

Advertised Tender Enquiry Documents
INDIAN INSTITUTE OF TECHNOLOGY (BHU), VARANASI
(NOTICE INVITING TENDER)

On behalf of the Director, IIT (BHU) Varanasi, sealed item rate tenders from manufactures (or their 'authorized' dealers by submitting letters/certificates, in original, from the manufacturers that they have been authorized to quote in response to this NIT) of the following items are invited:

Sl. No.	Tender No. and Last Date	Specifications & quantity of the item	Earnest Money Deposit (EMD)
1.	IIT(BHU)/CHE/Open Tender/ 02/ 2015 - 16 Dated 11/ 12/ 2015 Tender Start Date: 26 – 12 – 2015 from 10:00 AM Last Date for submission of Tender : 17-01-2016 up to 5:00 PM	Chemical Engineering Experimental Set ups (Technical Specifications as per Annexure-I) Qty.: 01	Rs 0.60 Lakhs for each setup

The Tender Documents for items will be on two-Bid System consisting of Technical Bid and Price Bid. The Tender Documents will be submitted item-wise in two separate sealed covers clearly mentioning on the envelope the details of items for which bid is submitted. Any firm may bid for any number of items against the purchase of Tender Document but each offer must be item-wise in two bid cover enclosing item-wise EMD with Technical Bid.

The Tender Document (non-transferable) along with detailed specifications, terms and conditions may be **downloaded from the institute website** (www.iitbhu.ac.in) under Tenders http://iitbhu.ac.in/iitnotifications/purchase_enquiries/ or from the CPPP website <http://eprocure.gov.in> by the interested supplier along with payment of non-refundable Tender price as mentioned below. The Tender price shall be paid in the form of Bank Draft in favour of Registrar, IIT (BHU) payable at Varanasi.

- a) Price of Tender Document: Rs. 500/- (five hundred Non-refundable)
- b) Tender Start date and time: 26 – 12 – 2015 from 10:00 AM
- c) Last date and time for submission of Tender Document: 17-01-2016 up to 5:00 PM

The tender should be addressed to **The Head, Department of Chemical Engineering & Technology, Indian Institute of Technology (Banaras Hindu University), Varanasi 221005**, India and should be delivered in person or sent by registered post so as to reach the institute on/before the last date up to 5:00 pm. No tender will be accepted after the due date and time.

All Tender Documents must be accompanied by the Bid Security/ Earnest Money Deposit (Refundable) of amount mentioned above by the bidder. The Earnest Money Deposit is to be paid in the form of **Bank Draft/Bank Guarantee** in favour of the Registrar, IIT (BHU) payable at Varanasi. **The Bid Security Form/Earnest Money Deposit Bank Draft/Bank Guarantee must be enclosed with Technical Bid in a separate sealed envelope.** The details of Bank Draft Number or bank guarantee No. of Earnest Money Deposit must be endorsed on top of envelope containing Technical Bid.

The Institute shall not be responsible for any delay in receiving Bids/sending of Tender Document by post. The Institute reserves the right to accept or reject any bid, cancel the purchase without assigning any reason thereof. No correspondence in this regard will be entertained.

Earnest Money shall be forfeited in case it is found at any stage that information/particulars regarding supply of tendered item (s) is false.

Head
Department of Chem Engg and Technology
IIT(BHU), Varanasi

TENDER DOCUMENT FOR: Particle Size Analyzer

BID REFERENCE	IIT(BHU)/CHE/Open Tender/ 02/ 2015 – 16 Dated 11/ 12/ 2015
Tender Start Date and Time	26 – 12 – 2015 from 10:00 AM
LAST DATE AND TIME FOR Submission of Tender	17-01-2016 up to 5:00 PM
ADDRESS FOR COMMUNICATION	The Head, Department of Chemical Engineering & Technology, Indian Institute of Technology (Banaras Hindu University), Varanasi 221005 head.che@itbhu.ac.in

TENDER DOCUMENT FOR: Particle Size Analyzer

INVITATION FOR BIDS

1. Sealed bids in two parts (techno commercial un-priced & Priced bids) are invited from eligible bidders for the following

Sl. No.	Tender No	Subject	Earnest Money Deposit (EMD)
1.	IIT(BHU)/CHE/Open Tender/ 02/ 2015 - 16 Dated 11/ 12/ 2015 Tender Start Date: 26 – 12 – 2015 from 10:00 AM Last Date for submission of Tender : 17-01-2016 up to 5:00 PM	Chemical Engineering Experimental Set ups (Technical Specifications as per Annexure-I) Qty.: 01	Rs 0.60 Lakhs for each setup

2. Interested eligible Bidders may obtain further information from and inspect the bidding documents at the office of **The Head, Department of Chemical Engineering & Technology, Indian Institute of Technology (Banaras Hindu University), Varanasi 221005, India** or on IIT (BHU) website: http://iitbhu.ac.in/iitnotifications/purchase_enquiries/ or from the CPPP website <http://eprocure.gov.in>

3. Each set of bidding document can be **downloaded from the institute website** by any interested eligible bidder on payment of the cost of tender document. The cost of bidding documents (Rs. 500 only) should be submitted in the form of a **Bank Draft** in favour of the Registrar IIT (BHU) payable at Varanasi.

4. All bids must be accompanied by earnest money deposit as specified above and must be delivered to the **Head, Department of Chemical Engineering & Technology, Indian Institute of Technology (Banaras Hindu University), Varanasi** office up-to 5.00 pm of **the last date of receiving the tender document as specified.**

5. The Institute reserves the right to accept or reject any or all tenders either in part or in full without assigning any reasons thereof.

6. This Tender Document contains the following:

- A. Instructions to Bidders
- B. General conditions of contract (GCC)
- C. Tender form (Techno commercial un-priced Bid)
- D. Tender form (priced Bid)
- E. Check-list for Bid/Tender submission
- F. Bank guarantee form
- G. Declaration Certificate
- H. Technical specification of the instrument (as per annexure I)

INSTRUCTIONS TO BIDDERS

A. Introduction

1. Qualification criteria/ Eligible Bidders

1.1 This Invitation for Bids is open to all manufacturers & their dealers authorized to quote in response to this NIT.

1.2 Copies of valid Central/State sales tax registration certificate, Income tax clearance certificate, proof of manufacturing unit/dealership & general order suppliers and copies of two major supply orders executed during the preceding two years for Govt. depts. /PSUs and Central Autonomous bodies have to be submitted.

2. Cost of Bidding

The Bidder shall bear all costs associated with the preparation and submission of its bid, and "the Purchaser", will in no case be responsible or liable for these costs, regardless of the conduct or outcome of the bidding process.

B. The Bidding Documents

3. Cost of Bidding Documents

Interested eligible bidders may purchase the bidding documents on payment of the cost of bidding documents as indicated in the invitation for bids. The cost of bidding documents should be submitted in the form of a Demand Draft in favour of the Registrar, IIT (BHU) payable at Varanasi.

4. Content of Bidding Documents

4.1 The goods required, bidding procedures and contract terms are prescribed in the bidding documents. In addition to the Invitation for Bids, the bidding documents include:

- (a) Instruction to Bidders (ITB);
- (b) General Conditions of Contract (GCC);
- (c) Schedule of requirements;
- (d) Tender form (technical bid).
- (e) Tender form (financial bid)

4.2 The Bidder is expected to examine all instructions, forms, terms, and specifications in the bidding documents. Failure to furnish all information required by the bidding documents or submission of a bid not substantially responsive to the bidding documents in every respect will be at the Bidder's risk and may result in rejection of its bid.

5. Amendment of Bidding Documents

5.1 At any time prior to the deadline for submission of bids, the Purchaser may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by amendment.

5.2 All prospective bidders who have received the bidding documents will be notified of the amendment in writing, which will be binding on them.

5.3 In order to allow prospective bidders reasonable time within which to take the amendment into account in preparing their bids, the Purchaser, at its discretion, may extend the deadline for the submission of bids.

C. Preparation of Bids

6. Language of Bid

The bid prepared by the Bidder, as well as all correspondence and documents relating to the bid exchanged by the Bidder and the Purchaser shall be written in English language.

7. Documents Comprising the Bid

7.1 Techno commercial un-priced bid and priced Bids: The bids are to be submitted in two parts in separate sealed envelopes i.e. Techno commercial un-priced bid and priced Bids.

(a) Techno commercial un-priced bid along with Earnest Money Deposit (EMD) as shown in invitation to bids shall be submitted alongwith Bank Guarantee valid for the duration of contract as per enclosure to the bidding documents or by a **Bank Draft** of Nationalised Bank in favour of the Registrar, IIT (BHU) payable at Varanasi. If the EMD is not received along with the technical bid, such bid will not be considered. The samples of all the items shown in the schedule of requirements of each tender should also accompany the techno commercial un-priced bid in a separate sealed envelope

(b) Priced bid.

7.2 Techno commercial un-priced bid: The Techno commercial un-priced bid prepared by the bidder shall be provided in the following Model Response format:

Model Response format

(a) Standing of each Bidder Manufacturer/Dealer and past experience in supply of the material (certificates to be enclosed), proof of manufacturing Unit/Dealership letter and general order supplier.

(b) List of other Govt. Departments, Public Sector units and Central Autonomous Bodies for which the bidder is supplying material or having the similar type of contracts and a certificate regarding the satisfactory performance of the contract.

(c) Copy of the audited balance sheet of the vendor for the previous financial year indicating the turnover in supply of the material.

(d) Details of Permanent Account Number and latest income tax clearance certificate.

(e) Details of S.T. No. along with a copy of certificate to be attached.

(f) Submission of samples if required, for all items indicated in the schedule of requirements. The make of items proposed to be supplied should be indicated in the format of the schedule of requirements and submitted along with the techno commercial un-priced bid without indicating the pricing components.

(g) Willingness to execute all orders which are placed to meet emergency requirement on priority basis. The Bidder shall note that standards for workmanship, material and equipment, and references to brand names designated by the Purchaser in the schedule of requirements are intended to be descriptive only and not restrictive. The Bidder may substitute alternative standards, brand names and/or catalogue numbers in his bid, provided that it demonstrates to the Purchaser's satisfaction that the substitutions ensure substantial equivalence to those designated in the Technical Specifications.

7.3 Priced Bid

The priced bid shall comprise the techno commercial bid along with the price component indicating the Unit prices for each and every item indicated in the schedule of requirements.

(a) The prices quoted must be net per unit as shown in the Schedule and must include all charges for delivery at the designated stores.

(b) The rate must be stated for each item separately both in words and figures. If there is a discrepancy between the price quoted in word and figures the higher price quoted will be treated as final.

(c) The price quoted by the tenderers should be exclusive of Excise Duty & Sales Tax. However, the Excise Duty & Sales Tax payable should be quoted separately in the schedule enclosed.

(d) Quoted prices should be firm and inclusive of octroi, freight and forwarding charges, handling charges, loading and unloading charges, and insurance charges etc.

(e) The prices once accepted by the Institute shall remain valid till the successful execution of the order and till supplies is fully effected and accepted or 12 months from the date of acceptance of tender whichever is later. The Institute shall not entertain any increase in the rates during the period. However, in the event there is a reduction or increase in Government levy/duties during the period of execution of the order, the rates shall be suitably adjusted with effect from the date notifying the said reduction or increase in the Government levy/excise duty. The quantity given in the schedule is approx annual requirement, which can be reduced or increased by 50%.

NOTE

1. THE TWO BIDS (BOTH TECHNO COMMERCIAL UNPRICED BID) ALONG WITH EARNEST MONEY DEPOSIT (EMD) AND SAMPLES (IF REQUIRED) AND THE PRICED BID SHOULD BE SUBMITTED SEPARATELY FOR EACH TENDER.

2. CONDITIONAL BIDS WILL NOT BE ACCEPTED

8. Bid Prices

8.1 The Bidder shall indicate on the Schedule of requirements, the unit prices of the goods it proposes to supply under the Contract and enclose it with the priced bid.

8.2 Prices indicated on the Price Schedule shall be entered separately in the following manner:

(i) The prices quoted must be net per unit as shown in the schedule of requirements and must be include all charges for delivery at the designated stores.

(ii) Any Indian duties, sales and other taxes which will be payable on the goods if this Contract is awarded;

8.3 Prices quoted by the Bidder shall be fixed during the Bidder's performance of the Contract and not subject to variation on any account.

9. Bid Currencies

Prices shall be quoted in Indian Rupees only. In case of direct import the prices may be indicated in the foreign currency. The Institute may, at its discretion, arrive at approximate Rupee equivalent on the basis of exchange rate on the date of opening of price bid.

10. Period of Validity of Bids

10.1 Bids shall remain valid for 90 days after the date of bid opening prescribed by the Purchaser. A bid valid for a shorter period shall be rejected by the Purchaser as non-responsive.

10.2 In exceptional circumstances, the Purchaser may solicit the Bidder's consent to an extension of the period of validity. The request and the responses thereto shall be made in writing. A Bidder may refuse the request without forfeiting its EMD. A Bidder granting the request will not be required nor permitted to modify the bid.

10.3 Bid evaluation will be based on the bid prices without taking into consideration the above modifications.

D. Submission of Bids

11. Sealing and Marking of Bids

11.1 The outer envelope containing Techno commercial un-priced bid along with EMD & samples, if required, and priced bid shall be addressed to The Registrar, Indian Institute of Technology (Banaras Hindu University), Varanasi – 221 005, INDIA and shall indicate tender number and due date.

11.2 The inner envelope shall indicate the name and address of the bidder, tender number due date and contents i.e. "Techno commercial un-priced bid along with EMD" and "Priced bid".

11.3 If the outer envelope is not sealed and marked as required, the Purchaser will assume no responsibility for the bid's misplacement or premature opening.

12. Deadline for Submission of Bids

12.1 Bids must be received by the Purchaser at the address specified not later than the time and date specified in the Invitation for Bids. In the event of the specified date for the submission of Bids being declared a holiday for the Purchaser, the Bids will be received up-to the appointed time on the next working day.

12.2 The Purchaser may, at his discretion, extend this deadline for submission of bids by amending the bid documents in which case all rights and obligations of the Purchaser and Bidders previously subject to the deadline will thereafter be subject to the deadline as extended.

13. Late/Delayed Bids

Any bid received by the Purchaser after the deadline for submission of bids prescribed by the Purchaser, pursuant to Clause 5 of invitation of bids will be rejected and/or returned unopened to the Bidder.

14. Modifications and Withdrawal of Bids

14.1 The Bidder may modify or withdraw its bid after the bid's submission, provided that written notice of the modification or withdrawal is received by the Purchaser prior to the deadline prescribed for submission of bids.

14.2 The Bidder's modification or withdrawal notice shall be prepared, marked and dispatched in a sealed envelope. A withdrawal notice may also be sent by telex or cable or fax but followed by a signed confirmation copy, post marked not later than the deadline for submission of bids.

14.3 No bid may be modified subsequent to the deadline for submission of bids.

14.4 No bid may be withdrawn in the interval between the deadline for submission of bids and the expiry of the period of bid validity specified by the Bidder on the bid form. Withdrawal of a bid during this interval may result in the Bidder's forfeiture of its EMD.

E. Bid Opening and Evaluation of Bids

15. Opening of Techno commercial un-priced Bids

The purchaser will open all techno commercial un-priced bids in the first instance.

16. Clarification of Bids

16.1 During evaluation of the bids, the purchaser may, at its discretion, ask the Bidder for clarification of its bid. The request for clarification and the response shall be in writing and no change in price or substance of the bid shall be sought, offered or permitted.

16.2 No Bidder shall contact the purchaser on any matter relating to its bid from the time of the bid opening to the time the contract is awarded. If the Bidder wishes to bring additional information to the notice of the Institute it should be done in writing.

16.3 Any effort by a Bidder to influence the purchaser in its decisions on bid evaluation, bid comparison or contract award decisions may result in rejection of the Bidder's bid.

17. Evaluation of Techno commercial un-priced Bid

17.1 Prior to the detailed technical evaluation, the purchaser will determine the substantial responsiveness of each bid. A substantially responsive bid is one, which conforms to all the terms and conditions of the Bidding Documents without material deviations.

17.2 The purchaser will reject a bid determined as not substantially responsive.

17.3 The bidders may be called for discussion and may be allowed to modify their technical bids to suit the organization's requirement. The idea is to arrive at a threshold level of acceptability above which all the bidders shall be treated on par. Those whose technical specifications do not reach the threshold level of acceptability shall be rejected as technically unsuitable. The price bids of the bidders who finally emerge as technically acceptable shall be opened, evaluated and the contract awarded to the lowest evaluated bidder.

17.4 The bidders short-listed by the purchaser based on evaluation of their technical bids may be called for detailed discussions with a team selected for the purpose, at a specified date, time and venue, if needed.

18. Opening of Priced Bids

18.1 The Purchaser will open the Priced Bids of only those bidders whose techno commercial bids have been found to be substantially responsive.

18.2 The priced Bids of the technically qualified bidders shall be opened by the tender committee.

19. Evaluation and Comparison of priced Bids

19.1 Arithmetical errors will be rectified on the following basis: If there is a discrepancy between words and figures, whichever is the higher of the two shall be taken as bid price. If the Vendor does not accept the correction of errors, its bid will be rejected

19.2 Bidders shall state their bid price for the payment schedule outlined in the Clause 14 of General Conditions of Contract. Bids will be evaluated on the basis of this base price. Bidders are, however, permitted to state an alternative payment schedule and indicate the reduction in bid price they wish to offer for such alternative payment schedule. The purchaser may consider the alternative payment schedule offered by the selected Bidder but it may not be binding on the purchaser.

19.3 The purchaser, at its option may ask some more bidders to match the rates of the lowest bidder for creating parallel suppliers.

20. Purchasers right to accept any bid and to reject any bid or all bids

The Purchaser reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids at any time prior to award of Contract, without thereby incurring any liability to the affected Bidder or bidders or any obligation to inform the affected Bidder or bidders of the grounds for the Purchaser's action.

21 Award Criteria

Subject to Clause 19, the purchaser will award the Contract to the successful Bidder whose bid has been determined to be substantially responsive and has been determined as the best evaluated bid provided further that the Bidder is determined to be qualified to perform the Contract satisfactorily.

22. Notification of Award

Prior to the expiration of the period validity, the purchaser will notify the successful Bidder in writing by letter or by fax, to be confirmed in writing by speed post or hand delivered letter, that its bid has been accepted.

23. Factors Affecting the Award of Supply

23.1 The bidder should have its own Contract support facilities. The support facilities should be fully owned and managed by the bidder.

23.2 Conformity with the Request for Bid/Tender required and conditions.

23.3 The assessment based on the response to Model Response Outline.

23.4 The assessment of the capability of the bidder to meet the terms and conditions.

23.5 The bidders must have executed similar orders, for which the bidder is quoting, as indicated in clause 1 for Govt./Semi-Govt./Autonomous Organizations.

23.6 The cost and the discount offered, if any.

24. Fall clause

24.1 The price quoted by the supplier should not be higher than the maximum retail price, if any, for the stores and the same shall not be higher than the price usually charged by the supplier for stores of the same nature, class or description to any other purchaser.

24.2 The price charged for the stores supplied under the contract by the supplier shall in no event exceed the lowest price at which the supplier sells the stores of identical description to any other person during the period till performance of all supply orders placed during the currency of the contract is completed. If at any time during the period the supplier reduces the sale price of such stores or sells such stores to any other person including his dealers at a price lower than the price chargeable under the contract, he shall forthwith notify such reduction or sale to the purchaser and the price payable under the contract for these items of stores supplied after the date of coming into force of such reduction or sale shall stand correspondingly reduced.

24.3 If it is discovered that the supplier has contravened the above conditions, then without prejudice to any other action which might be taken against him, it shall be lawful for the purchaser to (a) revise the price at any stage so as to bring it in conformity with sub-clause(i) above, or (b) to terminate the contract and purchase the items of stores at the risk and cost of the supplier and in that event the provisions of Clause 28 of General Conditions of Contract shall, as far as possible, be applicable or recover the loss.

25. Samples

All suppliers are requested to submit samples of items indicated in the schedule of requirements for each tender separately in a separate envelope along with the technical bid (where ever applicable).

GENERAL CONDITIONS OF CONTRACT (GCC)

1. Definitions

In this Contract, the following terms shall be interpreted as indicated:

(a) "The order" means the agreement entered into between the Purchaser and the Supplier including all the attachments and appendices and all documents incorporated as per notification of award.

(b) "The Contract Price" means the price payable to the Supplier under the Contract for the full and proper performance of its contractual obligations;

(c) "The Goods" means all the items, which the Supplier is required to supply to the Purchaser under the Contract;

- (d) "Services" means services ancillary to the supply of the Goods, such as transportation and insurance, and any other incidental services training and other obligations of the Supplier covered under the Contract;
- (e) "GCC" means the General Conditions of Contract contained in this section.
- (f) "The Purchaser" means the organization purchasing the Goods i.e. IIT (BHU), VARANASI.
- (g) "The Purchaser's country" is India.
- (h) "The Supplier" means the individual or firm supplying the Goods and Services under this Contract.
- (i) "Day" means calendar day.

2. Application

These General Conditions shall apply to the extent that they are not superseded by provisions in other parts of the Contract.

3. Standards

The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications, and, when no applicable standard is mentioned, to the authoritative standard appropriate to the Goods' country of origin and such standards shall be the latest issued by the concerned Institution.

4. Use of Contract Documents and Information

4.1 The Supplier shall not, without the Purchaser's prior written consent, disclose the Contract, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of the Purchaser in connection therewith, to any person other than a person employed by the Supplier in performance of the Contract. Disclosure to any such employed person shall be made in confidence and shall extend only so far as may be necessary for purposes of such performance.

4.2 The Supplier shall not, without the Purchaser's prior written consent, make use of any document or information except for purposes of performing the Contract.

4.3 Any document, other than the Contract itself, shall remain the property of the Purchaser and shall be returned (in all copies) to the Purchaser on completion of the Supplier's performance under the Contract if so required by the Purchaser.

5. Patent Rights

The Supplier shall indemnify the Purchaser against all third-party claims of infringement of patent, trademark or industrial design rights arising from use of the Goods or any part thereof in India.

6. Submission of the bids.

6.1 All bids complete in all respect must reach the purchaser within the last date and time of receipt of bid. No extension shall be allowed for any reason what so ever. Late tenders/delayed bids and tenders received without earnest money etc. shall be rejected.

6.2 Tender documents are available for sale with the purchaser. Interested bidders may purchase the tender documents on payment of the cost there of. The purchaser shall not be

liable for either non-receipt of the tender document or for delay in receipt of tender document.

7. Inspections and Tests

7.1 The Purchaser or its representative shall have the right to inspect and/or to test the Goods to confirm their conformity to the Contract specifications at no extra cost to the Purchaser.

7.2 The inspections and tests may be conducted on the premises of the Supplier or its subcontractor(s), at point of delivery and/or at the Goods final destination. If conducted on the premises of the Supplier or its subcontractor(s), all reasonable facilities and assistance, including access to drawings and production data shall be furnished to the inspectors at no charge to the Purchaser.

7.3 Should any inspected or tested Goods fail to conform to the specifications, the Purchaser may reject the goods and the Supplier shall either replace the rejected Goods or make alterations necessary to meet specification requirements free of cost to the Purchaser.

7.4 The Purchaser's right to inspect, test and, where necessary, reject the Goods after the Goods' arrival at Project Site shall in no way be limited or waived by reason of the Goods having previously been inspected, tested and passed by the Purchaser or its representative prior to the Goods shipment.

7.5 Nothing in GCC Clause 7 shall in any way release the Supplier from any warranty or other obligations under this Contract.

8. Consequences of rejection

If in the event the stores are rejected by the purchaser at the destination and the supplier fails to make satisfactory supplies within the stipulated period of delivery, the purchaser will be at liberty to:

- (a)** Allow the supplier to resubmit the stores in replacement of those rejected, within a specified time without any extra cost to the purchaser or
- (b)** Reject the material, which shall be final and binding on the contractor.
- (c)** Procure the rejected materials of comparable quality from the open market/Govt. stores and the supplier shall be liable to pay the difference in price over the RC prices or get the amount adjusted from the outstanding bills of the supplier, if any or EMD.

9. Packing

9.1 The Supplier shall provide such packing of the Goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the Contract. The packing shall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and open storage. Packing case size and weights shall take into consideration, where appropriate, the remoteness of the Goods' final destination and the absence of heavy handling facilities at all points in transit.

9.2 The packing, marking and documentation within and outside the packages shall comply strictly with such special requirements as shall be provided for in the Contract including additional requirements, in any subsequent instructions ordered by the Purchaser.

10. Delivery and Documents

10.1 The Supplier shall make delivery of the Goods within 30 days from the placement of purchase order in pursuance of the notification of award. The purchase order would be placed after assessing the requirements on quarterly basis. However, the supplier shall also arrange to execute all orders on priority basis which would be placed to meet any emergent requirements.

10.2 In case the purchaser decides to conclude parallel rate contracts, then the requirements would be split on different firms on equitable basis as per the discretion of the purchaser.

10.3 The delivery of Stores shall be affected at the premises of the Institute free of all delivery charges and within the stipulated time and as may be elucidated in the confirmed order, accompanied by a delivery challan. No extension of time for delivery of Stores shall normally be accorded.

Time and date of delivery – the essence of the contract: The time for and the date of delivery of the stores stipulated shall be deemed to be of the essence of the contract and delivery must be completed not later than the date(s) specified.

11. Insurance

The Goods supplied under the Contract shall be fully insured in Indian Rupees against loss or damage incidental to manufacture or acquisition, transportation, storage and delivery. The insurance shall be obtained by the suppliers in an amount equal to 110% of the value of the goods from “warehouse to warehouse” (final destinations) on “all risks” basis including war risks and strikes.

12. Transportation

Where the Supplier is required under the Contract to transport the Goods within India defined as Project site, transport to such place of destination in India including insurance, as shall be specified in the Contract, shall be arranged by the Supplier, and the related cost shall be included in the contract Price.

13. Warranty

13.1 The Supplier warrants that the Goods supplied under this Contract are new, unused, of the most recent or current models and that they incorporate all recent improvements in design and materials unless provided otherwise in the Contract. The Supplier further warrants that all Goods supplied under this Contract shall have no defect arising from design, materials or workmanship or from any act or omission of the Supplier that may develop under normal use of the supplied Goods in the conditions prevailing in India.

13.2 This warranty shall remain valid for at least 12 months (or as specified) after the Goods or any portion thereof as the case may be, have been delivered to and accepted at the final destination indicated in the Contract, unless specified otherwise.

13.3 The Purchaser shall promptly notify the Supplier in writing of any claims arising under this warranty.

13.4 Upon receipt of such notice, the Supplier shall with all reasonable speed, repair or replace the defective Goods or parts thereof, without any extra cost to the Purchaser.

13.5 If the Supplier, having been notified, fails to remedy the defect(s) within a reasonable period, the Purchaser may proceed to take such remedial action as may be necessary, at the Supplier's risk and expense and without prejudice to any other rights which the Purchaser may have against the Supplier under the Contract.

14. Payment

14.1 The payment shall be made by LC and after inspection of the materials and satisfactory performance.

14.2 The Supplier's request(s) for payment shall be made to the Purchaser in writing, accompanied by an invoice describing, as appropriate, the Goods delivered and the Services performed, and by documents, submitted pursuant to GCC Clause 10, and upon fulfilment of other obligations stipulated in the contract.

15. Prices

Prices charged by the Supplier for Goods delivered and Services performed under the Contract shall not vary from the prices quoted by the Supplier in his bid.

16. Change Orders

16.1 The Purchaser may at any time, by written order given to the Supplier, make changes within the general scope of the Contract in any one or more of the following:

- (a) Drawings, designs, or specifications, where Goods to be furnished under the Contract are to be specifically manufactured for the Purchaser;
- (b) The method of shipping or packing;
- (c) The place of delivery; and/or
- (d) The services to be provided by the Supplier.

16.2 If any such change causes an increase or decrease in the cost of, or the time required for, the Supplier's performance of any provisions under the Contract, an equitable adjustment shall be made in the Contract Price or delivery schedule, or both, and the Contract shall accordingly be amended. Any claims by the Supplier for adjustment under this clause must be asserted within thirty (30) days from the date of the Supplier's receipt of the Purchaser's change order.

17. Contract Amendments

Subject to GCC Clause 16, no variation in or modification of the terms of the Contract shall be made except by written amendment signed by the parties.

18. Assignment

The Supplier shall not assign, in whole or in part, its obligations to perform under the Contract, except with the Purchaser's prior written consent.

19. Subcontracts

The Supplier shall notify the Purchaser in writing of all subcontracts awarded under this Contract if not already specified in the bid. Such notification, in his original bid or later, shall not relieve the Supplier from any liability or obligation under the Contract.

20. Delays in the Supplier's Performance

20.1 Delivery of the Goods and performance of the Services shall be made by the Supplier in accordance with the time schedule specified by the Purchaser as per GCC clause 10.

20.2 If at any time during performance of the Contract, the Supplier or its sub-contractor(s) should encounter conditions impeding timely delivery of the Goods and performance of Services, the Supplier shall promptly notify the Purchaser in writing of the fact of the delay, its likely duration and its cause(s). As soon as practicable after receipt of the Supplier's notice, the Purchaser shall evaluate the situation and may, at its discretion, extend the Supplier's time for performance with or without liquidated damages, in which case the extension shall be ratified by the parties by amendment of the Contract.

20.3 Except as provided under GCC Clause 23, a delay by the Supplier in the performance of its delivery obligations shall render the Supplier liable to the imposition of penalty pursuant to GCC Clause 21, unless an extension of time is agreed upon pursuant to GCC Clause 20.2 without the application of liquidated damages.

21. Penalty

Subject to GCC Clause 23, if the Supplier fails to deliver any or all of the Goods or to perform the Services within the period(s) specified in the Contract, the Purchaser shall, without prejudice to its other remedies under the Contract, deduct from the Contract Price, as penalty, a sum equivalent to 1% per week and the maximum deduction is 10% of the contract price of the delivered price of the delayed Goods or unperformed Services for each week or part thereof of delay until actual delivery or performance. Once the maximum is reached, the Purchaser may consider termination of the Contract pursuant to GCC Clause 22.

22. Termination for Default

22.1 The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or part:

(a) If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the purchase order, or within any extension thereof granted by the Purchaser pursuant to GCC Clause 20; or

(b) If the Supplier fails to perform any other obligation(s) under the Contract.

(c) If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

'For the purpose of this Clause:

"Corrupt practice" means the offering, giving, receiving or soliciting of any thing of value to influence the action of a public official in the procurement process or in contract execution.

"Fraudulent practice: a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, 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 the Borrower of the benefits of free and open competition;”

22.2 In the event the Purchaser terminates the Contract in whole or in part, pursuant to GCC Clause 22.1, the Purchaser may procure, upon such terms and in such manner as it deems appropriate, Goods or Services similar to those undelivered, and the Supplier shall be liable to the Purchaser for any excess costs for such similar Goods or Services. However, the Supplier shall continue the performance of the Contract to the extent not terminated.

23. Force Majeure

23.1 Notwithstanding the provisions of GCC Clauses 20 & 21, the Supplier shall not be liable for imposition of liquidated damages or termination for default, if and to the extent that, its delay in performance or other failure to perform its obligations under the Contract is the result of an event of Force Majeure.

23.2 For purposes of this Clause, "Force Majeure" means an event beyond the control of the Supplier and not involving the Supplier's fault or negligence and not foreseeable. Such events may include, but are not limited to, acts of the Purchaser either in its sovereign or contractual capacity, wars or revolutions, fires, floods, epidemics, quarantine restrictions and freight embargoes.

23.3 If a Force Majeure situation arises, the Supplier shall promptly notify the Purchaser in writing of such conditions and the cause thereof. Unless otherwise directed by the Purchaser in writing, the Supplier shall continue to perform its obligations under the Contract as far as is reasonably practical, and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

24. Termination for Insolvency

The Purchaser may at any time terminate the Contract by giving written notice to the Supplier, if the Supplier becomes bankrupt or otherwise insolvent. In this event, termination will be without compensation to the Supplier, provided that such termination will not prejudice or affect any right of action or remedy, which has accrued or will accrue thereafter to the Purchaser.

25. Termination for Convenience

25.1 The Purchaser, by written notice sent to the Supplier, may terminate the Contract, in whole or in part, at any time for its convenience. The notice of termination shall specify that termination is for the Purchaser's convenience, the extent to which performance of the Supplier under the Contract is terminated, and the date upon which such termination becomes effective.

25.2 The Goods that are complete and ready for shipment within 30 days after the Supplier's receipt of notice of termination shall be accepted by the Purchaser at the Contract terms and prices.

26. Resolution of Disputes

26.1 The Purchaser and the supplier shall make every effort to resolve amicably by direct informal negotiation any disagreement or dispute arising between them under or in connection with the Contract.

26.2 If, after thirty (30) days from the commencement of such informal negotiations, the Purchaser and the Supplier have been unable to resolve amicably a Contract dispute, either party may require that the dispute be referred for resolution to the formal mechanisms as specified below. These mechanisms may include, but are not limited to, conciliation mediated by a third party, adjudication in an agreed national or international forum, and national or international arbitration.

26.3 In case of Dispute or difference arising between the Purchaser and a supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996.

27. Governing Language

The contract shall be written in English language. Subject to GCC Clause 28, English language version of the Contract shall govern its interpretation. All correspondence and other documents pertaining to the Contract which are exchanged by the parties shall be written in the same language.

28. Applicable Law

28.1 The contract shall be governed by the Law of Contract for the time being in force.

28.2 Irrespective of the place of delivery, the place of performance or place of payment under the contract, the contract shall be deemed to have been made at the place from which the acceptance of tender has been issued.

28.3 Jurisdiction of Courts: The courts of the place from where the acceptance of tender has been issued shall alone have jurisdiction to decide any dispute arising out of or in respect of this contract.

28.4 One month notice will be given by either party for termination of Contract during the tenure of Contract for breach of Clause or otherwise.

29. Taxes and Duties

Suppliers shall be entirely responsible for all taxes, duties, license fees, octroi, road permits, etc., incurred until delivery of the contracted Goods to the Purchaser.

30. Performance Security:

(i) Successful bidder have to furnish **10%** of the order value as a performance security in the shape of Bank Guarantee/ Fixed Deposit Receipt in favour of the Registrar, Indian Institute of Technology (BHU) for a period of 60 days beyond the end of all warranty obligation.

(ii) Earnest Money Deposit will be refunded to the successful bidder on receipt of Performance Security.

31. The Institute Reserves The Right To:

- i. The Institute reserve the right to increase or decrease the quantity of the item(s) as per requirement.
- ii. Reject the quotation in absence of not furnishing the documentary evidence in respect of Trade Tax Registration (C.S.T./U.P.T.T/VAT.), Income Tax and Trade Tax clearance certificates together with the performance of supplies in various branches/institutions.
- iii. Reject the quotation in the event of non-furnishing the authentic documentary evidence in respect of Testing reports / Performance report of the concerned Govt. Organization /

Institutions about the products being manufactured and marketed. The performance test of the product can be conducted at Institute level also for which charge will have to be borne by the suppliers.

- iv. Reject the supplies already made, if not found up to the mark. Thorough checking may be adopted to test the correctness of the supply. In such an event further action may call to conform or discard the supply.
- v. To reject any addition/alteration in respect of local dealerships intimated by the Principals after consideration of the case by the committee appointed by the Institute for the purpose.
- vi. The Purchaser may, without prejudice to any other remedy for breach of contract, by written notice of default sent to the Supplier, terminate the Contract in whole or part:
 - (a) If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the purchase order, or within any extension thereof granted by the Purchaser.
 - (b) If the Supplier fails to perform any other obligation(s) under the Contract.
 - (c) If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract.

‘For the purpose of this Clause:

“Corrupt practice” means the offering, giving, receiving or soliciting of anything of value to influence the action of a public official in the procurement process or in contract execution.

“Fraudulent practice: a misrepresentation of facts in order to influence a procurement process or the execution of a contract to the detriment of the Borrower, 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 the Borrower of the benefits of free and open competition;”

To reject any or all the offers without assigning any reasons thereof.

All disputes are subject to **“Varanasi Jurisdiction”** only.

The decisions of the Institute in all respect shall be final and binding on all. Kindly note that we attach great significance to the list of the organizations of repute where a firm is on rate contract, therefore please enclose certified photocopies of the rate contract.

Please ensure that your offer is complete in all respect as no further clarifications shall be sought from you and reaches us within the last date mentioned above. **The Institute shall not be responsible for any postal delay / loss in transit etc.**

Please mention our reference number and due date on the sealed envelope, otherwise your quotation may not be entertained.

A checklist (list documents to be attached) with proper signature, seal and date should be enclosed with tender document for verification; otherwise the proposal will not be entertained.

Registrar

*Indian Institute of Technology,
(Banaras Hindu University)*

NOTE: 1- While arranging the Tender Documents, check list should be placed on TOP.

TENDER FORM

(Techno commercial un-priced Bid)

(On the letter head of the firm submitting the bid)

Tender No.....

To

The _____

Dear Sir,

1. I/We hereby offer to supply the items as listed in the schedule to this tender hereto/portion thereof as you may specify in the acceptance of Tender at the price given in the said Schedule and agree to hold this offer open for a period of 90 days from the date of opening of the tender. I/we shall be bound by a communication of acceptance issued by you.

2. I/We have understood the Instruction to bidders and Conditions of Contract in the form as enclosed with the invitation to the tender and have thoroughly examined the specifications quoted in the Schedule hereto and am/are fully aware of the nature of the goods required and my/our offer is to supply the goods strictly in accordance with the specifications and requirements.

3. A crossed **Bank Draft/Bank Guarantee** in favour of the Registrar, IIT (BHU) for Rs. (Rupees.....only) as Earnest Money is enclosed. The **Bank Draft/Bank Guarantee** is drawn onBank payable at Varanasi

4. The following have been added to form part of this tender.

(a) Samples of items quoted for, as per instructions provided in the schedule of requirement.

(b) Schedule of requirements, quoting the make only duly signed and stamped.(without indicating price)

(c) Income Tax clearance certificate.

(d) Copy of last audited balance sheet.

(e) Copy of Valid Central/State sales tax registration certificate.

(f) Copy of relevant major purchase orders valuing more than Rs. 20000/- executed during last two years for Govt. Departments., PSUs & Central Autonomous bodies..

(g) Proof of manufacturing Unit, dealership certificate/general order suppliers.

(h) Statement of deviations from financial terms & conditions, if any.

(i) Any other enclosure. (Please give details)

5. We undertake to execute all orders which have been placed to meet emergent requirements on priority basis.

6. Certified that the bidder is: A sole proprietorship firm and the person signing the bid document is the sole proprietor/constituted attorney of the sole proprietor,

Or

A partnership firm, and the person signing the bid document is a partner of the firm and he has authority to refer to arbitration disputes concerning the business of the partnership by virtue of the partnership agreement/by virtue of general power of attorney.

Or

A company and the person signing the document is the constituted attorney.

(NOTE: Delete whatever is not applicable. All corrections/deletions should invariably be duly attested by the person authorized to sign the bid document).

7. We do hereby undertake that, until a formal notification of award, this bid, together with your written acceptance thereof shall constitute a binding contract between us.

Yours faithfully,
(Signature of bidder)

Dated this day of _____

Address:.....

.....

Telephone:_____

FAX_____

E-mail_____

Company seal

Tender Form
(Priced Bid)

(On the letter head of the firm submitting the bid document)

To _____
The _____

Ref: Tender No

Dated-----

Sir,

Having examined the bidding documents and having submitted the techno commercial un-priced bid for the same, we, the undersigned, hereby submit the priced bid for supply of goods and services as per the schedule of requirements and in conformity with the said bidding documents.

We hereby offer to supply the Goods/Services at the prices and rates mentioned in the enclosed schedule of requirement.

We do hereby undertake that, in the event of acceptance of our bid, the supply of Goods/Services shall be made as stipulated in the schedule of requirement and that we shall perform all the incidental services.

The prices quoted are inclusive of all charges net CIF N. Delhi or F.O.R IIT (BHU), Varanasi. We enclose herewith the complete Financial Bid as required by you. This includes:

Price Schedule as per schedule of requirement.

Statement of deviations from financial terms and conditions.

We agree to abide by our offer for a period of 90 days from the date fixed for opening of the bid documents and that we shall remain bound by a communication of acceptance within that time.

We have carefully read and understood the terms and conditions of the bid document and we do hereby undertake to supply as per these terms and conditions. The Financial Deviations are only those mentioned in the statement of deviations from financial terms and conditions.

Certified that the bidder is:

A sole proprietorship firm and the person signing the bid document is the sole proprietor/
constituted attorney of sole proprietor,

Or

A partnership firm, and the person signing the bid document is a partner of the firm and he has authority to refer to arbitration disputes concerning the business of the partnership by virtue of the partnership agreement/by virtue of general power of attorney,

Or

A company and the person signing the bid document is the constituted attorney.

(NOTE: Delete whatever is not applicable. All corrections/deletions should invariably be duly attested by the person authorised to sign the bid document.)

We do hereby undertake that, until a formal notification of award, this bid, together with your written acceptance thereof, shall constitute a binding contract between us.

Dated this day of _____

Signature of Bidder

Details of enclosures

Full Address:

Telephone No.:

Fax No.

E-mail:

COMPANY SEAL

Checklist for Bid/Tender Submission

The following check-list must be filled in and submitted with the bid document:

Pre-qualification Bid

1. Was the bid document issued to you? Yes/No
2. Have you attached the techno commercial un-priced bid form duly filled in appropriately? Yes/No
3. Have you attached a copy of a compliance list against the technical specification (for each point) ? Yes/No
3. Have you attached a copy of the last audited balance sheet of your firm Yes/No
4. Have you attached the details of the income tax clearance certificate, proof of manufacturing unit/ dealership letter/general order suppliers and copy of Central/State sales tax registration certificate. Yes/No
5. Have you attached the copies of relevant work orders from Govt. Deptt. /PSUs and Central Autonomous Bodies. Yes/No
6. EMD: Have you submitted EMD asked for- Yes/No
7. Have you submitted samples of all items indicated in the respective schedule of requirements. Yes/No
8. Have you enclosed the schedule of requirement indicating the make offered without indicating the pricing components along with the techno commercial un-priced bid. Yes/No
9. Have you submitted the bids both techno commercial un-priced and priced bid separately for each tender? Yes/No
10. Have you enclosed the statement of deviations from financial terms and conditions, if any? Yes/No

Priced Bid:

1. Have you signed and attached the priced bid form. Yes/No
2. Have you attached the schedule of requirements duly priced Yes/No
3. Have you attached the Declaration / integrity pact (as applicable) Yes/No

FORMAT OF BANK GUARANTEE FORM

1. This guarantee should be furnished by a Nationalized Bank / scheduled Bank, authorized by RBI to issue a Bank Guarantee.
2. This bank guarantee should be furnished on stamp paper of Rs. 100/-
3. The stamp paper should have been purchased in the Name of the Bank executing the Guarantee.
- 4. In the case of foreign bidder the B.G may be furnished by an international reputed bank acceptable to the PURCHASER countersigned by any Nationalized / Scheduled Bank in India authorized by Reserve Bank of India.**

DATE

BANK GUARANTEE NO:

Ref :.....

To
 Indian Institute of Technology
 (Banaras Hindu University)
 Varanasi-221005

Dear Sirs,

In accordance with your 'Invitation to Bid" under your Tender No: M/s: herein after called the Contractor/supplier, with the following Directors on their Board of Directors / partners of the firm.

- | | |
|--------|--------|
| 1..... | 2..... |
| 3..... | 4..... |

Agrees for the contract/supplies:

As an irrevocable Bank Guarantee for an amount of Rs.....(in words and figures) valid for days from is required to be submitted by the Contractor/Supplier which amount is liable to be forfeited by the purchaser in the event of 1) the withdrawal or revision of the offer by the Bidder as a condition within the validity period. (2) non-acceptance of the Letter of Intent / purchase order by the bidder when issued within the validity period. (3) failure to furnish the valid contract performance guarantee by the bidder within one month from the receipt of the purchase order and (4) on the happening of any contingencies mentioned in the bid documents such as

We, the Bank at..... having our Head office at (Local address) Guarantee and undertake to pay immediately on first demand by IIT (BHU) the amount of..... (in figure and words) without any reservation., protest, demur and recourse. Any such demand made by the Purchaser shall be conclusive and binding on the Bank irrespective of any dispute or difference raised by the purchaser.

The guarantee shall be irrevocable and shall remain valid up to
..... (This date should be 6 months after execution of the order). If any further extension of this guarantee is required the same shall be extended to such required period (not exceeding one year) on receiving instruction from M/s.....on whose behalf this guarantee is issued.

In witness whereof the Bank, through its authorized officer has set its hand and stamp on this
day of at witness (Signature)

WITNESS

(Signature).....

Name in (Block letters)

Designation

(Staff Code No.)

(Bank's common Seal)

Official address:

Attorney as per power of Attorney No.

Date:

DECLARATION

1. I, ----- Son /Daughter of Shri -----
----- Proprietor/Partner/CEO/MD/Director/ Authorized

Signatory of M/s. ----- am competent to sign this declaration and
execute this tender document.

- 2. I have carefully read and understood all the terms and conditions of the tender and hereby convey my acceptance of the same.
- 3. The information/ documents furnished along with the above application are true and authentic to the best of my knowledge and belief.
- 4. I/ we/ am are well aware of the fact that furnishing of any false information/ fabricated document would lead to rejection of my tender at any stage besides liabilities towards prosecution under appropriate law.
- 5. Each page of the tender document and papers submitted by my Company is authenticated, sealed and signed, and I take full responsibility for the entire documents submitted.

Signature of the Authorized Person

Date: -----

Place: -----

Full Name: -----

Company Seal: -----

Chemical Engineering Experimental Set Ups with Specifications

1. Stirred Liquid- liquid Extraction

Objectives

Study Process Parameters in Continuous Liquid- Liquid Extraction and determine Column Efficiency, HTU, NTU.

Salient Specifications

- a. SS/ PTFE Pumps
- b. Glass Decanters for Light and Heavy Phases Inlets and Outlets
- c. Glass Column of Height 1.0 m or more
- d. Stirring Shaft of SS
- e. Storage Tanks (capacity 10 L or more)
- f. Flowmeters (2 Nos) 0 – 10 L/h.

2 Ebulliometer

Objectives

Study of Liquid – Vapor Equilibriums at Atmospheric Pressure and Under Vacuum

Salient Specifications

- a. Minimum 250 mL Adiabatic Ebulliometric Chamber with a Provision to Draw Off Liquid
- b. Electrical Resistance Heater
- c. Glass Cooler with Condensed Vapour Extraction Valve
- d. Vacuum Circuit Consisting of Valves, Vacuum Connection Device, Safety Vave
- e. Pt Temperature Probe
- f. Absolute Pressure Transmitter

3. Centrifugal Pump Study

Objectives

Study of the Characteristics of a Centrifugal Pump and Coupling Two Pumps in Series/ Parallel

Salient Specifications

- a. SS Centrifugal Pumps with Provision for Power Consumption and Varying Speed
- b. Transparent Flanges to Observe Cavitation
- c. Serial Coupling Selection Valve
- d. Vacuum Gauges
- e. Manometers
- f. Flowmeters
- g. Closed Loop Operation

4 Fluid Dynamics Bench

Objectives

Study Pressure Drop across Various Components like Valves, Elbows, Abrupt Changes, Pipes of

Different Diameters , Lengths, Roughness

Comparison between Flow Rate Measuring Techniques

Salient Specifications

- a. SS Centrifugal Pump 5 m³/ h or more
- b. Parallel Pine lines consisting of
- c. Plexiglas Venturi and Diaphragm, 1 inch Needle Valve
- d. Smooth Pipes of Different Diameters (25, 15 and 10 mm Dia) with Connectors
- e. Rough Pipes (25 mm Dia) with Connectors
- f. Ink Injection Facility and Vacuum Pump
- g. Flow Meters
- h. Differential Pressure Transmitters
- i. Differential Manometers
- j. Manometers
- k. Digital Temperature Indication
- l. Closed Loop Operation

5 Luquid – Solid and Gas – Solid Fluidization

Objectives

Experimental Study of Fluidization like Expansion and Porosity of Bed, Bubbling Bed, Minimum Fluidization Velocity.

Study the Influence of Parameters like Particle Diameter and Density, Flow Rate and State (Gas or Liquid) on Fluidization.

Salient Specifications

- a. Compressed Air Feeding Circuit having Isolation Valve and Reducing Valve
- b. Gas Solid Fluidization Glass Column Dia 60 mm or more, Height 30 cm or more, Glass Fritted Support., Pressure Ports
- c. Water Feeding Circuit having Isolation Valve
- d. Solid Liquid Fluidization Colum Dia 60 mm or more, Height 100 cm or more, Glass Perforated Support, Pressure Ports
- e. Air Flow Meter 500 L/ h
- f. Water Flow Meter 1,000 L/ h.

6. Gas Solid Fluidization Drying

Objectives

Study of the Air Fluidization of Solid Particles

Study of the Drying of Solid Particles in a Hot Air Stream

Salient Specifications

- a. Air Feeding Circuit consisting of Pressure Reducing Valve, Manometers and Isolation Valve, Silica Gel Colum to dry Air
- b. Air Heating Device temperature up to 90 deg C
- c. Glass Cyclone
- d. Temperature Probes
- e. Flow meters
- f. Manometers

- g. Moisture Transmitter

7. Conduction Through Flat Wall

Objectives

Study Conduction and Temperature Profile with and Without Radial Heat Losses

Salient Specifications

- a. A 4 kW Temperature Heating plate
- b. Aluminum Block on Isolation Support
- c. Cooling Circuit consisting of Isolation Valve, Flow meter (~ 1,000 L/ h) and Temperature Measurement at Inlet and Outlet by Thermocouple (Pt Type)
- d. Thermocouples (K Type) at ~ 15 points
- e. Computer Data Acquisition Module

Power supply: 230V, 50 Hz

Warranty: Comprehensive warranty for 3 years from the date of commissioning for the main system and all accessories. **In addition** 2 years extended warranty.

Note: Bid should include both FCA and CIP New Delhi prices. Transportation cost with insurance from port of destination to IIT (BHU) Varanasi should also be clearly mentioned separately. Submit Electronic copy (in CD) of the Technical specifications/bid also along with the signed copy of the bids in sealed envelope. The optional and preferred items are not essential.

OTHER TERMS:

- (1) **Spares:** state availability of spares for ten years
- (2) **Indian agency commission:** Should be clearly stated in the financial bid in Indian currency
- (3) **Consumable & spares:** List of the consumables and spares to be supplied with the system
- (4) **User List:** Provide users for last 5 years with contact person name, address, phone, fax and email IDs.
- (5) **Manuals/Documents:** 1 set of hard copy and 1 set of soft copy in English (preferred as following).
 - i. Operating manual
 - ii. Maintenance manual
 - iii. Servicing manual
 - iv. Programming manual
 - v. Spare parts list with source of supply and prices
 - vi. Description of control interface
 - vii. Circuit diagrams of PLC, drive controls etc
 - viii. Manuals of bought out items incorporated in the system
 - ix. Details of any custom made ICs & components & their sources
 - x. Flow charts of all resident software
 - xi. Test Chart
 - xii. Pre-installation requirements of foundation plan details, electromagnetic interference and vibration.
- (6) Details of the standard samples to be provided by the company for testing the instruments at the time of installation at site for the demonstration of the performance of equipment.
- (7) Please provide the segmented quotation for each optional measurement capability.
- (8) The tender document should also indicate what kind of service/maintenance is required for the system. Whether this service has to be carried out by a company engineer or it can be carried by trained service personnel within India. The frequency of visit and the charges should be mentioned.

- (9) Complete computer control of operation and measurement on Windows based platform. Give the details of software for measurement and analysis.
- (10) Pre-installation site preparation/inspection requirements to be indicated and specified along with the bid.
- (11) Installation and training should be provided free of cost.
- (12) Warranty period to be clearly mentioned and should begin from the date of installation. Annual Maintenance Contract Charges should be clearly mentioned after warranty period.
- (13) Guaranteed specifications to be demonstrated at the time of installation. Any necessary standard samples for that purpose should be brought by the Service Engineers.
- (14) On – site training of our staff in operation and maintenance is essential by factory trained personal and provision for training for one person for minimum one week at factory site.
- (15) Port of shipment to be clearly mentioned in the tender. The Port of destination shall be New Delhi.
- (16) Bid should include both FCA and CIP N. Delhi prices. Transportation cost with insurance from port of destination to IIT (BHU) Varanasi should also be clearly mentioned.
- (17) Shipment may be routed through an agent who may be appointed by the Institute.
- (18) Service manuals with complete circuit diagram and PCB layout for all equipment to be provided with the instrument.
- (19) Submit Electronic copy of the Technical specifications and bids.
- (20) The vendor to provide compliance statement with respect to each technical specification in the tender document duly supported by the manufacturer’s literature. Any other claim will not be accepted and may lead to rejection of the bid.
- (21) Printed literature in support of compliance to the prescribed specifications is to be submitted.
- (22) Compliance report needs to be submitted as a part of the technical bid.
- (23) In case during shipment period newer versions of software/hardware is available with vendor in lieu of the existing one for which Letter of Credit was opened, then improved version should be made available without any extra cost.
- (24) Institute reserves the right to visit installation in India of similar capabilities the details with to regard to such installation should be given as a part of technical bid.
- (25) Technical evaluation by the Institute may include demonstration to verify functionalities and capabilities of the system quoted.

Services: Vendor must submit Factory Acceptance Test procedure supported with relevant printed literature and certificates.