Department of Biochemical Engineering and Biotechnology

September 4, 2012

Specifications for Water Purification System

The complete water purification system should comprise of two stages as described below :-.

Stage I

Stage 1 of the system must comprise of the following:-

a. **Pre-filter system -To provide a suitable pre-filtration system for bringing the particulate concentration from ~ 1200 ppb (of the tap water supply at IIT Delhi) to 100 ppb before use with the R.O. System.**

b. RO water system with a dispensing rate of **1 Liter per minute or better and large cartridges of over 20 inches each for a long life. The removal efficiency of** the RO water system should be as follows:-
Suspended solids - 100%, Bacteria - 99.5%, Viruses -99.5%, Pyrogens - 99.5%, Organic, molecular weight >250 daltons - 97-99.5%, Monovalent inorganics - 94-96%, Divalent Inorganics - 96-98%, Trivalent Inorganics- 98-99%

The water quality should be suitable enough for media preparation for bioreactor cultivations, general microbiology work, general immunology & other activities such as glassware washing, deionization systems, glassware rinsing, buffer solution preparation, standard solution preparation etc.

- 2 extra pre filter, carbon filters (total 3 each) to be included
- Storage tank of around 15 -20 Litre at outlet of RO.
- System should include automatic flush valve to extend RO membrane life: It should automatically initiate the purification process by flushing the RO membrane and tank for three minutes after each 12 hour period of inactivity.

STAGE II

For Ultra pure water

Water quality must be good enough for Inorganic analysis: Ion chromatography, Inductively coupled plasma/ mass spectroscopy, Atomic absorption, flame emission spectroscopy, trace metal analysis, Organic analysis such as Liquid chromatography, HPLC, Gas chromatography, Electrophoresis, Total organic carbon, **Tissue culture,** Clinical, General Microbiology, General Immunology, Recombinant DNA etc.

Purification techniques used / filters included to be as follows :-

Carbon filtration, De-ionization - 2 no's of polishing grade mixed bed, Organic adsorption cartridge, Ultrafiltration 0.1 micron, Ultraviolet reactor (with dual wave length of 185 & 254 nm), hollow fiber filter (optional)

- **Smart independent dispensing system (Dispensing Gun)** for low volumes of ultra pure water.
- In line pressure regulator
- Dispensing flow :- **1.5 - 2 L /minute of Type I** or 1 L/ m with hollow fiber filter

Extra membranes to be included within the offer :-
Pre-filters and Carbon Filters for RO system :- 9 No.'s each
R.O. : 2 No.'s
Polishing Station / Ultrapure Station :- 2 Sets each complete

All items necessary to operate the equipments & necessary spare parts for three years must be quoted.

Terms and Conditions –

1. Please submit the TECHNICAL and FINANCIAL bids in separate sealed envelopes. Mark the two envelopes clearly as "Technical Bid" and "Financial Bid". Both the sealed envelopes should be sent in a single sealed envelope, clearly marked as "**Quotations for Purchase of Water Purification System due on 26-09-12**". The quote should reach the following address on or before 26-09-12, up to 5 PM.

   Prof. A. K. Srivastava
   Department of Biochemical Engineering and Biotechnology
   Indian Institute of Technology Delhi
   Hauz Khas, New Delhi-110016

2. Please quote F.O.B. & CIF New Delhi prices separately.
3. Technical bid should contain **compliance chart** based on specifications as per NIQ, but must not contain any commercial information
4. The quotations should be in the currency of the country of origin and should be valid for at least three months.
5. Please attach all the technical literature and a list of similar installations done in India.
6. The warranty on the equipment should be clearly specified.
7. Payment should be through irrevocable letter of credit.
8. If the quote is being submitted by the representative of the Principals/manufacturer themselves, a valid Agency ship/Dealership Certificate authorizing the agent to quote to IIT Delhi on behalf of the Principals should be enclosed.
9. Complete set of manuals for the operation of equipment should be given.
10. Clearly specify the installation requirements—such as space, power, frequency, environment (Temperature and humidity) etc.
11. The institute reserves the right to accept or reject any / all the quotations without assigning any reasons thereof.