

## **SPECIFICATION OF MEDICAL CARE R.O. WATER PLANT FOR HEMODIALYSIS 2000 LTR**

It is RO Plant for Hemodialysis with Capacity 2000 Litres per hour.

### **GENERAL FEATURES**

Clinical Purpose	RO water for haemodialysis to be applied in therapies such as HD, SLED, HDF and HF
Product name	RO Water Plant for Haemodialysis
Plant capacity (Ltrs/Hr)	2000
Plant type	Microprocessor controlled Dual stage RO water system
System type	Online, Offline
System shall have microprocessor based control panel for ease of operation and inbuilt process logic	
System shall have auto start/stop based on water level in the supply tank	
System shall be equipped with electrical panel/MCB for plant protection	

### **PRE-TREATMENT MODULE**

Raw water mesh filtering size 50 to 200 microns to prevent big dust/sand particles with back wash control	
Vertical raw water tank of food grade quality of minimum 10000 litre capacity	The tank should be placed in a shaded area and not directly exposed to sunlight

with automatic water float and dry run protection	
Raw water feed pump type	Centrifugal
Double raw water pump (one active and the other stand by)	
Raw water feed pump capacity (LPH)	4000
Sand/iron filter (20 micron) and sample valve	Sand filter should have sand particles of different grade. Should have provision of fully automatic backwash and rinse cycle every day
Double Water Softener: one in operation while the other in standby and vice-versa with sample valve, a Brine tank and automatic regeneration capacity	
Double activated Carbon filter to remove Chlorine and Chloramines with sample valve	
Micron particle filter after activated Carbon filter for removing suspended particles more than 5 micron size	
Pre-treatment module should have programmable back wash and regeneration facility	
Online rotameter for measuring flow	
Pressure monitoring facility of all filtering stages	
Sample valve facility for all filtering stages	

**RO UNIT FOR MAIN TREATMENT**

Distribution of RO plant water sufficient for 30 to 40 dialysis machines	
Monitoring facility for input and output water conductivity, feed water pressure and injection flow rate	
Alarms against low feed water, high output conductivity and high temperature of pump motor	The alarms should be visible/audible in dialysis unit or a CCTV should be provided in Dialysis Unit to see any alarm condition
Unused water feedback facility to RO unit for saving on water injection in online mode	
The unit should be programmable and automatic rinsing/flushing facility at regular intervals when system is not in use, to prevent drying of filter media	
Emergency mode operation to run permeate output in case of electronic failure	

**RO MEMBRANE**

Efficiency of unit with maximum saving of water (%)	55 to 75
Sample valve for permeate	

**POST TREATMENT**

Material of Booster pump (offline)	Stainless Steel 316; One additional booster pump should be supplied with the system for the offline mode
Vertical storage water tank of 750 L or more capacity of food grade material with conical shape to avoid collection /stagnation of water at base of tank with automatic float	

control for filling and dry run protection for off-line system	
Direct and indirect feed for full closed loop distribution piping system	
Chemical disinfection and decalcification	Semi-automatic/Automatic
Provision of volume controlled heat disinfection of permeate loop	
The permeate should be supplied to distribution loop through 0 point 2 micron bacteria filter for offline system using PEX piping and high grade SS316 push pull type connectors for water outlet at dialysis machine connecting points at several areas.	Initially, the number of such points should correspond to the number of dialysis machines to be installed or already in place. However, there should be a provision to expand up to 40 points (without additional cost for the user) as more dialysis machines are added to the department.
The distribution loop should contain loop pressure regulator to maintain the desired loop back pressure	

#### **USER INTERFACE**

Digital display of values of Conductivity/permeable flow/temperature/pressure monitoring/reject flow	
Touch screen/button type illuminated display for easy to operation of user	
Software update via SD Card or Ethernet	
Memory storage device	

#### **STANDARD CONSUMABLES AND ACCESSORIES**

All media and consumables (membrane, cartridge filter, filter media, chemicals,	Price list of consumables & spares to be given. Rates should be fixed for 10 years after
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softener, salt etc.) for setting up and standardization should be provided	installation. Benefit of decrease in rates should be passed on to the hospital.
Seller should ensure the availability of all consumables required to run the RO plant	For the next 10 years.
UPS of suitable capacity to be provided	

## **CERTIFICATIONS & REPORTS**

Submission of Test Report for permeate water quality as per AAMI/ISO-13959/13500 from Central Govt/NABL/ILAC accredited Lab to prove the conformity to declared specifications after installation	Output water quality should match AAMI/ISO standards at all times
Product certification	BIS
Certification, performance and safety standards specific to the device	
Submission of all the certifications and test reports to the buyer	
Supplier to perform installation, safety and operation checks before handover	

All Pre-installation requirements along with site preparation should be provided by the seller to the buyer well in advance before the supply of equipment

Others :

1. Bidder should ensure TDS of less than 10 in final product water at all times
2. Reject water should not exceed the prescribed limit at all times
3. UPS of appropriate kV should be provided; bidder should also provide warranty as per ESI norms and service facility (CMC) for the installed UPS (in addition to RO plant per se)
4. The bidder must be willing to provide on-site training for hospital personnel, covering both basic operational aspects and machine troubleshooting. The training should be conducted by full-time qualified trainers, with certification issued to personnel upon completion. Additionally, the bidder must be prepared to offer re-training or refresher training, typically once a year (on the average), if requested by the user department, until the time plant remains operational.

5. Bidder should provide water quality testing facility as per acceptable standards from a reputed testing lab (that is acceptable to Dialysis Unit Incharge) at the start and at 3 monthly thereafter. The cost of testing should be included in CMC. (\*Rates for ad hoc testing in addition to 3 monthly testing should be stated)
6. Bidder should be willing to coordinate with hospital authorities to ensure the re-use of reject water for purposes such as gardening, landscaping, sanitization etc.
7. All maintenance including spare parts (electrical, mechanical, plastic etc.) software consumption should be included in warranty period and in CMC charges.
8. RO unit should be maintained by manufacturer, supplier, or authorized dealer through skilled staff.
9. Only vendors with an in-house service facility in India will be considered.
10. All piping (of PEX material) and related plumbing work related to unit as per design of unit should be provided by supplier at its cost.
11. The manufacturing company must have an installation base of a sufficient number of RO systems with at least 1000 LPH capacity for haemodialysis in India.
12. The bidder must submit at least one performance certificate from government hospitals/institutions where a Dialysis RO plant of at least above-stated capacity has been installed.
13. Tender should be submitted with full quality assurance certificate (EC/BIS/ISO)
14. Company should provide onsite demonstration if deemed necessary.
15. Service engineer for repair and maintenance should be provided by Manufacturer certified local representative or Principal Company.
16. The bidder should inspect the proposed dialysis unit and review the hospital building plan in order to prepare a comprehensive site plan, including any necessary prerequisites. The bidder should specify key requirements such as the room size, air-conditioning needs, locations for water supply and drainage points, and the type of flooring. All piping within the room designated for the RO plant, as well as drainage pipes connected to each individual dialysis machine, would be installed by the bidder at his own expense.
17. The after-sales service centre must be available in the city of the institution, providing support 24/7, 365 days a year. All complaints should be addressed promptly, with a maximum response time of 24 hours.
18. Undertaking by the Principal that the spare parts for the equipment shall be available for at least 10 years from the date of supply of equipment.
19. R.O. Unit should have fully integrated, compact design and Housing mounted system with wheels, housing membrane, high pressure pump and bypass mechanism.
20. Should have fully automatic volume-controlled heat and chemical disinfection cycle
21. The complete system should be fully programmable
22. Should have dynamic water-saving technology and rinsing system.

23. The cost of consumables for the first year should be included in the initial price bid.
24. The cost of spare parts and consumables should be reasonable, fair, and justified.
25. Every bidder should specifically provide the cost and specifications of the consumables which will be required for running of the machine.
26. The prices for the above items may be compared with those offered by other bidders for transparency and fairness by the hospital authorities.
27. System would operate in 3 phase power supply.
28. Comprehensive Maintenance Contract (CMC) for 5 years, covering all accessories, to commence after the 5-year warranty period.