

INDIAN INSTITUTE OF TECHNOLOGY DELHI
Department of Chemical Engineering

Date: 05.08.2013

Ref: IITD/BCHE/PLN03/MAS/2013/flow

**Purchase of Demonstration Setup for Flow Control for
Instrumentation & Process Control Lab**

Quotations are invited for a laboratory scale demonstration setup for **flow control**, to be used for Chemical Engineering Undergraduate teaching and laboratory experiments in Instrumentation & Process Control Laboratory. The setup should involve flow control in a typical chemical engineering process (say regulating flow rate of water to a tank).

(Quantity: 1)

Brief Description of Setup, and Requirements:

As envisioned, the setup would consist of a water tank from which water is pumped to a pneumatic flow control valve and a flow measuring device along with provision for manipulated variable, disturbance, measurement and controlled variable. The second part consists of the control loop, along with flow transmitter and PID controller that can be connected to a computer that allows for set point changes, disturbance changes, and tuning the PID control parameters.

The process to be controlled is to be proposed by the vendor, with the following constraints:

- Setup should be a table-top unit
- The process should be self-contained with minimal external requirements, which should be clearly stated (e.g. water or compressed air or power supply etc.)
- Optional accessories available (e.g. mini compressor for air supply) can be quoted separately.
- Hardware for manipulating the various system variables to be provided
- Whatever control hardware, piping, signal transmitters, control valves, etc. that are needed for smooth functioning of the above control logic should be provided.
- The whole setup should be supported on a well-designed housing, fixed to a base plate, and have a clear and accurate digital display.
- The process parameters are to be controlled through a computer, so that the necessary output (e.g. 4-20 mA signal through RS232), data-acquisition board/module and necessary (educational) software is to be included. The software should be able to export the data in standard formats, like Excel or text.
- It should be possible to demonstrate the control action with and without the controller (open loop vs closed loop)
- Scope for demonstrating controller tuning based on standard methods should be available.
- Automatic tuning option.
- Appropriate documentation of the experiment and setup

The setup should be complete in all aspects, and any accessories. The vendor is to recognize that the setup is to be used primarily for teaching and hence whatever accessories may aid the teaching of chemical process control & instrumentation in laboratory/classroom/environment should be included/quoted for. It should be possible to complete a full experiment in about 2 hours. The submitted bid needs to have detailed diagram, operation characteristics, specifications, etc. of the unit.

Terms and Conditions:

1. IIT Delhi is exempted from paying custom duty under notification No.51/96 (partially or fully) and necessary “Custom Duty Exemption Certificate” can be issued after providing following information.
 - a. Shipping details i.e. Master Airway Bill No. and House Airway No. (if exists)
 - b. Forwarder details i.e. Name, Contact No., etc.Custom Duty Exemption Certificate will be issued to the shipment in the name of the Institute and Bills of Entry should be submitted to IIT Delhi later on.
2. Either the Indian agent on behalf of the Principal/OEM or Principal/OEM itself can bid but both cannot bid simultaneously for the same item/product in the same tender. If an agent submits bid on behalf of the Principal/OEM, the same agent shall not submit a bid on behalf of another Principal/OEM in the same tender for the same item/product.
3. If the bidder is an authorized dealer of any manufacturer, the authorized Indian dealership certificate from the principles should be enclosed. Similarly, proprietary certificate for proprietary items should be provided.
4. IIT Delhi is exempted from paying Excise Duty and necessary Excise Duty Exemption Certificate will be provided for which following information is required.
 - a. Quotation with details of Basic Price, Rate & Amount on which ED is applicable.
5. Please quote prices of imported items at FOB (Freight on Board) IIT Delhi inclusive of all taxes, freight, delivery, installation and onsite training charges. The quotation should provide the total price of the system including all taxes and transportation charges.
6. In case IIT Delhi is imposed with demurrage charge due to import on CIF, the entire demurrage charge has to be borne by the Indian Agent of foreign supplier.
7. Three years comprehensive warranty be provided and AMC price beyond 3 years should be mentioned separately.

Payment against delivery: Payment by wire transfer after receipt of material and satisfactory installation.
8. Delivery period: within 1 month from the issue of supply order.
9. Warranty: at least 3 years onsite warranty should be provided.
10. The quotations must have validity of at least three months.
11. The products will be used for educational purposes. Any applicable academic institution discounts should be offered and stated clearly.
12. Authority of IIT Delhi reserves the right to reject any or all quotations without assigning any reasons.

Please submit the proposal in **separate** technical and commercial bids (each in separate sealed envelope). All bids must reach at the following address latest by **5:00 p.m.** on **19.08.2013**, in sealed envelopes as stated above.

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