

INDIAN INSTITUTE OF TECHNOLOGY DELHI
HAUZ KHAS, NEW DELHI-110016

Dated:10/02/2015

Open Tender Notice No. IITD/BEEN(SP-152)/2015

Indian Institute of Technology Delhi is in the process of purchasing following item(s) as per details as given as under.

Details of the item	Integrated Level and Temperature Control Setup
Earnest Money Deposit to be submitted	Nil

Tender Documents may be downloaded from Central Public Procurement Portal <http://eprocure.gov.in/eprocure/app>. Aspiring Bidders who have not enrolled / registered in e-procurement should enroll / register before participating through the website <http://eprocure.gov.in/eprocure/app>. The portal enrolment is free of cost. Bidders are advised to go through instructions provided at 'Instructions for online Bid Submission'.

Tenderers can access tender documents on the website (For searching in the NIC site, kindly go to Tender Search option and type 'IIT'. Thereafter, Click on "GO" button to view all IIT Delhi tenders). Select the appropriate tender and fill them with all relevant information and submit the completed tender document online on the website <http://eprocure.gov.in/eprocure/app> as per the schedule given in the next page.

No manual bids will be accepted. All quotation (both Technical and Financial should be submitted in the E-procurement portal).

Schedule

Name of Organization	Indian Institute of Technology Delhi
Tender Type (Open/Limited/EOI/Auction/Single)	Open
Tender Category (Services/Goods/works)	Goods
Type/Form of Contract (Work/Supply/ Auction/Service/Buy/Empanelment/ Sell)	Supply
Product Category (Civil Works/Electrical Works/Fleet Management/ Computer Systems)	Equipment
Is Multi Currency Allowed	YES
Date of Issue/Publishing	10/02/15 (16:00 Hrs)
Document Download/Sale Start Date	10/02/15 (16:00 Hrs)
Document Download/Sale End Date	24/02/15 (17:30 Hrs)
Last Date and Time for Uploading of Bids	24/02/15 (17:30 Hrs)
Date and Time of Opening of Technical Bids	25/02/15 (12:00 Hrs)
Tender Fee	---
No. of Covers (1/2/3/4)	02
Bid Validity days (180/120/90/60/30)	60 days
Address for Communication	Dr. S. Janardhanan, Department of Electrical Engineering
Contact No.	011-26596133
Fax No.	011-26581606
Email Address	janas@ee.iitd.ac.in

**Chairman Purchase Committee
(Buyer Member)**

Instructions for Online Bid Submission:

As per the directives of Department of Expenditure, this tender document has been published on the Central Public Procurement Portal ([URL:http://eprocure.gov.in/eprocure/app](http://eprocure.gov.in/eprocure/app)). The bidders are required to submit soft copies of their bids electronically on the CPP Portal, using valid Digital Signature Certificates. The instructions given below are meant to assist the bidders in registering on the CPP Portal, prepare their bids in accordance with the requirements and submitting their bids online on the CPP Portal.

More information useful for submitting online bids on the CPP Portal may be obtained at:

<http://eprocure.gov.in/eprocure/app>

REGISTRATION

- 1) Bidders are required to enroll on the e-Procurement module of the Central Public Procurement Portal ([URL:http://eprocure.gov.in/eprocure/app](http://eprocure.gov.in/eprocure/app)) by clicking on the link “Click here to Enroll”. Enrolment on the CPP Portal is free of charge.
- 2) As part of the enrolment process, the bidders will be required to choose a unique username and assign a password for their accounts.
- 3) Bidders are advised to register their valid email address and mobile numbers as part of the registration process. These would be used for any communication from the CPP Portal.
- 4) Upon enrolment, the bidders will be required to register their valid Digital Signature Certificate (Class II or Class III Certificates with signing key usage) issued by any Certifying Authority recognized by CCA India (e.g. Sify / TCS / nCode / eMudhra etc.), with their profile.
- 5) Only one valid DSC should be registered by a bidder. Please note that the bidders are responsible to ensure that they do not lend their DSCs to others which may lead to misuse.
- 6) Bidder then logs in to the site through the secured log-in by entering their userID / password and the password of the DSC / eToken.

SEARCHING FOR TENDER DOCUMENTS

- 1) There are various search options built in the CPP Portal, to facilitate bidders to search active tenders by several parameters. These parameters could include Tender ID, organization name, location, date, value, etc. There is also an option of advanced search for tenders, wherein the bidders may combine a number of search parameters such as organization name, form of contract, location, date, other keywords etc. to search for a tender published on the CPP Portal.
- 2) Once the bidders have selected the tenders they are interested in, they may download the required documents / tender schedules. These tenders can be moved to the respective ‘My Tenders’ folder. This would enable the CPP Portal to intimate the bidders through SMS / e-mail in case there is any corrigendum issued to the tender document.
- 3) The bidder should make a note of the unique Tender ID assigned to each tender, in case they want to obtain any clarification / help from the Helpdesk.

PREPARATION OF BIDS

- 1) Bidder should take into account any corrigendum published on the tender document before submitting their bids.
- 2) Please go through the tender advertisement and the tender document carefully to understand the documents required to be submitted as part of the bid. Please note the number of covers in which the

bid documents have to be submitted, the number of documents - including the names and content of each of the document that need to be submitted. Any deviations from these may lead to rejection of the bid.

- 3) Bidder, in advance, should get ready the bid documents to be submitted as indicated in the tender document / schedule and generally, they can be in PDF / XLS / RAR / DWF formats. Bid documents may be scanned with 100 dpi with black and white option.
- 4) To avoid the time and effort required in uploading the same set of standard documents which are required to be submitted as a part of every bid, a provision of uploading such standard documents (e.g. PAN card copy, annual reports, auditor certificates etc.) has been provided to the bidders. Bidders can use “My Space” area available to them to upload such documents. These documents may be directly submitted from the “My Space” area while submitting a bid, and need not be uploaded again and again. This will lead to a reduction in the time required for bid submission process.

SUBMISSION OF BIDS

- 1) Bidder should log into the site well in advance for bid submission so that he/she upload the bid in time i.e. on or before the bid submission time. Bidder will be responsible for any delay due to other issues.
- 2) The bidder has to digitally sign and upload the required bid documents one by one as indicated in the tender document.
- 3) Bidder has to select the payment option as “offline” to pay the tender fee / EMD as applicable and enter details of the instrument.
- 4) Financial Bids can be submitted in PDF format (in lieu of BOQ).
- 5) The server time (which is displayed on the bidders’ dashboard) will be considered as the standard time for referencing the deadlines for submission of the bids by the bidders, opening of bids etc. The bidders should follow this time during bid submission.
- 6) All the documents being submitted by the bidders would be encrypted using PKI encryption techniques to ensure the secrecy of the data. The data entered cannot be viewed by unauthorized persons until the time of bid opening. The confidentiality of the bids is maintained using the secured Socket Layer 128 bit encryption technology. Data storage encryption of sensitive fields is done.
- 7) The uploaded tender documents become readable only after the tender opening by the authorized bid openers.
- 8) Upon the successful and timely submission of bids, the portal will give a successful bid submission message & a bid summary will be displayed with the bid no. and the date & time of submission of the bid with all other relevant details.
- 9) Kindly add scanned PDF of all relevant documents in a single PDF file of compliance sheet.

ASSISTANCE TO BIDDERS

- 1) Any queries relating to the tender document and the terms and conditions contained therein should be addressed to the Tender Inviting Authority for a tender or the relevant contact person indicated in the tender.
- 2) Any queries relating to the process of online bid submission or queries relating to CPP Portal in general may be directed to the 24x7 CPP Portal Helpdesk. The contact number for the helpdesk is 1800 233 7315.

General Instructions to the Bidders

- 1) The tenders will be received online through portal <http://eprocure.gov.in/eprocure/app> . In the Technical Bids, the bidders are required to upload all the documents in .pdf format.
- 2) Possession of a Valid Class II/III Digital Signature Certificate (DSC) in the form of smart card/e-token in the company's name is a prerequisite for registration and participating in the bid submission activities through <https://eprocure.gov.in/eprocure/app> . Digital Signature Certificates can be obtained from the authorized certifying agencies, details of which are available in the web site <https://eprocure.gov.in/eprocure/app> under the link “Information about DSC”.
- 3) Tenderer are advised to follow the instructions provided in the ‘Instructions to the Tenderer for the e-submission of the bids online through the Central Public Procurement Portal for e Procurement at <https://eprocure.gov.in/eprocure/app>.

Electrical Engineering Department
Indian Institute of Technology
Hauz Khas, New Delhi-110 016

NOTICE INVITING QUOTATIONS

Dated : 19/01/2015

Subject : Integrated Level and Temperature Control Setup.

Invitation for Tender Offers

Indian Institute of Technology Delhi invites online Bids (Technical bid and Commercial bid) from eligible and experienced OEM (Original Equipment Manufacturers) OR OEM Authorized Dealers for **Integrated Level and Temperature Control Setup** with One year on site comprehensive warranty from the date of receipt of the material as per terms & conditions specified in the tender document, which is available on CPP Portal <http://eprocure.gov.in/eprocure/app>

TECHNICAL SPECIFICATION:

Sl. No.	Technical Specifications
1.	<p>The unit should be fully integrated, self-contained bench top apparatus consisting of a Process Module having maximum Dimensions 1030W x 750H x 380D , and a Control Console having maximum Dimensions 340W x 250H x 200D with a built in power supply. The trainer should be controlled through a Microsoft Windows based graphical software with SCADA type interface which should be supplied with the unit and provides P, PI & PID control. A number of experiments in process control should include Flow, Level, Pressure, Temperature, and combinations of the processes. The Control Console should be easily connectable to a PC using the USB connection and /or to a PLC using a D type connector.</p> <p>The Control Console should have a mimic of the Process Module on the front and should include Illuminated Push to Latch, (self resetting on power off) fault switches, minimum 5 test point from all of the transducers like Heater Output; Level Output; Sump Tank and Process Tank Temperature Output, Flow Rate and minimum 6 Indicators (for Heater On; Drain Valve Open; Flow and Diverter Solenoid Active; Pump Active and Cooler Active). Level should be measured using a 0 to10v Magnetostrictive sensor; pressure should be measured using a Gage 0 to 5 bar sensor and Flow using a turbine flow rate sensor (0.5 to 3 Liters per minute). Two PT1000 should be used to measure temperature in both the sump and process tank. A diverter valve should be available to direct the liquid through a forced air cooling process to cool the liquid in the system. Two proportional valves should be provided to control flow in to and out of the process tank, a manually adjustable needle valve should be provided to add disturbances to the system and a pressure relief valve should be fitted for safety.</p> <p>The Process module should comprise of a 24V, 6 Litres per minute with 1.5 bar safety cut-out Pump connected through 16 mm clear PVC pipes from, approximately 8 Litre Capacity reservoir/ sump tank, Approximately 4.5 Litres Capacity a process tank . A 48v dc , 400W Heating Element should be fitted in the process tank to heat the liquid.</p> <p>There should be provision for display of data of level, flow, temperature, pressure etc. on LCD</p>

	<p>displays fitted to the Process Module, and also provision for data monitoring, saving and printing through software. The software should have P, PI & PID controller with Supervisory Control and Data Acquisition and trending features.</p> <p>Manual should be included with the setup with the following curriculum coverage : Introduction , On/off control , Open loop control, Closed loop control , Basic control principles , 1st. order systems , Transfer functions , Block diagrams , Assessment of system performance , Transient responses, Control system instability , Final value theorem , The Routh-Hurwitz test , Bode plots , Bode phase lag versus frequency plot , Nyquist plots, Process modeling , Process models from step data tests, Process models from frequency response tests, Process models from time domain tests, PID controllers, Proportional control term, Integral control term, Derivative control term , Multi term control , Ziegler Nichols tuning , Digital control , The analysis of digital control systems, Pulse transfer functions, Z transform initial and final value theorems, Stability of sampled data control systems , Inverse Z transformations, Digital controllers , Digital three term controller, The effects of sampling time , Use of simulation.</p> <p>Experiments details to be provided with the manual: Proportional control, Proportional and integral control, Saturation and integral windup, Three term or PID control, Ziegler / Nichols tuning, Temperature control , Fluid level control, Open loop control, Bode plots, Flow loop model using Caldwell’s method, Flow loop model using Sundaresan’s method, Design of controller for PCT-100 flow loop.</p>
2.	<p>The Process control simulation software (10 user) for Flow, Level, Temperature and batch should have graphical display of all data in real time. Provision for Graph to be analyzed, rewound, saved and printed should be given. For each of control screen in Flow, Level, Temperature and batch, display should show : start and stop button, the control module, the principle variable being measured, PID and manual (on- off)control parameters, Open loop control for flow rate , minimum four set-points types: flat, ramp, sine & saw-tooth; real time graph with start time and time base, control buttons with graphical mimic for choke valve, heater, cooler, stirrer, flow divert and drain valve, state of current reading and reading should be able to examined with tick boxes for each traces to display. The tuned value of PID should be be implementable and verifiable on the above system.</p>

Sl. No.	List of optional items
1.	A 24Vdc, 6 Litres per minute with 1.5 bar safety cut-out Pump.

A complete set of tender documents* may be Download by prospective bidder free of cost from the website <http://eprocure.gov.in/eprocure/app>. Bidder has to make payment of requisite fees (i.e. Tender fees (if any) and EMD) by demand draft in favour of Registrar, IIT Delhi payable at New Delhi.

Terms & Conditions Details

Sl.No.	Specification
1.	Due date: The tender has to be submitted before the due date. The offers received after the due date and time will not be considered.
2.	<p>Preparation of Bids: The offer/bid should be submitted in two bid systems (i.e.) Technical bid and financial bid. The technical bid should consist of all technical details along with commercial terms and conditions. Financial Bids to be submitted in .pdf format.</p> <p>The Technical bid and the financial bid should be submitted Online.</p>
3.	<p>Opening of the tender: The online bid will be opened by a committee duly constituted for this purpose. Online bids (complete in all respect) received will be opened as mentioned at “Annexure: Schedule” in presence of bidders representative if available, Only one representative will be allowed to participate in the tender opening. The technical bid will be opened online first and it will be examined by a technical committee which will decide the suitability as per our specification and requirement. The financial offer/bid will be opened only for the offer/bid which technically meets all our requirements as per the specification, and will be opened in the presence of the vendor’s representatives subsequently for further evaluation. The bidders if interested may participate on the tender opening Date and Time. The bidder should produce authorization letter from their company to participate in the tender opening.</p>
4.	<p>Acceptance/ Rejection of bids: The Committee reserves the right to reject any or all offers without assigning any reason.</p>
5.	<p>Pre-qualification criteria:</p> <p>(i) Bidders should be the manufacturer / authorized dealer. Letter of Authorization from original equipment manufacturer (OEM) on the same and specific to the tender should be enclosed.</p> <p>(ii) OEM should be internationally reputed Branded Company.</p> <p>(iii) Non-compliance of tender terms, non-submission of required documents, lack of clarity of the specifications, contradiction between bidder specification and supporting documents etc. may lead to rejection of the bid.</p>
6.	<p>Risk Purchase Clause: In event of failure of supply of the item/equipment within the stipulated delivery schedule, the purchaser has all the right to purchase the item/equipment from the other source on the total risk of the supplier under risk purchase clause.</p>
7.	<p>Packing Instructions: Each package will be marked on three sides with proper paint/indelible ink, the following:</p> <ol style="list-style-type: none"> i. Item Nomenclature ii. Order/Contract No. iii. Country of Origin of Goods iv. Supplier’s Name and Address v. Consignee details vi. Packing list reference number
8.	<p>Delivery and Documents:</p> <p>Delivery of the goods should be made within a maximum of 08 to 16 weeks from the date of placement of purchase order and the opening of LC. Within 24 hours of shipment, the supplier shall notify the purchaser and the insurance company by cable/telex/fax/e mail the full details of the shipment including contract number, railway receipt number/ AAP etc. and date, description of goods, quantity, name of the consignee, invoice etc. The supplier shall mail the following documents to the purchaser with a copy to the insurance company:</p> <ol style="list-style-type: none"> 1. 4 Copies of the Supplier invoice showing contract number, goods' description, quantity unit price, total amount; 2. Insurance Certificate if applicable;

	<p>3. Manufacturer's/Supplier's warranty certificate;</p> <p>4. Inspection Certificate issued by the nominated inspection agency, if any</p> <p>5. Certificate of Origin (if possible by the beneficiary);</p> <p>6. Two copies of the packing list identifying the contents of each package.</p> <p>7. The above documents should be received by the Purchaser before arrival of the Goods (except where the Goods have been delivered directly to the Consignee with all documents) and, if not received, the Supplier will be responsible for any consequent expenses.</p>
9.	<p>Delayed delivery: If the delivery is not made within the due date for any reason, the Committee will have the right to impose penalty 1% per week and the maximum deduction is 10% of the contract value / price.</p>
10.	<p>Prices: The price should be quoted in net per unit (after breakup) and must include all packing and delivery charges. The offer/bid should be exclusive of taxes and duties, which will be paid by the purchaser as applicable. However the percentage of taxes & duties shall be clearly indicated. The price should be quoted without custom duty and excise duty, since IIT Delhi is exempted from payment of Excise Duty and is eligible for concessional rate of custom duty. Necessary certificate will be issued on demand.</p> <p>In case of import supply the price should be quoted on FOB Basis only. Under special circumstances (eg. perishable chemicals), when the item is imported on CIF/CIP, please indicate CIF/CIP charges separately upto IIT Delhi indicating the mode of shipment. IIT Delhi will make necessary arrangements for the clearance of imported goods at the Airport/Seaport. Hence the price should not include the above charges.</p>
11.	<p>Notices: For the purpose of all notices, the following shall be the address of the Purchaser and Supplier.</p> <p>Purchaser: Dr. S. Janardhanan, Control Lab, Room No. II-214, Department of Electrical Engineering, Indian Institute of Technology Hauz Khas, New Delhi - 110016.</p> <p>Supplier: (To be filled in by the supplier) (All suppliers should submit their supplies information as per Annexure-II).</p> <p>_____</p> <p>_____</p>
12.	<p>Progress of Supply: Wherever applicable, supplier shall regularly intimate progress of supply, in writing, to the Purchaser as under:</p> <ol style="list-style-type: none"> 1. Quantity dispatched/delivered to consignees and date; 2. Quantity where incidental services have been satisfactorily completed with date; 3. Quantity where rectification/repair/replacement effected/completed on receipt of any communication from consignee/Purchaser with date; 4. Date of completion of entire Contract including incidental services, if any; and 5. Date of receipt of entire payments under the Contract (In case of stage-wise inspection, details required may also be specified).
13.	<p>Resolution of Disputes: The dispute resolution mechanism to be applied pursuant shall be as follows:</p> <ul style="list-style-type: none"> • In case of Dispute or difference arising between the Purchaser and a domestic supplier relating to any matter arising out of or connected with this agreement, such disputes or difference shall be settled in accordance with the Indian Arbitration & Conciliation Act, 1996, the rules there under and any statutory modifications or re-enactments thereof shall apply to the arbitration proceedings.

	<p>The dispute shall be referred to the Director, Indian Institute of Technology (IIT) Delhi and if he is unable or unwilling to act, to the sole arbitration of some other person appointed by him willing to act as such Arbitrator. The award of the arbitrator so appointed shall be final, conclusive and binding on all parties to this order.</p> <ul style="list-style-type: none"> • In the case of a dispute between the purchaser and a Foreign Supplier, the dispute shall be settled by arbitration in accordance with provision of sub-clause (a) above. But if this is not acceptable to the supplier then the dispute shall be settled in accordance with provisions of UNCITRAL (United Nations Commission on International Trade Law) Arbitration Rules. • The venue of the arbitration shall be the place from where the order is issued.
14.	Applicable Law: The place of jurisdiction would be New Delhi (Delhi) INDIA.
15.	<p>Right to Use Defective Goods</p> <p>If after delivery, acceptance and installation and within the guarantee and warranty period, the operation or use of the goods proves to be unsatisfactory, the Purchaser shall have the right to continue to operate or use such goods until rectifications of defects, errors or omissions by repair or by partial or complete replacement is made without interfering with the Purchaser's operation.</p>
16.	<p>Supplier Integrity</p> <p>The Supplier is responsible for and obliged to conduct all contracted activities in accordance with the Contract using state of the art methods and economic principles and exercising all means available to achieve the performance specified in the contract.</p>
17.	<p>Training</p> <p>The Supplier is required to provide training on training to the designated Purchaser's technical and end user personnel to enable them to effectively operate the total equipment.</p>
18.	<p>Installation & Demonstration</p> <p>The supplier is required to done the installation and demonstration of the equipment within one month of the arrival of materials at the IITD site of installation, otherwise the penalty clause will be the same as per the supply of materials.</p>
19.	<p>Insurance: For delivery of goods at the purchaser's premises, the insurance shall be obtained by the Supplier 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. The insurance shall be valid for a period of not less than 3 months after installation and commissioning. In case of orders placed on FOB/FCA basis, the purchaser shall arrange Insurance. If orders placed on CIF/CIP basis, the insurance should be up to IIT Delhi.</p>
20.	<p>Incidental services: The incidental services also include:</p> <ul style="list-style-type: none"> • Furnishing of 01 set of detailed operations manual. • Arranging the shifting/moving of the item to their location of final installation within IITD premises at the cost of Supplier through their Indian representatives.
21.	<p>Warranty: 1. Warranty period shall be 12 month from date of installation of Goods at the IITD site of installation.</p> <p>Note: <u>If a different period of warranty has been specified in the 'Technical Specifications' then the period mentioned above shall stand modified to that extent.</u></p>
22.	<p>Governing Language</p> <p>The contract shall be written in English language. 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.</p>
23.	<p>Applicable Law</p> <p>The Contract shall be interpreted in accordance with the laws of the Union of India and all disputes shall be subject to place of jurisdiction.</p>
24.	Notices

	<ul style="list-style-type: none"> Any notice given by one party to the other pursuant to this contract/order shall be sent to the other party in writing or by cable, telex, FAX or e mail and confirmed in writing to the other party's address. A notice shall be effective when delivered or on the notice's effective date, whichever is later.
25.	<p>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. However, VAT in respect of the transaction between the Purchaser and the Supplier shall be payable extra, if so stipulated in the order.</p>
26.	<p>Agency Commission: Agency commission if any will be paid to the Indian agent in Rupees on receipt of the equipment and after satisfactory installation. Agency Commission will not be paid in foreign currency under any circumstances. The details should be explicitly shown in Tender even in case of Nil commission. The tenderer should indicate the percentage of agency commission to be paid to the Indian agent.</p>
27.	<p>Payment: Payment will be made through irrevocable Letter of Credit (LC). The letter of credit (LC) will be established on the exchange rates as applicable on the date of establishment.</p> <ul style="list-style-type: none"> For Indigenous supplies, 100% payment shall be made by the Purchaser against delivery, inspection, successful installation, commissioning and acceptance of the equipment at IITD in good condition and to the entire satisfaction of the Purchaser and on production of unconditional performance bank guarantee as specified in Clause 9 of tender terms and conditions. For Imports, LC will be opened for 100% FOB/CIF value. 100% of the LC amount shall be released on presentation of complete and clear shipping documents. Indian Agency commission (IAC), if any shall be paid after satisfactory installation & commissioning of the goods at the destination at the exchange rate prevailing on the date of negotiation of LC documents, subject to DGS&D registration for restricted items. All the bank charges within India will be borne by the Institute and outside India will be borne by the Supplier.
28.	<p>User list: Brochure detailing technical specifications , list of industrial and educational establishments where the items enquired have been supplied must be provided.</p>
29.	<p>Manuals and Drawings</p> <ul style="list-style-type: none"> Before the goods and equipment are taken over by the Purchaser, the Supplier shall supply operation manuals. The Manuals shall be in the ruling language (English) in such form and numbers as stated in the contract. Unless and otherwise agreed, the goods equipment shall not be considered to be completed for the purposes of taking over until such manuals has been supplied to the Purchaser.
30.	<p>Application Specialist: The Tenderer should mention in the Techno-Commercial bid the availability and names of Application Specialist and Service Engineers in the nearest regional office.</p>
31.	<p>Installation: The equipment or machinery has to be installed or commissioned by the successful bidder within 30 days from the date of receipt of the item at IITD.</p>
32.	<p>Spare Parts The Supplier may be required to provide any or all of the following materials, notifications, and information pertaining to spare parts manufactured or distributed by the Supplier:</p> <ol style="list-style-type: none"> Such spare parts as the Purchaser may elect to purchase from the Supplier, providing that this election shall not relieve the Supplier of any warranty obligations under the Contract; and In the event of termination of production of the spare parts:

	<p>iii. Advance notification to the Purchaser of the pending termination, in sufficient time to permit the Purchaser to procure needed requirements; and</p> <p>iv. Following such termination, furnishing at no cost to the Purchaser, the blueprints, drawings and specifications of the spare parts, if requested.</p> <p>Supplier shall carry sufficient inventories to assure ex-stock supply of consumable spares for the Goods, such as gaskets, plugs, washers, belts etc. Other spare parts and components shall be supplied as promptly as possible but in any case within six months of placement of order.</p>
33.	<p>Defective Equipment: If any of the equipment supplied by the Tenderer is found to be substandard, refurbished, un-merchantable or not in accordance with the description/specification or otherwise faulty, the committee will have the right to reject the equipment or its part.</p>
34.	<p>Termination for Default</p> <p>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:</p> <ol style="list-style-type: none"> i. If the Supplier fails to deliver any or all of the Goods within the period(s) specified in the order, or within any extension thereof granted by the Purchaser; or ii If the Supplier fails to perform any other obligation(s) under the Contract. iii If the Supplier, in the judgment of the Purchaser has engaged in corrupt or fraudulent practices in competing for or in executing the Contract. <ul style="list-style-type: none"> ● For the purpose of this Clause: <ol style="list-style-type: none"> i. “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. ii. “Fraudulent practice” means 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;” ● In the event the Purchaser terminates the Contract in whole or in part, 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.
35.	<p>Warranty/Guarantee: The warranty period should be clearly mentioned. The maintenance charges (AMC) under different schemes after the expiry of the warranty should also be mentioned. The tender must be quoted with one (01) year on-site comprehensive warranty/guarantee which will commence from the date of the satisfactory installation/commissioning of the equipment against the defect of any manufacturing, workmanship and poor quality of the components.</p>
36.	<p>Training of Personnel: The supplier shall be required to undertake to provide the technical training to the personnel involved in the use of the equipment at the Institute premises, immediately after completing the installation of the equipment for a minimum period of one week at the supplier’s cost.</p>
37.	<p>Disputes and Jurisdiction: Any legal disputes arising out of any breach of contract pertaining to this tender shall be settled in the court of competent jurisdiction located within New Delhi.</p>
38.	<p>Compliance certificate: This certificate must be provided indicating conformity to the technical specifications.</p>
39.	<p>Acknowledgement: The quotation should include an acknowledgement with the following words: “It is hereby acknowledged that we have gone through all the conditions mentioned above and we agree to abide by them.”</p>

COMPLIANCE SHEET

TECHNICAL SPECIFICATION

Sl. No.	Technical Specifications	Compliance Y/N
1.	The unit should be fully integrated, self-contained bench top apparatus consisting of a Process Control Module and a Control Console with a built in power supply.	
1.1	Process Module having maximum Dimensions 1030W x 750H x 380D	
1.2	Control Console having maximum Dimensions 340W x 250H x 200D	
1.3	The trainer should be controlled through the windows based graphical software with SCADA type interface supplied with the unit and provides P, PI & PID control.	
1.4	The experiments in process control should include Flow, Level, Pressure, Temperature, and combinations of the processes.	
1.5	The Control Console should be easily connected to a PC using the USB connection and /or to a PLC using a D type connector.	
1.6	The Control Console should have a mimic of the Process Module on the front and includes Illuminated Push to Latch, (self-resetting on power off) fault switches, minimum 5 test point from all of the transducers like Heater Output; Level Output; Sump Tank and Process Tank Temperature Output, Flow Rate and minimum 6 Indicators for Heater On; Drain Valve Open; Flow and Diverter Solenoid Active; Pump Active and Cooler Active.	
1.7	Level should be measured using a 0 to10v Magnetostrictive sensor.	
1.8	Pressure should be measured using a Gage 0 to 5 bar sensor.	
1.9	Flow using a turbine flow rate sensor, 0.5 to 3 Litres per minute.	
1.10	Two PT1000 should be used to measure temperature in both the sump and process tank.	
1.11	A diverter valve should be used to direct the liquid through a forced air cooling process to cool the liquid in the system. Two proportional valves should be provided to control flow in to and out of the process tank, a manually adjustable needle valve should be provided to add disturbances to the system and a pressure relief valve should be fitted for safety.	
1.12	The Process module should comprises a 24V, 6 Litres per minute with 1.5 bar safety cut-out Pump connected through 16 mm clear PVC pipes from, approximately 8 Litre Capacity reservoir/ sump tank, Approximately 4.5 Litres Capacity a process tank . A 48v dc, 400W Heating Element should be fitted in the process tank to heat the liquid.	
1.13	Data should be displayed on minimum five LCD displays fitted to the Process Module, and through the software data can be monitored, saved or printed. The software should have P, PI & PID controller with Supervisory Control and Data Acquisition and trending features.	
1.14	Manual should includes the following curriculum coverage : Introduction , On/off control , Open loop control, Closed loop control , Basic control principles , 1st. order systems , Transfer functions , Block diagrams , Assessment of	

	system performance , Transient responses, Control system instability , Final value theorem , The Routh-Hurwitz test , Bode plots , Bode phase lag versus frequency plot , Nyquist plots, Process modeling , Process models from step data tests, Process models from frequency response tests, Process models from time domain tests, PID controllers, Proportional control term, Integral control term, Derivative control term , Multi term control , Ziegler Nichols tuning , Digital control , The analysis of digital control systems, Pulse transfer functions, Z transform initial and final value theorems, Stability of sampled data control systems , Inverse Z transformations, Digital controllers , Digital three term controller, The effects of sampling time , Use of simulation.	
1.15	Lab works: Proportional control, Proportional and integral control, Saturation and integral windup, Three term or PID control, Ziegler / Nichols tuning, Temperature control , Fluid level control, Open loop control, Bode plots, Flow loop model using Caldwell's method, Flow loop model using Sundaresan's method, Design of controller for PCT-100 flow loop.	
2.	The Process control simulation software (10 user) for Flow, Level, Temperature and batch should have graphical display of all data in real time. Graph can be analyzed, rewound, saved and printed. For each of control screen in Flow, Level, Temperature and batch, display should show : start and stop button, the control module, the principle variable being measured, PID and manual (on- off)control parameters, Open loop control for flow rate , minimum four set-points types: flat, ramp, sine & saw-tooth; real time graph with start time and time base, control buttons with graphical mimic for choke valve, heater, cooler, stirrer, flow divert and drain valve, state of current reading and reading should be able to examined with tick boxes for each traces to display. The tuned value of PID can be implemented and verified on the above system	
2.1	For each of control screen in Flow, Level, Temperature and batch, display should show : start and stop button, the control module, the principle variable being measured, PID and manual (on- off)control parameters, Open loop control for flow rate , minimum four set-points types: flat, ramp, sine & saw-tooth; real time graph with start time and time base, control buttons with graphical mimic for choke valve, heater, cooler, stirrer, flow divert and drain valve, state of current reading and reading should be able to examined with tick boxes for each traces to display. The tuned value of PID can be implemented and verified on the above system.	

I have also enclosed all relevant documents in support of my claims, (as above) in the following pages.

Signature of Bidder

Name : _____

Designation : _____

Organization Name : _____

Contact No. : _____

**<< Organization Letter Head >>
DECLARATION SHEET**

We, _____ hereby certify that all the information and data furnished by our organization with regard to this tender specification are true and complete to the best of our knowledge. I have gone through the specification, conditions and stipulations in details and agree to comply with the requirements and intent of specification.

This is certified that our organization has been authorized (Copy attached) by the OEM to participate in Tender. We, further certified that our organization meets all the conditions of eligibility criteria laid down in this tender document.

The prices quoted in the financial bids are subsidized due to academic discount given to IIT Delhi.

We, further specifically certify that our organization has not been Black Listed/De Listed or put to any Holiday by any Institutional Agency/ Govt. Department/ Public Sector Undertaking in the last three years.	NAME & ADDRESS OF THE Vendor/ Manufacturer / Agent
1 Phone	
2 Fax	
3 E-mail	
4 Contact Person Name	
5 Mobile Number	
6 TIN Number	
7 PAN Number	

(Signature of the Tenderer)

Name :

Seal of the Company

Bid Submission

i. Online Bid Submission :

The Online bids (complete in all respect) must be uploaded online in **Two** Envelops as explained below :-

Envelope – 1			
(Following documents to be provided as single PDF file)			
Sl. No.	Documents	Content	File Types
1.	Technical Bid	Compliance Sheet as per Annexure – I	.PDF
2.		Organization Declaration Sheet as per Annexure - II	.PDF
3.			.PDF
4.			.PDF
Envelope – 2			
Sl. No.	TYPES	Content	
1.	Financial Bid	Price bid should be submitted in PDF format.	.PDF