

**Open Tender Notification for the procurement of “Lab Water Purification System – Type I & II Water Quality” at the Biochemistry Department, Indian Institute of Science, Bangalore**

**(Last date of submission of tenders: 18<sup>th</sup> Jan. 2024)**

**(TENDER FROM DOMESTIC VENDORS)**

**Tender Ref No: BC/WS/012,**

**Date: 26<sup>th</sup> Dec. 2023**

Dear Sir/Madam,

**Sub: Lab Water Purification System – Type I & II Water Quality”**

**This is a domestic tender notification meant for the purchase of a “Lab Water Purification System – Type I & II Water Quality”** towards the purpose of Standalone Type II System which can produce purified water with  $>5 \text{ M}\Omega\cdot\text{cm}$  @25 °C resistivity with pre-treatment cartridge, Reverse Osmosis, followed by standalone Type-1 Water Purification System which can produce Ultrapure Water with  $18.2 \text{ M}\Omega\cdot\text{cm}$  @25 °C resistivity with TOC<5 ppb. Your quotation should clearly indicate the terms and conditions of the quotation, delivery schedule, entry tax, payment terms, warranty coverage etc. The quotation should be submitted in two parts: **Part I (Technical Bid) and Part II ( Commercial Bid)** and both should be submitted in separate sealed envelopes. The Technical bid should be exactly the same as the Commercial bid except that prices must not be shown in the technical bid. The Technical bid should have an item-wise compliance report of all specifications indicated below. **The last day for submitting the bid is 18<sup>th</sup> Jan, 2024 from the date of tender notification.** The offer should be valid for a period of at least 90 days from the last date of submission of quotes.

- 1. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.**
- 2. The quotations should be on FOR-IISc Bangalore basis in INR only.**
- 3. The Bidder should belong to either Class-1 or Class-2 suppliers distinguished by their “local content” as defined by recent edits to GFR. They should mention clearly which class they belong to in the cover letter. a) Class-1 supplier: Goods and services should have local content of equal to or more than 50%. b) Class-2 supplier: Goods and services should have local content of equal to or more than 20 % and less than 50%.**
- 4. Bidders offering imported products will fall under the category of non-local suppliers. They cannot claim themselves as Class-1 local suppliers/Class-2 local suppliers by claiming the services such as transportation, insurance, installation, commissioning, training, and other sales service support like AMC/CMC, etc., as local value addition.**

5. Purchase preference as defined by the recent edits to GFR (within the “margin of purchase preference”) will be given to the Class-1 supplier.
6. MSMEs can seek an exemption to some qualification criteria. IISc follows GFR2017 for such details.

### **Lab Water Purification System – Type I & II Water Quality**

Standalone Type II System which can produce purified water with  $>5 \text{ M}\Omega\cdot\text{cm}$  @25 °C resistivity with pre-treatment cartridge, Reverse Osmosis, followed by standalone Type-1 Water Purification System which can produce Ultrapure Water with  $18.2 \text{ M}\Omega\cdot\text{cm}$  @25 °C resistivity with  $\text{TOC} < 5 \text{ ppb}$ .

#### **Feed Water Specification:**

Water Type: Portable water

Pressure: 2 bar min to 6 bar max (29 to 86 psi).

Conductivity:  $10 \mu\text{S}$  to  $2000 \mu\text{S}$

pH: 4 to 10

Hardness (as  $\text{CaCO}_3$ ):  $< 300 \text{ ppm}$

Silica concentration:  $< 30 \text{ ppm}$

Carbon dioxide concentration ( $\text{CO}_2$ ):  $< 30 \text{ ppm}$

Langelier Saturation Index (LSI):  $< 0.3$

Fouling Index (FI5) or Silt Density Index (SDI): 7

#### **Stage:1: Prefiltration Unit:**

The Prefiltration unit must consist of: Booster pump [Centrifugal Type] with controller, Filter with housing, Chassis, Main socket and power cord, Pressure Gauge, Timer unit for cartridge replacement and other accessories. The prefiltration unit should also consist of 3- & 1-Micron depth filters to remove the particulate matter from the feed water. The unit should have the automatic low/high pressure cutoff mechanism. The Pre-filtration system should be manufactured by the same company which manufactures the Water Purification system and indigenous unit if quoted will not be considered. The complete product catalogue of the prefiltration unit from the manufacturer is mandatory to be uploaded, Individual filter quality certificate if only submitted will not be considered.

#### **Stage: 2: Pure Water/Type-2 water Generation System:**

- Pre-treatment cartridge with Poly Phosphate [anti-scaling compound], 0.5-micron filter and activated carbon, with Radio Frequency Identification tag [RFID] for easy traceability [Bar code or any other technologies will not be considered] & to have water consumption data stored in the system memory. In addition, the activated carbon is impregnated with a small level of silver to prevent bacteria growth. Users

should have the provision to go to the menu option and find out the main consumable's status and traceability.

- System should have Pump with unique temperature feedback mechanism so that it works not only in high feed water temperature situations but also in low and high feed water temperature situations. The benefit of the same needs to be explained/highlighted with the help of the flow schematic in the product broucher.
- Latest Polyamide Thin film composite membrane RO which should be capable of achieving 99% rejection of Ions, Organics, Particles. Automatic product flow regulation on feed water temperature between 10 and 35 °C (45 to 95 °F).
- RO Reject Water recovery: Automatic regulation between 45 and 75% based on water analysis parameters introduced in the controller (E.R.A technology).Also it should have conductivity cell before and after RO to measure performance of RO membrane.
- The System should have the Electro De-ionization module (EDI Module) & EDI module should contain conductive carbon Beads in Cathode compartment to avoid the use of softener before the module. Online Resistivity cell should also be present after EDI module to check the final type-2 product water quality.
- Product water is sanitized as a final purification step by passing through a 254 nm UV lamp providing bacterial removal at 4 LRV (log reduction value).
- System should have 24/7 Real time remote monitoring compatible and should have the provision to connect with BMS. It should have touchscreen display with detail water quality monitoring of makeup, storage. System should be capable of archiving data through USB port up to 2 years. It should have complete graphical traceability and real time monitoring of consumables with attached RFID Tag.
- Information menu should contain all the details to understand the main system's performance, (Product water Resistivity and % of RO rejection, RO pressure, RO water quality, RO membrane efficiency % ion rejection, RO feed water conductivity and Permeate water conductivity etc.
- Storage Reservoir: Storage capacity should be 100 liters with material of construction of Polyethylene for storage Type II Water. It should be controlled by water purification unit. Tank should be fully drainable capable of collecting water from the bottom. The tank should have Opaque walls to block sunlight and to prevent algae development, should be Cylindrical in shape to minimizes surface area in contact with water. The tank should have Conical bottom which will allows complete draining for cleaning and rinsing. The tank should also have front valve for manual dispense of pure water. The tank must be of Compact space-saving design. Vent filter should also be provided which is built with activated carbon to adsorb volatile organics, a soda-lime bed to remove CO<sub>2</sub>, a Durapore® hydrophobic membrane for particle and bacteria retention.

### **Product Water Quality: Type-2 water**

Should meet or exceed ASTM Type II water:

Resistivity: >5 MΩ.

TOC: < 30 ppb.

Flow Rate: 40 Liters/Hour.

### **Stage: 3: Ultra-Pure Water/Type-1 water Generation System:**

Type-1 System should have the following technology insight:

- Nanotechnology based Ion Exchange resin to achieve faster kinetics for ionic removals.
- The water system should have a built-in UV lamp with emission at 185 nm and 254 nm wavelength for bacterial germicidal effect & photooxidation of organics.
- Option for attaching various application specific packs simultaneously for multiple application like LC-MS, Bacteriology, GC-MS, Endocrine Disruptors, PCR, Cell Culture.
- System should have the provision to go for hibernation mode (when lab is closed for more than 3 days) to save the energy & reduce the risk of contamination when not in use.
- Touch Screen colour Display: Size -7" Touch Screen LCD Display.
- Display Home screen should contain the details of Water Quality, Dispensing Options, Tank Water Level, Menu, Recirculation, Options for Dispense Report and Alerts/Alarms if any.
- Display should have the Screen-saver options for saving the power.
- Display menu should have multiple menus for Consumables, Maintenance, Information, Settings.
- Consumables Menu should have the option for Real time Graphical Monitoring of consumable status. Presence of E-Sure tag in Type-1 system consumables for traceability and better inventory planning.
- Maintenance menu should contain self-guided wizard (Graphical representation) of Pak/Cartridges replacements steps which intern will help the users to perform the activity themselves without any intervention of Service engineers.
- Precise on-line conductivity monitoring having a 0.01 cm<sup>-1</sup> cell constant and a 0.1° C sensitive thermistor. No of Conductivity/ Resistivity Cell should be 5 or above to ensure the Input output water quality at various filtration stages.
- In-line TOC measurement with 185nm lamp should have the options to show TOC values in display for every dispensing.
- System should have options for volumetric dispensing to manage different volume requirements from ml to Liters.
- System should have the options to manage at least 3 different flows (High, Mid, Low) based on the requirements.
- Dispensing gun should contain magnetic lock system with dispensing arm to avoid the risk of breakage due to handling error.
- It should have the provision for hands free dispensing to reduce the risk of contamination through hands or human intervention.
- System should have the options for connecting water dispenser (along with main units) in 4 different places based on the Lab layout. Also, there should be a provision to connect dispensing units complete remotely to save effective bench space & enhance ease of use.
- System should have the check and dispense lights options.
- As and when required entire dispensing history should be available that can provide information on water quality and system maintenance, which can be downloadable through a data cable or USB key.

- Service (Contracts) historical data should be managed through cloud base online solutions for easy access of data to the users in remote conditions.
- Service Support: Direct Service Support from the manufacturer only not by any third party.
- common email-id/toll free number to register service-related issues.
- Wide range of service offerings like on-site verification/calibration performed directly by manufacturers only.
- Certifications & Compliance report for Water System: CE, cUL, FCC, ISO® 9001 v. 2000- and ISO® 14001 or better, All certificates need to be submitted after installation of the equipment.

**Product Water Quality: Type-1 water:**

Resistivity: 18.2 MΩ·cm at 25°C,  
 TOC (ppb) ≤ 5 ppb,  
 Bacteria < 0.01 cfu/ml,  
 Flow rate: Up to 2L/min.

Water purification systems should be manufactured in an ISO® 9001 v. 2008 and ISO 14001- v. 2004- or better, registered manufacturing site. Should be certified for safety and electromagnetic compatibility (CE, cUL; FCC). Total Warranty of Two Year from the date of installation [Including consumables for two years operation]. The product installation and demo should be given to all the users after installation without any additional cost. The installation, maintenance, service of the system should be carried out by the manufacturer owned service engineers and not by any third party, with relevant service engineer certification. Quotes are expected only from reputed manufactures who has excellent track record of selling Lab water purification systems, having minimum of 800 or more Lab water purification system installations in Karnataka, specifically more than 75 installations in IISC Bangalore.

- 1. Quote should come only from Indian Original Equipment Manufacturer (OEM) or their Indian authorized distributor.**
- 2. The quotations should be on FOR-IISc Bangalore basis in INR only.**
- 3. The Bidder should belong to either Class-1 or Class-2 suppliers distinguished by their “local content” as defined by recent edits to GFR. They should mention clearly which class they belong to in the cover letter. a) Class-1 supplier: Goods and services should have local content of equal to or more than 50%. b) Class-2 supplier: Goods and services should have local content of equal to or more than 20 % and less than 50%.**
- 4. Bidders offering imported products will fall under the category of non-local suppliers. They cannot claim themselves as Class-1 local suppliers/Class-2 local suppliers by claiming the services such as transportation, insurance, installation,**

**commissioning, training, and other sales service support like AMC/CMC, etc., as local value addition.**

- 5. Purchase preference as defined by the recent edits to GFR (within the “margin of purchase preference”) will be given to the Class-1 supplier.**
- 6. MSMEs can seek an exemption to some qualification criteria. IISc follows GFR2017 for such details.**

**Important: Please note that the Lab Water Purification System – Type I & II Water Quality should match all technical specifications and item- wise compliance must be listed in a detailed document in the technical bid**

**The sealed tender documents should be addressed to The Chair, Department of Biochemistry, Indian Institute of Science, Bangalore 560 012. Last date for receiving queries is 18<sup>th</sup> Jan. 2024 from the date of tender notification.**

Sincerely,

The Chair  
Department of Biochemistry,  
Indian Institute of Science  
Bangalore - 560 012.