



तेजपुर विश्वविद्यालय / TEZPUR UNIVERSITY
(केंद्रीय विश्वविद्यालय / A Central University)
कुल सचिव का कार्यालय / OFFICE OF THE REGISTRAR
तेजपुर-784028 :: असम / TEZPUR-784028 :: ASSAM

NOTICE INVITING QUOTATION (NIQ)

ET-NIQ-5628-DT-20.20.2020

Online Tenders in 02 Bid System (Technical and Financial) are invited from reputed manufacturers/authorized dealers for supply, installation & commissioning etc. of the following items required for DST project of Dr. D.C.Baruah, Department of Ebergry, Tezpur University.

Please read the NIQ document carefully before participating. It shall be deemed that submission of bid by the bidder has been done after their careful study and examination of the NIQ terms with full understanding to its implications. Any lack of information shall not in any way relieve the bidder of its responsibility to fulfill its obligations under the Bid.

The University will reject a proposal for award if it determines that the bidder recommended for award has engaged in corrupt or fraudulent practices in competing for, or in executing, the Purchase Order. Fraudulent Practice means a misrepresentation of facts in order to influence a procurement process and includes collusive practice among bidders (prior to or after Bid submission) designed to establish Bid prices at artificial non-competitive levels and to deprive Tezpur University of the benefits of free and fair competition. Corrupt Practice means offering, giving, receiving or soliciting of anything of value, pressurizing to influence the action of a public official in the process of this purchase execution.

For any queries/doubt please contact the Stores & Purchase Section (e-mail: snp@tezu.ernet.in).

Items:

Sl. No	Item	Quantity	Approximate Unit Price in ₹
1	Bio CNG Tractor	01	8,50,000.00
2	Heat Sealing machine	01	4,00,000.00
3	Harvester and chopper	01	8,00,000.00
4	Anaerobic Jar system and accessories	01	10,00,000.00
5	FRP Gel Coat spray gun	01	6,00,000.00
6	Automated Weather Chamber	01	8,00,000.00

(Detail Technical Specification/Compliance Sheet and BoQ are attached/uploaded separately)

General Information about the NIQ

Last date and time for submission of Bids: 09.03.2020 (2.00 PM)

Date and Time of opening of Bids: 10.03.2020 (4.00 PM)

Place of Opening of Bids: Tezpur University

Handwritten signature



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GENERAL TERMS & CONDITIONS:

1. No separate tender paper will be issued from the office; one should only download the specifications from the CPP Portal of Govt. of India or the Tezpur University website (www.tezu.ernet.in).
2. **GST:** As per Gol Notification dated 14.11.2017 GST % for Public Funded Research Institution or a University has been reduced to 5% for certain goods and services. Hence, reduced rate of GST shall be paid if applicable on the tendered items. Exemption Certificate will be provided on request.
3. **Rates:** Rates quoted should be on **FOR Tezpur University, Napam, Tezpur, Door Delivery Basis**, for indigenous items and **CIP Tezpur University, Napam, Tezpur or Delivered Duty Paid**, for imported item. Failure to comply with this term may lead to rejection of the quotation.
4. **Quotations should be accompanied by** i) An **EMD (in the form of Demand Draft/Banker Cheque)** for **₹89000.00 (Rupees Eighty-Nine Thousand)** only drawn in favor of Registrar, Tezpur University, payable at Tezpur. **No request for consideration of earlier deposited EMD will be considered.** ii) A non-refundable application (quotation/participation) fee of **₹2000.00 (Rupees Two Thousand)** only must be paid only by Demand Draft/Banker Cheque drawn in favour of Registrar, Tezpur University payable at Tezpur. iii) **The original copies of the EMD & Quotation/Participation Fee should be deposited/submitted/reach the office of the undersigned before opening of the Bids in an envelope superscribed as "Quotation/Participation Fee and EMD for ET-NIQ-.....5628.....DT-20.02.2020....." addressed to the Assistant Registrar-GA, Tezpur University. Failure to do so may result in rejection of the bid.**
5. **Exemption:** MSME registered Bidders may claim exemption from payment of EMD only subject to submission of valid documents in support of their claim. Bidders seeking exemption are asked to clearly mention the category under which exemption is claimed. The name/definition of services/activities mentioned in the exemption documents/certificates will be strictly adhered to. **Payment of tender fee is a must and is not exempted. However, the University will make provisions for the tender documents free of cost in its website as well as in CPP Portal.**
6. The rates should be exclusive of taxes and applicable tax % should be clearly indicated.
7. **Validity of Quotation:** Quoted rates must be valid for at least **180 days** from the last date of submission of quotation.
8. Applicable levies, surcharge and discounts should be clearly indicated item wise.
9. The rates should be quoted along with supporting documents of specifications and technical features and list of users, wherever applicable.
10. The system must be installed at the laboratory wherever applicable, and after installation a basic training must also be provided by the supplier or their Indian counterpart without any additional costs.
11. **Literature a must:** All the quotations must be supported by technical leaflet/literature and the specifications mentioned in the quotation must be reflected/ supported by such technical leaflet/literature. The model and specifications quoted should **invariably be highlighted** in the leaflet/literature for easy reference.
12. **Technical Evaluation:** The bidder should provide the standard technical literature on the subject offered with dealership certificate of the offered product(s). The offers which do not meet the NIQ required technical specifications will be summarily rejected, from any further consideration. Technical bids will be evaluated and ranked by the award ACCEPT & REJECT. The price bids of ACCEPTED vendors would then be considered by the concerned Purchase Committee of the institute.

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13. **After Sales Service Guidelines:** The Bidders should clearly state the detailed address, contact number and email ids of 'after sales service centre' preferably in Tezpur/Guwahati, India or any place in Assam without which their offers shall be liable for rejection. Service against any complaint must be provided within 24 hours
14. **Dealership Certificate:** Dealers or Agents quoting on behalf of Manufacturer must upload valid dealership certificate.
15. **Quality Certificates:** Valid certificate to prove that the products are genuine and of International standard, as mentioned below, must be uploaded: (a) Manufacturer's certificate; (b) ISO/ISI certificate.
16. **Performance Bank Guarantee:** If PO value is above Rs.5 Lakhs, the successful bidder, to whom the PO is placed, shall furnish an unconditional Performance Bank Guarantee from a scheduled Bank of India, for 10% of the Purchase Order value, alongwith the Bill/Invoice. The format for PBG if required; will be provided on request. In case of foreign purchase, the local Agent shall submit the PBG. Where the PBG is to be necessarily given by a foreign bank it shall be endorsed by its counterpart in India. Validity of the PBG, which shall be effective from the date mentioned therein, shall be *warranty period + 2 months before and 3 months after the warranty period.*
 - a. **By submitting the PBG, the vendor is understood to have guaranteed that,**
 - i. The Purchase Order (PO) shall be executed as per terms and conditions mentioned therein.
 - ii. The vendor shall at his/their own cost rectify/replace the defects, if any, during the guarantee period.
 - iii. The guarantee is to the extent of 10% of the order value.
 - b. **Condition for invoking PBG:** In case of failure to comply with the guarantees above, Tezpur University, Napam, Tezpur may terminate the contract / purchase order in whole or in part and forfeit the PBG. In addition, Tezpur University, Napam, Tezpur, at its discretion, procure upon such terms and in such manner as it deems appropriate, goods similar to the undelivered items/products and the defaulting supplier/vendor shall be liable to compensate Tezpur University, Napam, Tezpur for any extra expenditure involved."
17. **Genuine Pricing:** Vendor is to ensure that quoted price is not more than the price offered to any other customer in India to whom this particular item has been sold, particularly to Universities/IITs/Institutes and other Government Organization.
18. **Payment:** 100% payment after successful delivery, installation and commissioning and acceptance by the user. **Please note that as per University's norm advance payment is not allowed for indigenous purchase.**
19. **PENALTY FOR DELAYED DELIVERY:** The date of delivery should be strictly adhered to. In the event of delayed delivery, installation & commissioning, the vendor shall be liable for a penalty deduction as per prevailing rule
20. Demonstration may be sought from the vendors for authentication of quoted specification.
21. The University is exempted from paying Custom and Excise duty.
22. Warranty/Guarantee period should be specifically mentioned in the quotation.
23. No Advance payment will be made. However, for foreign supplies, advance payment will be made either by LoC. In such cases 10% Performance Bank Guarantee should be submitted before opening of the LoC.
24. Items of Foreign origin should have Insurance up to installation on site.
25. The University reserves the right to accept or reject any or all the quotations without assigning any reason.
26. Irresponsive/incomplete quote will be rejected.

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27. **Award:** The Final Award will be given to the vendor, selected by the Purchase Committee on the lowest quote basis.
28. **Conditional tenders not acceptable:** All the terms and conditions mentioned herein must be strictly adhered to by all the vendors. Conditional tenders shall not be accepted on any ground and shall be rejected straightway. Printed conditions mentioned in the tender bids submitted by vendors will not be binding on Tezpur University.
29. **Enquiry during the course of evaluation not allowed:** No enquiry shall be made by the bidder(s) during the course of evaluation of the tender till final decision is conveyed to the successful bidder(s). However, the Purchase Committee or its authorized representative (Tezpur University) can make any enquiry/seek clarification from the bidders. In such a situation, the agency shall extend full co-operation. The bidders may also be asked to arrange demonstration of the offered items, in a short period notice, as such the bidders have to be ready for the same.

30. **Force Majeure:**

If the performance of the obligation of either party is rendered commercially impossible by any of the events hereafter mentioned that party shall be under no obligation to perform the agreement under order after giving notice of 15 days from the date of such an event in writing to the other party, and the events referred to are as follows:

- I) any law, statute or ordinance, order action or regulations of the Government of India,
- II) Any kind of natural disaster, and
- III) Strikes acts of the Public enemy, war, insurrections, riots, lockouts, sabotage.

Termination for default: Default is said to have occurred

- a. If the equipment or any of its component is found having poor workmanship, faulty designs, poor performance and bad quality of materials used.
- b. If the supplier fails to deliver any or all of the services within the time period(s) specified in the purchase order or any extension thereof granted by Tezpur University.
- c. If the supplier fails to perform any other obligation(s) under the contract.
- d. Under the above circumstances Tezpur University may terminate the contract / purchase order in whole or in part and forfeit the EMD/PBG as applicable. In addition to above, Tezpur University may at its discretion also take the following actions: Tezpur University may procure, upon such terms and in such manner, as it deems appropriate, goods similar to the undelivered items/products and the defaulting supplier shall be liable to compensate Tezpur University for any extra expenditure involved towards goods and services obtained. Besides, the Vice-Chancellor, Tezpur University, reserves the right to impose any other form of penalty as deemed fit including blacklisting of the vendor.

31. **Selection criteria:**

Evaluation Criteria:

Technical criteria will be evaluated and ranked by the award of ACCEPT and/or REJECT. Only the ACCEPTED vendors will be considered for price bid. In case a joint venture makes a bid, any one of the members of the joint venture need to be qualified for each of the criteria mentioned below.

Eligibility Criteria:

- a. The bidder or the OEM should not be blacklisted by Tezpur University or any other Educational /R&D/ PSU/ Govt organizations. A certificate or undertaking to this effect must be submitted.

Note: The bidders should provide sufficient documentary evidence to support the eligibility criteria.

Technical Criteria

The bidder should provide the standard technical literature on the subject offered with dealership certificate of the offered product(s). The offers which do not meet the NIQ required technical

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specifications will be summarily rejected, from any further consideration. Technical bids will be evaluated and ranked by the award Accepted & Rejected. The price bids of Accepted vendors would then be considered by the concerned Purchase Committee of the institute.

32. **ADDITIONAL TERMS FOR IMPORTED GOODS:**

Following additional terms will be applicable in case of foreign supply:

- a) **Rates:** Rates quoted should be on **DELIVERED DUTY PAID basis**, with break-ups as per details given in the BOQ,
 - b) **Exchange rate:** Rate of foreign exchange shall be the rate prevailing on the date of Purchase Committee Meeting.
 - c) While transshipment will be allowed, **part shipment will not be allowed.**
 - d) **Payment:** By an irrevocable Letter of Credit at CIF/CIP Kolkata value negotiable through any overseas branch of State Bank of India with unrestricted provision. 90% of payment will be released on receipt of the shipping document and balance 10% after receipt of consignment. LoC will be established on receipt of Order acknowledgment, Proforma Invoice and Performance Bank Guarantee (PBG).
 - e) **Agency Commission:** The percentage of ex-works value to be paid to Indian agent in equivalent Indian currency as agency commission as applicable if any will have to be clearly stated in the quotation.
 - f) **Country of Origin:** While Country of Origin will have to be stated in the Original Invoice for payment through LoC.
 - g) **LoC Amendment:** LoC amendment charges due to mistake on the part of the supplier, if any, will have to be borne by the supplier.
33. Applications for release of EMD should be submitted to the Registrar/ Joint Registrar-GA/Assistant Registrar-GA, Tezpur University.
34. Apart from the above terms and conditions the University has the right to include any other terms and conditions as and when felt necessary.

INSTRUCTIONS TO BIDDERS FOR ONLINE BID SUBMISSION

Instructions to the Bidders to submit the bids online through the Central Public Procurement Portal for e Procurement at <http://eprocure.gov.in/eprocure/app>

1. Possession of valid Digital Signature Certificate (DSC) and enrollment/registration of the agencies/bidders on the e-Procurement/e-tender portal is a prerequisite for e-tendering.
2. Bidder should do the enrollment in the e-Procurement site using the "Online Bidder Enrollment" option available on the home page. Portal enrollment is generally free of charge. During enrollment/registration, the bidders should provide the correct/true information including valid email id. All the correspondence shall be made directly with the agency/bidder through email id provided.
3. Bidder need to login to the site through their user ID/ password chosen during enrollment/registration.
4. Then the Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by SIFY/TCS/nCode/eMudra or any Certifying Authority recognized by CCA India on eToken/SmartCard, should be registered.
5. The DSC that is registered only should be used by the bidder and should ensure safety of the same.
6. Agency/Bidder may go through the tenders published on the site and download the required tender documents/schedules for the tenders he/she is interested.
7. After downloading / getting the tender document/schedules, the Bidder should go through them carefully and then submit the documents as asked, otherwise bid will be rejected.
8. If there are any clarifications, this may be obtained online through the tender site, or through the contact details. Bidder should take into account the corrigendum published before submitting the bids online.

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9. Bidder then logs in to the site through the secured log in by giving the user id/ password chosen during enrolment/registration and then by giving the password of e-Token/Smartcard to access DSC.
10. Bidder selects the tender which he/she is interested in by using the search option & then moves it to the 'my tenders' folder.
11. From my tender folder, he selects the tender to view all the details indicated.
12. It is construed that the bidder has read all the terms and conditions before submitting their offer. Bidder should go through the tender schedules carefully and upload the documents as asked; otherwise, the bid will be rejected.
13. Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender documents/schedule and generally, they can be in PDF/xls/rar/jpg/dwf formats. If there is more than one document, they can be clubbed together and can be provided in the requested format. Bidders Bid documents may be scanned with 100 dpi with black and white option. It is advisable that each document to be uploaded through online for the tenders should be less than 2 MB. If any document is more than 2MB, it can be reduced through rar and the same can be uploaded, if permitted. However, if the file size is less than 1 MB the transaction uploading time will be very fast.
14. If there are any clarifications, this may be obtained through the site. Bidder should take into account the corrigendum published from time to time before submitting the online bids.
15. The Bidders can update well in advance, the documents such as certificates, annual report details etc., under My Space option and these can be selected as per tender requirements and then send along with bid documents during bid submission. This will facilitate the bid submission process faster by reducing upload time of bids.
16. Bidder should submit the Tender Fee/EMD as specified in the tender. The original should be posted/couriered/given in person to the Tender Inviting Authority, within the bid submission due date & time for the tender or as indicated in the tender. Scanned copy of the instrument should be uploaded as part of the offer.
17. While submitting the bids online, the bidder reads the terms & conditions and accepts the same to proceed further to submit the bid packets.
18. The bidder has to select the payment option as offline to pay the Tender Fee/EMD as applicable and enter details of the instruments.
19. The details of the DD/ any other accepted instrument, physically sent, should tally with the details available in the scanned copy and the data entered during bid submission time. Otherwise submitted bid will not be acceptable or liable for rejection.
20. The bidder has to digitally sign and upload the required bid documents one by one as indicated. Bidders to note that the very act of using DSC for downloading the bids and uploading their offers shall be deemed to be a confirmation they have read all sections and pages of the bid document including General conditions of contract without any exception and have understood the entire document and are clear about the requirements of the tender requirements.
21. The bidder has to upload the relevant files required as indicated in the cover content. In case of any irrelevant files, the bid will be rejected.
22. If the price bid format is provided in a spread sheet file like BoQ_xxxx.xls, the rates offered should be entered in the allotted space only and uploaded after filling the relevant columns. The Price-bid BOQ template must not be modified/replaced by the bidder; else the bid submitted is liable to be rejected for this tender.
23. The bidders are requested to submit the bids through online e-tendering system to the Tender Inviting Authority (TIA) well before the bid submission end date & time (as per Server System Clock). The TIA will not be held responsible for any sort of delay or the difficulties faced during the submission of bid online by the bidders at the eleventh hour.
24. After the bid submission (i.e. after Clicking "Freeze Bid Submission" in the portal), the acknowledgement number, given by the system should be printed by the bidder and kept as a record of evidence for online submission of bid for the particular tender and will also act as an entry pass to participate in the bid opening date.
25. The time settings fixed in the server side & displayed at the top of the tender site, will be valid for all actions of requesting, bid submission, bid opening etc., in the e-tender system. The bidders should follow this time during bid submission.
26. All the data being entered by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered will not be viewable by unauthorized persons during bid submission & not be viewable by any one until the time of bid opening.



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27. Any bid document that is uploaded to the server is subjected to symmetric encryption using a system generated symmetric key. Further this key is subjected to asymmetric encryption using buyers/bid openers' public keys. Overall, the uploaded tender documents become readable only after the tender opening by the authorized bid openers.
28. The confidentiality of the bids is maintained since the secured Socket Layer 128-bit encryption technology is used. Data storage encryption of sensitive fields is done.
29. The bidder should logout of the tendering system using the normal logout option available at the top right-hand corner and not by selecting the (X) exit option in the browser.
30. For any queries regarding e-tendering process, the bidders are requested to contact as provided in the tender document. Parallely for any further queries, the bidders are asked to contact over phone: 180030702232 or send a mail over to cppp-nic@nic.in.

Joint Registrar-GA
Tezpur University

Technical Specifications cum Compliance Report
(To be submitted on Company's/Firm's Letterhead Signed and Sealed)

Item	Specification	Complied (Yes/No)	Remarks if any,
Bio CNG Tractor	60 kW rated power at standard outlet with all standards fitting capable to work on field and road. Provisions for fueling by both diesel and bioCNG as per user choices. Certified by BIS or standard Testing body. Proof of Repair and maintenance facilities in Assam, Punjab and Haryana.		
Heat Sealing machine	Technical Specification: <ul style="list-style-type: none"> • Air Volume : 230 L/min • Application: Welding of plastics/Tarpaulin, Stripping and drying paint, Softening adhesives on glass, De-soldering and small electronic repairs, Melting wax or other materials for craft use. • Cord Length : 3 m • Frequency : 50 Hz • Material Type : Metal & Plastic • Power Consumption : 2300 W • Product Dimension : 420 X 270 X 210 mm • Product Information : Weld seam width: 20 mm • Air flow range: 50 - 100 % • Speed : 1.0 to 7.5 m/min • Temperature Range : 80-620°C • Variable Temperature Control : 2 Stage • Voltage : 230 V Warranty : 3 Year Proof of Repair and maintenance facilities in Assam, Punjab and Haryana.		
Harvester and chopper	Tractor mounted pto power operated; to be operated by tractor power range (35-60 kW pto power); Ability to harvest, collect, chop and bail (desirable) all types of field crops grown in India. Certified by BIS or standard Testing body. Proof of Repair and maintenance facilities in Assam, Punjab and Haryana.		
Anaerobic Jar system and accessories	Description of Function: Automated anaerobic jar system Operational Requirements: System should provide 1 Jar and 3 Gas connection. Technical Specifications: Automation:		

- Anaerobic culture system having automation to work itself and capable of identifying human error like low/ high pressure/ no gas supply, jars not closed properly and catalysts not properly regenerated. In case of any error the equipment should stop with color coded pass/failure message on its touch screen for the operator to restart it after correcting the error.
- Should be provided with a one button start & reset operation.

Memory:

- It should have memory back up to store minimum 50 user programmed recipes in its memory.

Catalysts:

- Equipment should come with a feature to use single use (disposable) or reusable 2 boxes of catalysts, it should have feature to assess catalysts kept in the jars, should stop working if the catalyst are not properly regenerated.

Jars:

- Should provide clear, transparent and Polycarbonate Jars
- No of jars-2 able to hold 2 stacks of 6 Petri dishes of 9-10cm.
- No. of jars- 1 able to hold stacks of 12 Petri dishes of 9-10cm.
- No. of jars-1 able to hold 2 stacks of 12 Petri dishes of 9-10cm.
- Should be based on the principle of evacuation and replacement of gases while filling the transparent anaerobic jars.
- Should have valves to purge gases externally.

Petri dish holder:

- No. of petri dish holder- 2 able to hold 12 Petri dishes of 9-10 cm.
- No. of petri dish holder- 2 able to hold 6 Petri dishes of 9-10 cm.

Programming:

- Multifunctional ability to create Any Gas Environment with any Non Hazardous Gas all with one instrument.
- Should have user programming function along with Custom Recipe Environments with Optional Generating Program to Mix any type of Gas.

	<ul style="list-style-type: none"> • The gaseous environment created in its jar should be exact and reproducible with less than 0.5% deviations. • Should come with easy to use touch screen display. <p>Prevention of Microbial Contamination:</p> <ul style="list-style-type: none"> • Should have provision to fix filter for prevention of microbial contamination of the laboratory environment. <p>LAN facility:</p> <ul style="list-style-type: none"> • Should have a data interface software which is compatible with the LAN system <p>Bar code and Printer:</p> <ul style="list-style-type: none"> • If User requires at a later stage it should also be able to work with Bar Code and Printer. <p>Upgradation:</p> <ul style="list-style-type: none"> • It should provide connection for 3 Jars and 1 Gas or 3 Gases and 1 Jar and a basic Equipment should work with single Jar or Single Gas Connection. <p>Process timing:</p> <ul style="list-style-type: none"> • Able to Create Anaerobic Environment In 3 minutes and Microaerophilic in 1 Minute. <p>Indigenous Items</p> <ul style="list-style-type: none"> • Cylinders Filled at the time of supply – • Gas Cylinder filled with Anaerobic Mix gas • Pure gas cylinders filled with Carbon dioxide & Nitrogen • Should provide compatible pressure regulators to mix anaerobic gas & pure gases attached to it <ol style="list-style-type: none"> 1) No. of Nitrogen Pressure Regulators (Tornado Brand) – 2 2) No. of CO2 Pressure Regulators (Tornado Brand) – 1 • Arrangement should be made to refill Anaerobic Gas cylinders whenever its cylinder gets depleted (minimum 8 years from the date of installation). • Vendor should bear the freight charges to and fro for refilling Anaerobic Gases, freight may be claimed from university after supplies made to Tezpur University <p>Warranty and Certification</p> <ul style="list-style-type: none"> • Instrument warranty: 2 Years extendable upto 3rd year. <p>Item should be ISO 9001 / FDA/ CE marked.</p>		
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<p align="center">FRP Gel Coat spray gun</p>	<p>Fiberglass Reinforcement Proportioner Gel Coat System</p> <p>Mandatory:</p> <ul style="list-style-type: none"> • FRP Gel coat spray gun with chopper system for use with thermoset resin for gel-coat along with chopped FRP synthetic fibres to be added to the stream. • Spray Gel and Chop Gun system to cater to spraying both resin and chopped synthetic fibres simultaneously. • External Mixing • Simultaneously spray of resin, catalyst and fibre on the mold. • 30 m hoses for Gel coat, Air and Catalyst • Air Motor, Resin Displacement Pump, Catalyst Pump along with the piping for assembly of the gel-coating system to be included in the system. • Air Assist Containment (AAC) standard • Speed control <p>Desirable:</p> <ul style="list-style-type: none"> • Maximum Fluid Working Pressure 14 MPa, • Maximum Catalyst Working Pressure 1.4 MPa, • Air Inlet Working Pressure Range 0.55-0.86 MPa, • Maximum Fluid Temperature 38°C. <p>Warranty: 3 years Proof of Repair and maintenance facilities in Assam, Punjab and Haryana.</p>		
<p align="center">Automated Weather Chamber</p>	<p>Technical Specification:</p> <p>Chamber inner dimension: 0.8m (W) × 0.8m (D) × 0.8m (H)</p> <p>Temperature range: 0 °C - 100°C</p> <p>Controller accuracy: +/- 0.5 °C - 1.0 °C</p> <p>Gradient: Less than +/- 2.0 °C</p> <p>Average rate of rise/fall: 2.0°C per min</p> <p>Humidity range: 20 % - 100%</p> <p>RH over the temperature range: 20 °C to 80°C</p> <p>Humidity accuracy: +/- 3.0% RH with 0.1% display res</p> <p>Insulation: Proper insulation to be maintained in between 20 °C - 35°C in extreme low and high temperature conditions.</p> <p>Chamber interior : Graded stainless steel with completely welded finish and joints with leak proof required.</p>		

	<p>Chamber exterior : GI required with electrostatic powder coating finish.</p> <p>Air flow system : The entire conditioned air should circulate into the workspace to maintain uniform distribution of temperature and Humidity.</p> <p>Control instrument:</p> <ul style="list-style-type: none"> • Programmable microprocessor PID controller required for temperature control. Tubular and graphical display should be provided with complete history and storing facility. <p>Cooling system:</p> <ul style="list-style-type: none"> • Sealed compressor should be provided for low temperature. • The refrigeration system should be such that the temperature as well as compressor suction return is maintained to control the suction head temperature. <p>Heating system:</p> <ul style="list-style-type: none"> • Interlocking of heating system with air circulation should be provided. • The heaters should be properly placed such that there is no direct radiation on to the test specimen. <p>Humidification system:</p> <ul style="list-style-type: none"> • The humidification system should be of steam humidifier type and should be capable of maintaining low moisture pressure inside the chamber. • The steam generation system should be such that very fine mist circulates throughout the workspace and there is condensed free vaporization. • The water inlet should be easy to operate from an external supply. • The wet heater should be externally mounted and easily removable without dismantling the moisture generator. <p>De-humidification system:</p> <ul style="list-style-type: none"> • The system should be such that it does not allow condensation on the test specimen and should be able to control the lower relative humidity. <p>Temperature and humidity sensor:</p> <ul style="list-style-type: none"> • The temperature accuracy should be +/- 1.0°C in the range between 0°C - 100°C. The sensors should be rust proof. 		
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	<ul style="list-style-type: none">• The humidity sensor should have an accuracy of +/- 3% RH in the range between 10% - 100%. <p>Door and silicon gasket:</p> <ul style="list-style-type: none">• The chamber door should be properly designed such that it provides an air tight interlocking. <p>Viewing window and lamp:</p> <ul style="list-style-type: none">• Toughened glass windows should be provided to enable clear viewing of the test specimen. The window should also be properly insulated. <p>Electrical control panel:</p> <ul style="list-style-type: none">• The panel should be able to provide adequate readings of all the parameters and working statuses of the sensors.• An emergency stop button should also be provided to halt the system under any accident. <p>Electrical components:</p> <ul style="list-style-type: none">• Single phase preventer (SSP) should be provided to prevent the system from single phasing under high and low voltage control.• Circuit breakers should be provided against short circuit and over load faults. <p>Calibration:</p> <ul style="list-style-type: none">• Should be NABL certified. <p>Training :</p> <ul style="list-style-type: none">• Onsite training should be provided at the time of installation.		
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