

TECHNICAL SPECIFICATIONS OF DI WATER PURIFIER FOR PROF.MGKML,CREST HOSAKOTE

PLACE: DETAILS OF REQUIREMENT OF DE-IONISED WATER PURIFICATION PLANT FOR PROF M.G.K.MENON LABORATORY FOR SPACE SCIENCES AT **CREST** CAMPUS OF THE INDIAN INSTITUTE OF ASTROPHYSICS(IIAP), HOSAKOTE.

USE: THE PROPOSED DI LAB PURIFICATION PLANT WATER WILL BE USED IN THE ULTRASONIC CLEANER TO CLEAN THE PAYLOAD OPTICAL COMPONENTS & MECHANICAL COMPONENTS MADE OF INVAR / TITANIUM / ALUMINIUM 6061(T6)/ STAINLESS STEEL/GLASS (ZERODUR)/ETC.,

TECHNICAL REQUIREMENT

Lab Water Purification System–Type II Water Quality

Standalone Type II System which can produce purified water with 5- 15 MΩ.cm @25 °C resistivity with pre-treatment cartridge, Reverse Osmosis, Electro Deionization with feed water acceptance of 100 to 2000 μS/cm conductivity, Fouling Index (SDI) < 12, Total Chlorine < 3 ppm.

Stage-1:Prefiltration system:

- 2 Stage pre-treatment system with 5 & 1 micron depth filters. It should have one pressure gauges & Pre filtration unit which can take TDS up to 5000 & SDI(Silt Density Index) up to 50. Noise level should be Less than 50 Db. Should have automatic low/high pressure cut off. Must come with

DC pump with built in sensor & VFD ,0-2 pressure at 120L /hr. Inlet screen filter to DC pump should be provided.

Stage-2:Reverse Osmosis with Electro Deionization technology

- 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 & to have water consumption data for one year from the date of cartridge installation. Should have Pump with unique temperature feedback mechanism.
- High quality RO membrane with 95-99% rejection all dissolved organics (MW > 200 Dalton), microorganisms and particles. Should have high water recovery with its RO recovery loop having capillary tube and diaphragm valve. Conductivity cells before and after RO, which would provide the efficiency of the membrane in rejecting the contaminants as well as the permeate water.
- Electro deionization module with auto regeneration by a weak electric current, eliminating the need for chemical regeneration or replacement of DI resin cartridges. EDI (Electro Deionization) module should not require softening pre - treatment. Should have carbon beads at cathode of the EDI module to prevent scaling of the module. Should have coaxial resistivity cell with a cell constant of 0.01cm^{-1} .EDI Module is mandatory and no DI cartridge to be used.

Stage-3 -Storage Tank

- To store Type II water ,should have external separate 100 Liter capacity. The Tank should also have inbuilt tank level sensor, sensor rod float switch, programmed to have high and low level cut-off based on water level in the tank.

Type II -Pure Water Specification

- Production Flow Rate : 15 Liter/Hour
- Conductivity: 0.2 us/cm to 0.066 us/cm [5-15 MΩ/cm Resistivity]

Water purification systems should be manufactured in an ISO® 9001 v. 2008 and ISO 14001-v. 2004 - registered manufacturing site. Should be

certified for safety and electromagnetic compatibility (CE, cUL; FCC). The water system should have a built - in Quick Reference Guide for immediate understanding of the main operations with 1 year Warranty.

The water produced from the purification system should meet the highest standard and should ensure consistent quality.

1. Resistivity - >5M Ω -cm AT 25 DEG C
2. Conductivity - <0.2 Micro Siemens/Cm
3. TOC - <30 ppb
4. Flow - 15 Lit/Hr
5. Display - Resistivity/conductivity measurement display
6. Electrical Requirement - 230V/50Hz

Storage Tank Requirements of purified / DI water

- 100Lit - 1No poly ethylene material
- 50Lit - 1 No poly ethylene material (optional)
 - To protect purified water, the storage tank should include activated carbon to absorb volatile organics, a soda lime bed to remove CO₂ and a hydrophobic membrane for particle and bacteria retention.
 - Should have smooth inner surface to prevent the formation of bio film

- Hermetically sealed lid to prevent the air entry

Inlet water Specification:

1. Water quality - Tap water
2. Pressure - 0.2 to 1 bar
3. Temperature - 5 to 40 deg C

Installation & Commissioning

Installation & Commissioning at site should be done by Vendor. Necessary Power supply and drainage facility will be provided by IIAP. The product demo should also be given to all the users without any additional cost.

Warranty & Service Details:

Vendor should clearly specify the warranty details of each and every component and service availability.

THE BID SHALL BE IN TWO PARTS

A) TECHNICAL:

WITH TECHNICAL DETAILS/LITERATURE OF THE OFFERED PRODUCT, TABLE OF COMPLIANCE WITH SPECIFICATIONS GIVEN IN THE RFP, AND DELIVERY/INSTALLATION SCHEDULE

B) COMMERCIAL:

WITH PRICE, PAYMENT TERMS ETC.

THE COMMERCIAL BID SHALL GIVE THE PRICE OF EACH OPTIONAL ITEM (If any) SEPARATELY.

EACH OF THE ABOVE TWO PARTS SHALL BE PLACED IN A SEALED ENVELOPE, I.E. TECHNICAL IN ONE ENVELOPE AND COMMERCIAL IN ANOTHER ENVELOPE.