



तेजपुर विश्वविद्यालय / TEZPUR UNIVERSITY

(केंद्रीय विश्वविद्यालय / A Central University)

- कुलाध्यक्ष का सर्वोत्तम विश्वविद्यालय पुरस्कार, 2016 और एनआईआरएफ भारत रैंकिंग 2016: नं. 05
- Visitor's Best University Award, 2016 and NIRF India Ranking 2016: No. 05

कुल सचिव का कार्यालय / OFFICE OF THE REGISTRAR

तेजपुर-784028 :: असम / TEZPUR-784028 :: ASSAM

SHORT QUOTATION NOTICE

TU/11-24/PUR/QTN/2016-17/1857 Date: 10.08.2016.

Sealed quotations are invited from reputed manufacturers/authorized dealers/vendors for supply & installation of following equipment required for the DBT sponsored Research project of Prof. Dhanapati Deka, Department of Energy, Tezpur University.

Equipment with Specification:

High Pressure Stainless Steel Reactor

| Sl. No. | Parameter | Value |
|---------|---------------------|---|
| 1 | Volume & M.O.C | 100ml net filling capacity made from SS 316L solid bar stock (no welding) & all wetted parts of SS 316. Note: Only head & body shall be SS 316L |
| 2 | Design Pressure | 100 Bar (Max working pressure around 80 % of the design pressure) |
| 3 | Design Temperature | 250° C. |
| 4 | Nozzles & Fittings | i) External Fittings: Pressure gauge, vent valve, safety rupture disc(Inconel) (Certified by original manufacturer), gas inlet-valve & liquid sampling valve mounted on common dip tube. Solenoid valve at the inlet of cooling coil pipe for automatic cooling. Note: All valve end connections shall be ¼" BSPM. ii) Internal Fittings: Single tube in tube out type cooling pipe for 50ml/100ml & Serpentine cooling coil for 250ml, thermowell (with temp. sensor), dip tube. |
| 5 | Body & Head Sealing | PTFE Gasket with split clamp type quick opening system with clamp bolts. Body clamps shall be with clut / latches to prevent flying off of clamps in case of over pressure. |
| 6 | Motor & drive | ¼ H.P AC Motor and variable frequency drive with 100-1450 RPM infinitely variable speed & digital RPM indication. Motor shall have 3 piece quick & maintenance free connect/disconnect motor coupling for ease of operation. (in place of spring loaded clutching). |
| 7 | Shaft Sealing | Zero leakage Magnetic drive coupling. (Maintenance free) |
| 8 | Stirrer | 4 bladed turbine stirrer |
| 9 | Heating | External electrical ceramic band heater with insulation & with high temperature steel cladding & provision to connect heater temperature sensor. It shall have insulated heater plate to prevent thermal shock to operator. |
| 10 | Control Panel | SS control panel with Programmable P.I.D temperature controller (Make: PPI, Model: Neuro 102a/102ac, Programs: 16 ramp/soak with OSIH over shoot inhibit parameter to control overshoot with standby mode to cut off heating & cooling) with high temperature alarm system & motor speed controller mounted on it. The panel shall be Screw less design with push lock enclosure, PVC Cable tray for internal wiring, safe & rugged metal clad military grade lockable plug sockets for all the sensors, heaters & motors (for tight connection & safety) . |
| 11 | Touch Screen Panel | 7 inch touch control panel with data logging facility and transfer of data to |



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| | | PC in excel format. |
|----|--|--|
| 12 | Mains Power Supply | 1 Phase, 220VAC ± 10%, 50Hz |
| 13 | Mounting | Mounted on Trolley with buffing of complete autoclave. |
| 14 | volume of Autoclave | 100 ml |
| 15 | Minimum Stirrable Volume | 25 ml |
| 16 | Approximate Overall Dimension for Table Top Model in mm (W x D x H) | 275 x 230 x 780 |
| 17 | Approximate Overall Dimension for Trolley Model in mm (W x D x H) | 1010 x 410 x 1300 |
| 18 | SS Pr. Regulator with self venting for releasing the pressure, pressure gauge & 4m long flexible hose pipe with NRV for 0-140 bar O/P pressure for H ₂ gas & adaptor for N ₂ , O ₂ or air cylinder. | |
| 19 | Digital pressure indicator in bar & psi (Make: PPI, Model: Neuro 100a/ N100ac) with SS-316 Pr. transmitter (Non-FLP) & high pressure alarm in addition to analog pressure gauge with high pressure safety heater cut off. | |
| 20 | ½ L High Pressure Liquid / Catalyst Slurry / Gas charging pot for injecting liquids / Gas / Catalyst during the reaction under pressure. { (It consists of a high pressure SS-316 pot, inlet & outlet valves, pressure gauge , high pr. Hose pipe , NRV & Pressure relief Valve) } | |
| 21 | 0.1m ² Condenser for distillation / condensation (It is an SS-304 shell side & SS-316 tube side heat exchanger) with hose pipe. | |
| 22 | SCADA Software (Make: Dreamsoft, Front End: vb.net 2008, Back End: Ms Access Database, Reporting Tool Crystal Report.) with RS485-232 convertor for online display trends, datalogging & remote set points of temperature, pressure alarm & rpm w.r.t. time on PC. (PC in clients scope) (Digital Pressure Indicator also to be ordered). Note: Cable length shall be 10m from PC to panel unless specified. | |
| 23 | Suitable laptop / Desktop with licensed windows software for the above SCADA software (highly recommended to avoid the installation & communication problems at the client end) | |
| 24 | Auto-cooling system with water pump for forced cooling SS tank & hose pipes for exothermic reaction & faster cooling | |
| 25 | Flush Bottom Valve of MOC. SS-316 | |
| 26 | Pressure relief valve of MOC SS- 316 (Max. working temp. 250° C) | |
| 27 | Water Pump and 5Ltr. Tank with tubing for circulating water to cool the magnetic drive, pressure sensor etc. | |
| 28 | Digital gas mass flow controller (in flow control mode or pressure control mode.) for any one gas with totalliser. (upto 30LPM) (Mention the gas, pressure, flow rate range & mode of control required)(Digital pressure indicator also to be ordered). | |

1. Underwater Robot

| Sl. No. | Parameter | Value |
|---------|-----------|-------|
|---------|-----------|-------|



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| | | |
|--|----------------------------|--|
| 1 | Dimension | Width: ~350 mm Height: ~250 mm Length: ~280 mm |
| 2 | Weight (Maximum) | ~ 10 KG |
| 3 | Speed (Maximum) | ~ 4 KM/Hour |
| 4 | Battery Run Time (Minimum) | 4 Hours |
| The robotics system should be equipped with camera, light and thruster, camera, pitch and light control through joystick and switches. | | |

2. Petroleum Testing Kit for Oil Analysis

i. 'CI' FOAMING CHARACTERISTICS TEST APPARATUS AS PER IP:146 & ASTM D 892

Consisting of two number test baths to operate at 24 ° C and 93.5 ° C with digital Prop. Control of Temperature and accuracy better than 0.5 ° C Complete with

2Nos. Graduated 1000ml. glass cylinder

2Nos. Gas diffuser stone

1No. Wet Gas Volume meter

1No. Flow Meter

1No. Air Drying Glass Tower

1No. Thermometer IP-64 ° C

ii. 'CI' CONSTANT TEMP. BATH (SOLID STATE) KINEMATIC VISCOSITY BATH: DIGITAL

Full Visibility. High precision. Meant primarily for viscosity determination. Stainless steel tank. Toughened glass windows. Control of temp. by digital microprocessor based, temp. controller. Continuously variable heaters for greater accuracy. Pump/Stirrer to provide gentle yet through agitation/circulation of tank media. Temp. Range 5 ° C above ambient to 100 ° C. Accuracy of temp. control ± 0.01 ° C. Resolution: 0.1 ° C. Operation on 230V, 50 Hz, AC Mains.

| WORKING CHAMBER SIZE | VOLUME | SUITABLE FOR | POWER |
|---------------------------|--------|--------------|--------|
| 285mm L x 160mm W x 350mm | D 28 | 4 VM | 2.00KW |

ACCESSORIES FOR ABOVE (NOT INCLUDED WITH ABOVE)

* Viscometer Tray for 4 VM

* Viscometer Holder

* Viscometer Stand

* Lighting Attachment

* Bath Media (for temp. up to 120° C) (Note: Minimum quantity 30 Liters.)

* Kinematic Viscosity Test Thermometers, Range: 100° C (ASTM-121C)

iii. 'CI'-30C ULTRA CRYOSTAT CLOUD & POUR POINT APPARATUS

* With hermetically sealed compressor charged with CFC free refrigerant gas.

* Digital prop. control of temperature on 3½ digit

* LED panel. operation on 230V, AC mains.

* Four test bath with metal and glass tubes.

* Temp. Range -30 ° C to + 50 ° C

GENERAL TERMS & CONDITIONS:

1. No separate tender paper will be issued from the office; one should only download the specifications/List from the website.
2. The rates should be preferably quoted in Indian Rupee and FOR Tezpur University, Napaam basis. Charges for clearing and transportation should be incurred by the supplier.



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3. Quotations should be accompanied by i) An EMD (in the form of Demand Draft/Call Deposit/TDR) of ₹. 5000/- (Rupees Five Thousand) only drawn/pledged 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) fee of ₹.1000.00 (Rupees One Thousand) only have to be paid only by Demand Draft drawn in favour of Registrar, Tezpur University payable at Tezpur.
4. The rates should be exclusive of taxes and applicable tax % should be clearly indicated.
5. Quoted rates should be valid at least for a period of 01 year.
6. The rates should be quoted along with supporting documents of specifications and technical features and list of users.
7. All the quotations must be accompanied with supporting documents and / or literature.
8. Details of availability of after sales support will have to be furnished. After sales support directly from manufacturer and from Assam (Guwahati / Tezpur) will be preferred.
9. The University is exempted from paying Custom and Excise duty.
10. Proprietary items should be quoted with sole Manufacturer/Distributorship certificate.
11. Warranty/Gurantee period should be specifically mentioned in the quotation.
12. No Advance payment will be made. However, for foreign supplier, advance payment will be made either by FDD/Wire Transfer/LC. In such cases 10% Performance Bank Guarantee should be submitted before issuing FDD/Wire Transfer/LC, covering the warranty period.
13. The University reserves the right to accept or reject any or all the quotations without assigning any reason.
14. Quoted price should be inclusive of essential accessories and should be CIF Tezpur University, Tezpur
15. Applications for release of EMD should be submitted to the Registrar/ Joint Registrar.
16. Apart from the above terms and conditions the University has the right to include any other terms and conditions as and when felt necessary.
17. Authorization/Dealership Certificate of the Company(s) whose product has been quoted has to be provided.
18. **Quotation should be submitted in the DROP BOX placed in the reception of the Administrative Building of the University within 21 days from the issue of the notice. If posted/couriered, should reached within 21 days from the issue of this notice addressed to "The Joint Registrar , Tezpur University". The Quotation Notice No. and date should be clearly superscribed in the the envelope/packet containing the quotation.**

Sd/- Joint Registrar
Tezpur University