

Request For Proposal For The Supply, Delivery, Installation and Commissioning Of Reverse Osmosis Water Treatment System, Centralised Acid Concentrate Delivery System and Haemodialysis Machines

REQUIREMENT SPECIFICATIONS				
Specification of Reverse Osmosis Water Treatment System with Heat Rinse				
Description of function				
Water plays a vital role in haemodialysis treatment. Reverse osmosis water treatment system compliments our superior standards in water quality and serves our mission to deliver high-quality dialysis.				
General Specification				
S/No	Parameters	Specifications	Comply (Yes/No)	Vendor Comment
1	Dual-stage RO system: A complete dual stage RO system that consists of Break tank / Soft water tank, valves, indicators, connectors, membranes, pumps, PLC, Online monitoring system etc. Each stages must be able to operate individually.	Required RO Main system constructed with high medical grade materials for heat rinse with dual stage, able to operate individual stages		
2	RO Water disruption loop: (Primary Loop/Main Pipe). The main pipe that allows circulating purified water from the RO system to the Dialysis area and returning back unused RO water to the Break tank / Soft water tank.	High medical grade PEX pipe construction with 100% dead space-free construction and coupling with a double adaptor at the dialysis unit for hot/heat rinse.		
3	RO Water distribution loop: (Secondary Loop/recirculation loop - if). Branch out of lines/circulation from the Primary loop/ Main pipe to individual stations.	Option 1: Secondary loop/recirculation loop with ring piping design to avoid stagnant water, completely made of high-grade PTFE (Teflon) material with 100% dead space-free construction, and reinforced with stainless steel net for high durability for heat rinse Option 2: Medical/ High-grade PEX pipe/ Reinforced silicone tubing used for secondary/fluid fly loops construction for secondary loop/recirculation tube silicon material with 100% dead space-free construction, and reinforced for high durability for heat rinse.		
4	RO Membrane : Material	Polyamide material - ESPA (Energy saving Polyamide) with heat withstanding capability		
5	RO Membrane : Dimension	Required 8-inch diameters by 40-inch long spiral wound		

Authorised Signature: _____

Vendor's stamp: _____

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6	Operational Features			
	Permeate Flow (Based on the number of stations estimated 3 to 6 units of 8-inch membranes in the system)	Refer point 14 for the Requirement of Reverse Osmosis Water Treatment System Capacity		
	Retention capacity	Min 99 % retention capacity of inorganic substances		
	RO Membrane	Rejection Rate : Bacteria & Endotoxin >99%		
	PUB Raw Water pressure	Able to operate with ,Static pressure 2 - 6 bar and Dynamic pressure 2 - 3 bar		
	Membrane cleaning	Required membrane backwash rinsing / regular flushing at a regular interval		
	Auto ON/OFF	Programmable auto ON/OFF function for the entire week/ Month.		
	Disinfection heat disinfection	Function to do complete heat disinfection programmable for Auto and Manual.		
	Disinfection Chemical disinfection	Function to do complete chemical disinfection programmable for Auto and Manual		
	Sampling point	Minimum two sampling points, one at the start of the Primary loop and another one at the End loop.		
	Service menu	Password Secured menu for service technicians		
7	Security Features			Required Dual-stage RO system
				Able to operate emergency operation functions for Stage 1 and 2- Auto / Manual
				Able to detect and control Permeate overpressure
				Able to detect and control Permeate high conductivity
				Able to detect and control Permeate high temperature
				Able to detect and control Dry run protection
				Voltage stabilisation
				Traceability of alarms
				Operation and alarm history

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8	Monitoring Features	Permeate Flow		
		Concentrate Flow		
		Membrane pressure		
		Permeate pressure		
		Permeate temperature		
		Raw water, Concentrate and Permeate water conductivity		
		Online Monitoring: History and Event		
		Soft water Hardness (optional)		
		Chlorine & Chloramine (optional)		
9	Pre-treatment Specification:			
	Pre-filters	Replaceable 5 /1 micron filter Assembly (single/dual stage)		
		Feed water inlet filter /100-micron filter assembly/ Multimedia filter		
	Pre-Treatment Piping	UPVC grade with good quality of connectors and pipes		
		Metal flexible hose especially high-pressure handling areas like inlet and outlet of Carbon tanks Softener tanks and Multimedia filter		
	Safety	Backflow Preventer/ Non-returnable valve		
	Softener	Duplex (two) softener with auto and manual backwash function		
		Bypass facility		
		Softener tank capacity: Based on the RO system permeate flow		
		Operating pressure minimum 2 bar		
		Media -Synthetic Resin - Ion-exchanger		
		Duplex (two) charcoal filter with auto and manual backwash		

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	Activated Carbon Filter	Bypass facility for stage 1 and stage 2		
		Carbon tank capacity: Based on the RO system permeate flow		
		Operating pressure minimum 2 bar		
		Media - Activated carbon		
	Booster Pump	Two pumps with Bypass facility		
	RO Status Indicator	RO status indicator to be installed at Treatment Area including cable and accessories		
10	Warranty period for 3 years	Entire RO system with RO water loop (High medical grade PEX pipe) and Pre-treatment (Multimedia, Softener & Carbon tank controller and Booster Pump and leakage detector)		
11	Educational / Technical Training for BMEs	Minimum Two sessions of Technical training for NKF BMEs during the warranty period.		
12	Disposal of packaging material/	All packing materials and unwanted items to remove from site after commissioning.		
13	Additional Information	Please indicate the number of years of experience in relevant industry (Medical RO system)		
		Please indicate the number of RO systems installed in Singapore. Provide the customer details.		
14	Requirement of Reverse Osmosis Water Treatment System Capacity			
	DC	MP4KK (NKF Centre) (Retrofit) <small>JP-Apr-25</small>		
	Description			
	Estimated Number of Stations	36		
	Estimated Number of Machines	41		
	Estimated Number of Water Points (Inclusive of 1 water point for Centralised Acid Concentrate Delivery System (CDS))	44		
	Estimated Product Output/permeate flow	Min 2800 - 3200 L/hr		
	Estimated target month to issue Purchase Order	June - July 2024		
	Estimated target month of installation	October - November 2024		
	Layout	Available		