Specification for Laboratory Water Purification Systems

A. Analytical grade water system

1. Product water should have
   i) Resistivity > 5 Megaohm-cm
   ii) Conductivity < 0.2 Micro-Siemens
   iii) TOC level < 40 ppb
   iv) Flow rate > 8 lit / hour

2. The 'Analytical grade water system' should have
   i) Pretreatment cartridge with anti-scaling compound, activated carbon & 1-micron filter.
   ii) A high flux thin film Reverse Osmosis (RO) membrane
   iii) Self-regenerating Electrodeionisation module (EDI) with mixed bed ion exchange resin

3. The RO membrane & EDI module of 'Laboratory water purification system' should be compatible with feed water quality of free chlorine level of 3 ppm, SDI upto 20 and conductivity of 2000 Micro-Siemens.

4. EDI module with mixed bed ion exchange resin, should have carbon bead at cathode and should not have conditioning cartridge before EDI

5. System should have auto diagnostic facility with Error & Alarm

6. Monitoring of system should be through Coaxial resistivity cell, with cell constant 0.01cm -1

7. PE tank should have 100lit capacity. It should have sensor rod float switch for auto cut-off.

8. System should be supplied along with PREFILTERATION UNIT, having 5-micron & 1-micron depth filter to arrest particulate matters in the feed water & also having noise free DC pump.

B. Ultra pure water system

1. Ultra pure water system should take at least 100 Micro Siemens of Water conductivity and should deliver ultra pure product water by point of use dispenser with rocker arm, volumetric dispensing and auto shut off facility having
   i) Resistivity > 16 Megaohm-cm
   ii) Conductivity < 0.06 Micro-Siemens
   iii) TOC level < 10 ppb
   iv) Flow rate > 1 lit / min

2. Should have separate feed water specific purification cartridge and application specific polishing cartridge

3. Should have a vertically placed dual wavelength (185 & 254nm) hotcathode, UV lamp with ballast and quartz sleeve placed in a electro polished housing.

4. Final filter 0.22 micron PVDF validated membrane. System should have option for producing Pyrogen/Rnase-free water with UF cartridge.

5. Point of use gun with rocker arm and volumetric and fixed volume dispensing (3% accuracy), with a green LED

6. Built in coaxial resistivity meter with a cell constant of 0.01/cm and 0.1degree C accuracy thermistor

7. Maintenance display for sanitization, exchange purification cartridges, activation of fast flush, depressurization, air purge

8. Control display showing product water resistivity / conductivity both compensated and non compensated mode, product water temperature, product water resistivity greater or below set point

C. Other points:

1. The supplier should have agents in India to provide after sales service and maintenance.

2. The equipment should be Guaranteed for a period of 2 years from the date of commissioning. During the period, if there is any repair to be carried out at the suppliers works, transportation cost of equipment / component besides repair / replacement charges, if any, should be borne by the supplier.

3. Catalogue related to each and every item should be enclosed.

4. Installation & commissioning to be carried out by supplier at site at Corporate R&D, BHEL, Hyderabad, India.

5. Commissioning charges, if any, to be indicated.

6. Dimensions of equipment, weight and space requirements to be given

7. Pre-installation requirements should be furnished.

8. Compliance statement of specification to be submitted along with the offer. Without compliance statement, the offer is liable to be rejected. All tender specifications to be compared with equipment offered line by line and documentary evidence must be enclosed by the supplier along with quotation.

11. Two copies of operating manual to be provided.

12. The Offer should include sufficient Spares & consumable items used in 'Analytical grade water system' & 'Ultra pure water system' to ensure trouble free operation for at least 2 years.

For any Technical Clarification, please contact :

Shri K Venugopal, AGM(CNT) at E-mail ID : venugopal@bhelrnd.co.in