ Capacity: 20 – 30 Litres ▪ Measurement: Time-volume method using a stopwatch <p>Flow Control System:</p> <ul style="list-style-type: none"> ▪ Delivery Valve: Provided for flow adjustment ▪ Bypass Line: Optional for flow fine-tuning <p>Motor Specifications:</p> <ul style="list-style-type: none"> ▪ Motor Type: AC Motor, Single Phase, 220V, 50Hz ▪ Power Rating: 1 HP (typical) <p>Frame & Construction:</p> <ul style="list-style-type: none"> ▪ Material: Mild Steel with excellent Finish ▪ Design: Compact, sturdy, corrosion-resistant frame ▪ Mounting: Vibration-free rigid platform <p>Utilities Required:</p> <ul style="list-style-type: none"> ▪ Power Supply: 220V AC, 50Hz, Single Phase ▪ Water Supply: Provided via closed-loop system <p>PURPOSE :</p> <p>a) To determine the flow, head, power characteristics at various speeds.</p> <p>b) To determine the volumetric efficiency (Slip).</p> <p>CONSISTS OF :</p> <ul style="list-style-type: none"> * Centrifugal pump - 1 HP coupled to AC Motor with AC DRIVE with different speeds, digital RPM Indicator, Digital Powermeter, Pressure and vacuum gauges. * Sump tank with drain valve & flow control valve. * Sump tank and collecting tank with drain valve, flow control valve, piezometer. * All accessories mounted on a sturdy stand with anti- vibration mounts. * With AC Motor & and S.S. Tanks. 	

ROCKWELL'S HARDNESS TESTING MACHINE

SL No	Technical Specification	Bidder's Compliance
29	<p>Technical Specifications:</p> <p>The Hardness Tester is designed to test the hardness of general steel, metals and some non-metals to the Rockwell Hardness Test Method using A, B, C scale.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Test method: Rockwell hardness test, Superficial hardness test <input type="checkbox"/> Preliminary test force: 29.42, 98.07N (3, 10kgf) <input type="checkbox"/> Total test force: 15, 30, 45, 60, 100, 150kgf <input type="checkbox"/> Duration time setting: TA, TB, TC <input type="checkbox"/> Up-down system: Manual <input type="checkbox"/> Distance indenter for frame: 165mm <input type="checkbox"/> Hardness minimum value: 0.1HR <input type="checkbox"/> Conversion function: HRA, HRB, HRC, HRD, HRF, HRG, HR15N, HR30N, HR45N, HR15T, HR15T, HR30T, HR45T, HV, HBS, HS, MPA. <input type="checkbox"/> Data output: RS-232C, SPC (on/off) select a table in each output type <input type="checkbox"/> Power supply: AC input-100-240v, 50-60hz, 1.2A DC output 12v -3.5A 	

Shaper Machine

SL No	Technical Specification	Bidder's Compliance
30	<p>Shaping machine made of high grade cast iron suitable for keyway cutting</p> <p>Type of Mechanism: Gear drive STROKE</p> <p>length: 450 mm</p> <p>Ram length: 840 mm Ram</p> <p>bearing: 610 mm No of</p> <p>RAM Speed: 4</p> <p>Max Distance from Table to RAM: 370 mm Min</p> <p>Distance from Table to RAM: 50 to 70 mm Motor</p> <p>Power: 2 HP</p> <p>Power supply: AC 3-Phase, 415V +/-10%, 50 HZ Working</p> <p>Surface of Table: 450X320 mm</p> <p>Max Horizontal Travel of Table: 400 mm Max</p> <p>Vertical Travel of Table: 204 mm Angular</p> <p>Movement of Table: 45</p> <p>Max Tool Shank Size: 20 x 20</p> <p>Max Vertical Travel of Tool Slide: 130mm Max</p> <p>Swivel of Tool Head: 60</p> <p>Cross feed range per stroke in mm: 0.2-1</p> <p>Range of RAM Speed: 20-90 Accessories</p> <ol style="list-style-type: none"> 1. Key way cutting attachment 2. Automatic lubricating pump 3. Swiveling Machine Vice 4. Tool holder with cutting tool 5. Standard tool kit for operation and maintenance of the machine shall be provided 	

Shear Testing Machine

SL No	Technical Specification	Bidder's Compliance
31	Specification	

Spring Testing Machine (Open&Closed)

SL No	Technical Specification	Bidder's Compliance
32	Specification Model / Capacity BSP –30 Maximum Capacity: 5kg, 10kg, 20kg, 30kg Maximum Cross Head Travel: 100mm Force Measuring Resolution: 0.1 kg Type of Construction: Double Column	

Static And Dynamic Balancing Apparatus

SL No	Technical Specification	Bidder's Compliance
33		

Torsion Testing Machine

SL No	Technical Specification	Bidder's Compliance
34	Specifications: Capacity : 0 to 50 kgm. Range : ONE Rod to be tested : 8 to 20 mm. Load of Measurement : Torque and Twist will be read directly. Other provisions : Automatic stop in case of failure of specimen.	

Universal Grinding Machine

Sr. No.	Technical Specification	Bidder's Compliance
1.	Operating Conditions	
2.	Altitude: 1000 meters above MSL	
3.	Humidity: 35-95%	
4.	Ambient Temp: 4-45 °C	
5.	Power supply: 415 volts \pm 15V, 50 Hz \pm 3%, 3 phases AC Supply.	
6.	Pneumatic Pressure: 4-6 Kg/cm ² (The equipment shall work from any pressure between 4-6 Kg/cm ²) as per necessity.	
	TECHNICAL SPECIFICATION	
7.	Centre distance: 650mm minimum	
8.	Centre Height: 150mm minimum	

9.	Longitudinal side: Max.travel=Centre distance +50mmSpeed: 50-5500mm/min. Reversal dwell: 0-6s Minimum increment on diameter: 0.00125mm or better Swivel of table: +/- 70 or better	
10.	Wheel head side: Rapid approach: 45mm minimum Infeed1: 0.012-6mm/min Incremental feed: 0.001-0.05mm Wheel head Swivel: 60° towards Work Head & 45° away from Work Head	
11.	5-Wheel head: External grinding wheel size: diameter X Width X bore = 300/400 X40 X127mm Power requirement: 4kw Peripheral speed: 30m/sec Rpm: 1910 revolution/min or better.	
12.	6- Work head: Swivel head: 0-90° With variable spindle speed 55-312 rev./min. with different ranges	
13.	7-Work accuracy: Surface straightness: 0.0025 mm/ 400mm, 0.004mm/650mm, Roundness on live spindle:0.001mm to 0.003mm	
14.	8. Guideways coating -Turcite –B/ equivalent/ better slide way coated on moveable slides to prevent stick slip motion.	
15.	9- Working head, Wheel head rotating spindle with anti-friction bearing or hydrodynamic super precision bearings or better.	
16.	10- Internal grinding attachment : Spindle size: Ø 60 or Ø 80X250mm Grinding internal bore: Ø 15 to Ø 100 mm with Suitable quils. Collets for mounting wheel Ø 3 & 6 mm (for ø 60 or 80x250 spindle or suitable with supplied spindle). Spindle RPM:18000 and above With Cooling arrangement for internal grinding.	
	Accessories along with Machine	
17.	Oil circulation and filtration unit for grinding wheel head.	
18.	3 point steady rest	
19.	3 jaw/4 jaw true chuck 6' with 6' chuck flange.	
20.	Face plate Ø 150 minimum	
21.	Set of collets Ø 5 mm to 25 mm.(with0.5 step or maximum 1 mm)	
22.	Adaptor Sleeve & drawbar for collets of above size	
23.	Revolving centre MT3/MT4/MT5 suitable for machine.	
24.	Set of carbide tipped dead centers (2 nos.)	
25.	Set of carbide tipped half centers (2 nos.)	
26.	Additional Grinding wheel flange with balancing blocks	
27.	Wheel Balancing Stand (Roller type)	
28.	Wheel Balancing arbour	
29.	Wheel angle dressing device	
30.	Radius dressing device (Concave & Convex)	
31.	Dial indicator holding arrangement on main table for taper correction (with DIAL)	
32.	Table fine feed attachment	
33.	Machine lamp	
34.	Paper band cum Magnetic filter unit with special coolant tank	
35.	Lead screw/Ball Screw or better for In-Feed Slide	
36.	Digital Read out unit (DRO) for In-feed slide - 0.001 mm least count.	

37.	Micro Feed/ Fine feed on the wheel head slide - 0.001 mm least count.	
38.	Automatic Centralised lubrication system	

Universal Milling Machine

Parameter	Specifications	Bidder's Specifications	Bidder's Compliance
Working Surface (mm)Length	1350mm to 1600mm		
Working Surface (mm)Width	300mm to 450mm		
Swivel range of table on both side	0° to 45°		
T-Slot Nos.	3		
T-Slot Size	14mm to 18mm		
T-Slot Centre	45mm to 65mm		
Min. distance, centre lower face of	60mm		
Milling head spindle to table to face	0		
Max. distance, centre lower face of	600mm		
Milling head spindle to table to face	475mm		
X-Longitudinal Travel (Max.)	800 mm to 1000mm		
Y-Cross Travel (Max.)	400mm to 600mm		
Z-Vertical Travel (Max.)	230mm to 450mm		
FEEDS			
No. of Feeds	18 to 21		
Range of Longitudinal Feed/ min	16-25 to 800 - 1000		
Range of Cross Feed / min	16-25 to 800 - 1000		
Range of Vertical Feed / min	4-10 to 200-400		
No. of Rapid Feeds	1		
Longitudinal Rapid Feeds / min	Min.3200		
Cross Rapid Feeds / min	Min.3200		
Vertical Rapid Feeds / min	Min.800		
SPINDLE			
No. of Spindle Speeds	18 to 21		
Range of Spindle Speeds (RPM)	25-45 to 1800 - 2000		
Spindle Taper	ISO 40		
ELECTRICAL			
Main Motor	7.5 H.P. to 10 H.P.		
Feed Motor	2 H.P. to 3 H.P.		
Coolant Motor	0.1 H.P. to 0.15 H.P.		
STANDARD ACCESSORIES			
Stub arbore size – (Dia. 27mm, Dia.32mm, Dia.40mm) - 1 No.each			
Long arbore size - Ø27mm x500mm long & Ø 1”x500mm long - 1 No.each			
Universal vertical head - 1 No.			
Universal dividing head - 1 No.			
Rotary table size 250mm-300mm - 1 No.			
Slotting attachment - 1 No.			
Rack cutting attachment -1 No.			
Machine light suitable for 415 V operations with machine lamp. – 1 Set			
Coolant system with tank – 1 Set			
7.5 H.P. - 10 H.P. Electric motor with control gear – 1 Set			
Auto feed box with 2 H.P. - 3 H.P. Electric motor - 1 Set			
Set of requisite tools - 1 Set			
Swivel base type machine vice 160 mm heavy duty - 1 No.			
Conical type collets Ø 5mm to Ø 25 mm by 1mm or 2mm with collets chuck - 1 Set			
Face milling cutter size Φ 80mm x 27mm or Φ 100mm x 32mm bore diameter with index able carbide inserts - 1 No.			
Self-cantering vice - 1 No.			
Instruction & spare parts manual - 1 No.			

VCR Test Rig

SL No	Technical Specification	Bidder's Compliance
37	<p>Specification</p> <p>The Vapour Compression Test Rig demonstrates the working of a basic refrigeration cycle using a hermetically sealed compressor, air-cooled condenser, capillary tube, and evaporator.</p> <ul style="list-style-type: none">▪ Compressor: Hermetically sealed, typically 1/4 HP to 1/2 HP capacity.▪ Condenser: Air-cooled or water-cooled, compact type▪ Expansion Device: Capillary tube for pressure reduction.▪ Evaporator: Coil type or finned evaporator inside a water tank (approx. 10–20 litres).▪ Refrigerant: R134a/R22 (as per system design). <p>Measurement:</p> <ul style="list-style-type: none">▪ Pressure Gauges: Suction and discharge sides.▪ Thermometer sensors: Temperature at key points.▪ Rotameter/Volumetric tank for refrigerant flow measurement (optional).▪ Frame: Mild Steel, powder-coated, mobile unit.▪ Power Supply: 220V AC, 50Hz, single-phase▪ WITH HMI & Data Acquisitions system	

VENTURIMETER APPARATUS FOR DETERMINATION OF CD

SL No	Technical Specification	Bidder's Compliance
38	<p>Specification</p> <p>Venturimeter Section:</p> <ul style="list-style-type: none"> ▪ Material: Transparent Acrylic or Stainless Steel ▪ Inlet Diameter: 20 mm (Typical) ▪ Throat Diameter: 12 mm (Typical) ▪ Flow Range: 0.5 – 25 LPM (Depending on pump and pipe size) ▪ Pressure Tapping: Provided at inlet and throat for differential pressure measurement <p>Manometer:</p> <ul style="list-style-type: none"> ▪ Type: U-tube Differential Manometer ▪ Manometric Fluid: Water / Mercury (commonly water in labs) ▪ Scale: Graduated scale for direct head reading in cm <p>Sump Tank:</p> <ul style="list-style-type: none"> ▪ Material: Stainless Steel/FRP ▪ Capacity: 40– 60 Litres (Typical) ▪ Purpose: Stores water for recirculation <p>Pump Type: Centrifugal Pump (~0.5 HP) to maintain continuous water circulation</p> <p>Discharge Measurement Tank:</p> <ul style="list-style-type: none"> ▪ Type: Graduated Tank with Markings ▪ Capacity: 20 – 30 Litres ▪ Measuring Method: Volumetric collection with stopwatch ▪ Purpose: Accurate discharge measurement to calculate flow rate <p>Flow Control System:</p> <ul style="list-style-type: none"> ▪ Flow Control Valve: Provided at the delivery side to adjust flow rate ▪ Bypass Line: Optional for fine flow adjustment <p>Utilities Required:</p> <ul style="list-style-type: none"> ▪ Electrical Supply: 220V AC, 50Hz, Single Phase ▪ Water Supply: Provided via recirculating sump system ▪ Floor Space: Approx. 1.5 m x 0.5 m <p>PURPOSE : To determine the co-efficient of discharge for Venturimeter at different flow rates.</p> <p>CONSISTS OF :</p> <ul style="list-style-type: none"> * Venturimeter in separate pipe line suitable for 1” BSP pipe with manometer tapping connections at suitable points downstream and upstream of the meters and double column manometer for measurement of pressure drop. The pipe lines are mounted on Sturdy stand. * A Centrifugal Pump of capacity 1HP & a starter. * Acrylic Manometer for better reliability * Sump tank and collecting tank with drain valve, and piezometer for collecting tank with Butterfly Valve for quick operation with over-flow facility. * Starter, manometer, acrylic piezometer and all accessories mounted on a control panel. * Imported Ball Valves for manometer& venturimeter for longer life / reliability. * With S.S. Tanks (Close Circuit) . 	

VISCOSITY MEASUREMENT USING SAYBOLT VISCOMETER

SL No	Technical Specification	Bidder's Compliance
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8	Specification Universal & Furol Jet, Electrically Heated Model, with Energy Regulator, Measuring Flask and Thermometer, Hot Water Bath.	
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