

DEPARTMENT OF BIOCHEMICAL ENGINEERING AND BIOTECHNOLOGY
INDIAN INSTITUTE OF TECHNOLOGY DELHI
HAUZ KHAS, NEW DELHI – 110016

AUGUST 27, 2013

Subject: Notice Inviting Quotation (NIQ) for purchase of Fermentor system

Sealed quotations are invited for supply of **1 (one) Fermentor system** in the DBEB, addressed to **Prof. G. P. Agarwal, DBEB, IIT Delhi** on or before **17.09.2013 by 5.00 P.M.** All the parties are requested to read the specifications given below carefully before submitting the quote. The quotation must include all taxes, handling, shipping and installation charges. Also all details of guarantee/warranty should be clearly mentioned. The Technical and Financial bids should be in separate sealed envelopes and both should be placed inside a large sealed envelope inscribed with “**Quotation for purchase of Fermentor system**”. The Technical bid must provide all information about the components asked in the sections “Essential Technical Specification” as well as “Optional Accessories”.

Item Name: Fermentor system

Quantity: 01 (One)

NOTE: Kindly do not send any unnecessary documents, like advertisements containing the product range list of vendors/distributors etc. along with the bids.

Prof. G. P. Agarwal
(DBEB, IIT Delhi)

ESSENTIAL TECHNICAL SPECIFICATIONS

1. A compact autoclavable benchtop fermentor of 3 L total volume designed for growth of bacteria, yeast and fungi.
2. The fermenter vessel should be borosilicate glass, autoclavable with SS 316L fittings. It should be jacketed for temperature control via circulation of cold water. Range of temperature control: 20°C to 60°C.
3. The system should be supplied with at least 3 fixed configurable speed peristaltic pumps controlled by the reactor controller (PID) for addition of acid, base and anti-foaming reagent with appropriate tubings.
4. The system should be supplied with 1 variable speed peristaltic pump (flow rate: 0.5 to 50 ml/min) with control panel interface capable of addition of feeds in programmed manner.
5. The system agitation should be through direct-drive motor controlled by reactor controller mechanism. The agitation range should be from 50 - 1,000 RPM.
6. The system should be supplied with at least 2 six-blade Rushton Impellers along with removable 316L stainless steel baffles. The position of the impellers on the axis should be moveable. Option for interfacing other Impellers should also be available.
7. The system should be supplied with a standard sparger (ring/L-shaped) for aeration.
8. The system should be provided with one platinum RTD probe with thermowell for temperature sensing.
9. The system should be supplied with one pH probe. The pH control range should be from 3 - 12, links to acid pump or CO₂ gas in combination with alkali pump with adjustable dead-band and three point calibration.
10. System should be supplied with at least one Mass Flow Controller (MFC) in the range of 0.04 – 20 SLPM. System should be capable of integrating additional inbuilt MFC's.
11. Integrated rotameters (minimum 3) in the range of 0.5 – 5 Lpm in gassing module calibrated with air with precision control valve should be supplied.
12. Automatic and manual gas mixing options with control via solenoid valves should be available.
13. The system should have a built-in cascade control to automatically maintain DO set point.
14. The system should be supplied with one height adjustable conductivity based Foam/Level sensor connected with reactor controller for getting controlled anti-foaming dosage.
15. The system should use PID Controller for all controls including DO.
16. An autoclavable manual sampling system which allows for simple and sterile sample collection with sampling vials should be provided.
17. SS condenser for exhaust gas outlet (SS-316L) should be provided.
18. A minimum of 13 ports on the head plate with appropriate adaptors and 'O' rings to fit the followings:

S. No.	Items to be fitted	No. of ports required	Adaptor Needed
a	Probes (pH, foam, polarographic DO, optical DO)	4	YES
b	thermowell	1	YES
c	sparger	1	YES
d	chemostat tube	1	YES (tube to be provided)
e	inoculation septum	1	YES
f	triports	2	YES
g	sampling tubes	2	YES (4 mm tube with hose barb)
h	condenser	1	YES

19. The system should be equipped with a bright colour touch-screen interface. It must display online virtual overview of all process parameters on the controller screen itself.
20. The system should be supplied with SCADA software Control, capable of basic data management and monitoring. It should also have added enhanced control features including alarm settings, synoptic display window and equipment lock-out feature.
21. Spare parts for trouble free and maintenance free operation to be included – O-rings, inoculation septum kit, drive shaft seals, tubing, electrolytes etc.
22. Data acquisition system should have appropriate software along with required A/D and D/A converters for continuous monitoring and data logging for any reactor operation.
23. LAN and/ USB ports should be present for computer interfacing.
24. Safety shut down in case of control failure.
25. The equipment supplied with all accessories required for integration of auxiliary analog equipment like variable speed pumps; Glucose Analyser; Off-Gas Analyser; Turbidity, CO₂, Redox transmitters; probes and Scales will be preferred.
26. Controller with GAMP/cGMP/IQ/OQ guidelines compliance will be preferred.
27. The supplier should have a minimum of 10 installations of the quoted model in India with at-least one in any academic institute in DELHI (chronological user-list not more than five years to be attached, strictly limited to 10 only).

OPTIONAL ACCESSORIES: TO BE QUOTED ALONG WITH ESSENTIAL ITEMS

1. One additional interchangeable vessel of appropriate working volumes with all the accessories (probes, impellers and chemostat tube).
2. One optical DO probe with detection range of 10 – 1000 ppb.
3. One polarographic DO probe along with DO probe kit with at least five spare DO membrane. The probe range should be from 0 - 100%.
4. Additional (minimum 1) variable speed peristaltic pumps (flow rate: 0.1 – 50 ml/min)
5. Spin filters for cell retention.
6. Marine blade impeller.
7. Suitable chiller circulator for temperature control in the fermentor.
8. Autoclave for sterilization of the fermentor vessels.
9. Suitable Oil free Air compressor for aeration.
10. Additional mass flow controller (quantity 2)
11. Suitable Load Cells / Weighing scale for the measurement/control of content of the vessel which can be integrated with the fermentor.
12. Suitable online Cell density Meter which can be integrated with the fermentor.
13. Suitable UPS for 1 hour back up
14. Suitable Branded PC with LCD monitor (All-in-One preferable) should be offered.

NOTE: Specification of all the accessories should be mentioned in detail in the technical bid.

NECESSARY TERMS AND CONDITIONS

1. IIT Delhi is exempted from paying custom duty under notification No.51/96 (partially or fully) and necessary "Custom Duty Exemption Certificate" can be issued after providing following information.
 - a. Shipping details i.e. Master Airway Bill No. and House Airway No. (if exists)
 - b. Forwarder details i.e. Name, Contact No., etc.

Custom Duty Exemption Certificate will be issued to the shipment in the name of the Institute and Bills of Entry should be submitted to IIT Delhi later on.

2. Either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender. If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.
3. If the bidder is an authorized dealer of any manufacturer, the authorized Indian dealership certificate from the principles should be enclosed. Similarly, proprietary certificate for proprietary items should be provided.
4. IIT Delhi is exempted from paying Excise Duty and necessary Excise Duty Exemption Certificate will be provided for which following information are required. a. Quotation with details of Basic Price, Rate & Amount on which ED is applicable.
5. Please quote prices of imported items at FOB (Freight on Board) IIT Delhi inclusive of all taxes, freight, delivery, installation and onsite training charges. The quotation should provide the total price of the system including all taxes and transportation charges.
6. In case IIT Delhi is imposed with demurrage charge due to import on CIF, the entire demurrage charge has to be borne by the Indian Agent of foreign supplier.
7. A special discount/rebate wherever admissible keeping in view that supplies are being made for educational purpose in respect of public institution of national importance may please be indicated.
8. Payment Options (any one to be chosen by the Department)
 - Letter of Credit: 90% payment against shipping documents & balance 10% after satisfactory installation. For large purchase i.e. costing over Rs. 1 crore, 100% payment be made through LC.
 - Sight Draft: Payment against documents through bank.
 - Against Delivery: Payment by wire transfer after receipt of material.
 - Advance payment: pre-payment by wire transfer (for orders less than Rs. 5 lakh)
 - Against Delivery: Payment by wire transfer after receipt and installation of material.
9. Delivery period: within 1 month from the issue of supply order.
10. Warranty: at least 1 year comprehensive onsite warranty should be provided. AMC price beyond 1 year should be mentioned separately.
11. The quotations must have validity of at least three months.
12. Authority of IIT Delhi reserves the right to reject any or all quotations without assigning any reasons.