Ananya Medi Systems

Gandhi RO Turnkey Project

In its commitment to advancing healthcare and providing state-of-the-art facilities, Gandhi Hospital is embarking on a groundbreaking initiative to establish dedicated Liver and Kidney Transplant Centers. These centers will not only facilitate life-saving transplant surgeries but also incorporate cutting-edge features, including isolation rooms and intensive care units (ICUs). To ensure the utmost care for patients, the hospital has proposed the installation of a sophisticated Reverse Osmosis (RO) plant, specifically designed to meet the dialysis requirements of patients admitted to the ICUs.

Recognizing the importance of renal care for transplant patients, it is proposed to setup a double pass RO plant with a recirculation loop. This innovative approach is tailored to meet the dialysis requirements of patients admitted to the ICUs. Dialysis is a vital component of post-transplant care, especially for patients with compromised kidney function.

A double pass RO system involves the water passing through the RO membrane twice, ensuring a higher level of purity. This is particularly important for dialysis, where water quality directly impacts the effectiveness of the treatment. The recirculation loop enhances efficiency by allowing for the reuse of treated water, minimizing stagnation, dead ends and ensuring a continuous supply of purified water for dialysis procedures.

Benefits of Double Pass RO with Recirculation Loop:

1. Enhanced Purity: The double pass RO system ensures that the water used for dialysis is of the highest purity, meeting stringent healthcare standards. This is crucial for preventing complications in transplant patients with compromised immune systems.

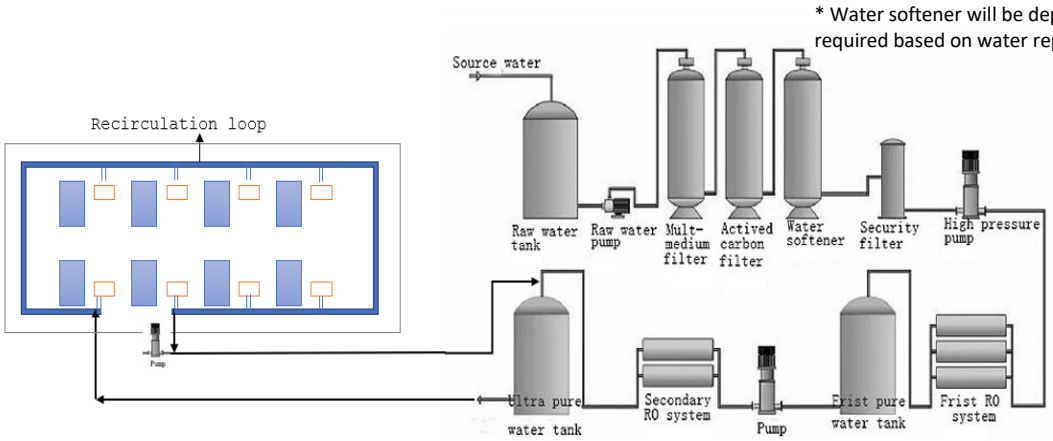
2. Efficiency and Sustainability: The recirculation loop minimizes water wastage by allowing for the reuse of treated water. This not only contributes to the hospital's environmental sustainability efforts but also ensures a continuous and reliable supply of purified water for dialysis procedures.

3. Reduced Operating Costs: While the initial setup of a double pass RO system may involve a higher investment, the long-term benefits include lower operating costs due to increased efficiency.

4. Minimized Infection Risk: The advanced water treatment provided by the double pass RO system significantly reduces the risk of infections related to dialysis. This is of paramount importance for transplant patients who are already susceptible to post-operative complications.

Registered Office: # 301, Vaishnavi Meadows, Indira Nagar, Telephone Colony Main Road, Kothapet
Hyderabad – 500035 || Telangana || India
Sales Office: H. No. 3-14-49/111, Road No. 6, Subhodaya Colony, Mansoorabad, Vanasthalipuram
Hyderabad – 500070 || Telangana || India
Email: ananyamedisys@gmail.com || Mobile: +91 9177774517

* Water softener will be deployed only if required based on water report



As per the two proposals submitted earlier on turnkey basis, one based on FRP and another based on Stainless steel usage in RO room. The cost break-up for the same is as follows:

FRP Proposal break up:

Double Pass RO System	**9.5 Lakhs**
Electrical work	75 thousand
Plumbing work	2.75 Lakhs
Shed	2.5 Lakhs

Applicable taxes extra

EQUIPMENT TECHNICAL SPECIFICATIONS IN DETAIL:

FEED PUMP	
Numbers Offered	Two
Max.Flow	9000 Liters Per hour
H.P	1.5 hp
Make	CNP/LEO/LUBI
RAW Water Tank	5000 liter plastic tank
SAND FILTER	
Height on Straight	1665 mm
Unit Diameter	325 mm
Filter Media Quartz	Quartz Sand.
Make	PENTAIR
Frontal Pipe work	MULTIPORT VALVE WITH ¾ cPVC LINES
Material of Construction	FRP Vessel
MAKE	ALFA/ADVANSED (1665 Model)
QUANTITY	100 Kgs.

ACTIVATED CARBON FILTER	
Height on Straight	1665 mm
Filter Media	Activated Carbon (IV – 600)
Frontal Pipe work	MULTIPORT VALVE WITH 1 INCH cPVC LINES
Material of Construction	FRP VESSEL
MAKE	Pentair/ADVANSED (1 model)
QUANTITY	50KGS
ANTISCALANT DOSING SYSTEM	
Dosing Pump	1 No's (On-Line)
Capacity	Max 6 LPH
Make	I-Dose
RO Membrane	4 No's
Membrane Type	Spiral wound
Membrane Size	8" dia X 1 Meter Length
Membrane Specification	Thin Film Composite Polyamide
Membrane Make :	G.E. OSMONICS (or) HYDRAUNAUTICS
Membrane housing	2 Nos – UKL/Alpha - FRP Housings
Size	8 Inch Dia X 7.5 Feet Length
High Pressure Pump	3000 LPH. Make pump with SS Impellers &
In-let/Out-let Port.	LEO/CNP/LUBI
No. of High Pressure Pumps	2 No
Motor HP / KW	4 HP –3 Phase/3 KW.
Instrumentations:	
Pressure gauges	4 NO.S
TYPE	GLIZERINE
Rota meters	4 NO.S
MOC	PVC
R.O. SKID	02 NO.S
MOC:	SS 202
Thickness:	1.0 MM
CONTROL PANEL WITH CONDUCTIVITY	2 NO.S
MICRON FILTER	4 NO.S
Moc	HDPE
Length	20 INCHES.

U.V.SYSTEMS	4 no.s
MOC	Stainless Steel..
Service Flow	1,000 Liters per Hour
Make .	Alfa
Thickness	1 MM
Length	1 Meter
Dia	3 INCHES
Location	Before Sand Filter & After S.S.Tank Out-Let.
L.P and H.P Switches	4 Set

SS Proposal break up:

Double Pass RO System	**13.75 Lakhs**
Electrical work	75 thousand
Plumbing work	2.75 Lakhs
Shed	2.5 Lakhs

Applicable taxes extra

EQUIPMENT TECHNICAL SPECIFICATIONS IN DETAIL:

FEED PUMP	
Numbers Offered	Two
Max.Flow	9000 Liters Per hour
H.P	1.5 hp
Make	CNP/LEO/LUBI
RAW Water Tank	5000 liter plastic tank
SAND FILTER	
Height on Straight	1665 mm
Unit Diameter	325 mm
Filter Media Quartz	Quartz Sand
Frontal Pipe work	MULTIPORT VALVE WITH ¾ SS LINES
Material of Construction	SS Vessel
QUANTITY	100 Kgs
ACTIVATED CARBON FILTER	
Height on Straight	1665 mm
Filter Media	Activated Carbon (IV – 600)
Frontal Pipe work	MULTIPORT VALVE WITH 1 INCH SS LINES
Material of Construction	SS VESSEL
QUANTITY	50KGS

ANTISCALANT DOSING SYSTEM	
Dosing Pump	1 No's (On-Line)
Capacity	Max 6 LPH
Make	I-Dose
RO Membrane	4 No's
Membrane Type	Spiral wound
Membrane Size	8" dia X 1 Meter Length
Membrane Specification	Thin Film Composite Polyamide
Membrane Make :	G.E. OSMONICS (or) HYDRAUNAUTICS
Membrane housing	2 Nos – UKL/Alpha - SS Housings
Size	8 Inch Dia X 7.5 Feet Length
High Pressure Pump	3000 LPH. Make pump with SS Impellers &
In-let/Out-let Port.	LEO/CNP/LUBI
No. of High Pressure Pumps	2 No
Motor HP / KW	4 HP –3 Phase/3 KW.
Instrumentations:	
Pressure gauges	4 NO.S
TYPE	GLIZERINE
Rota meters	4 NO.S
MOC	PVC
R.O. SKID	02 NO.S
MOC:	SS 202
Thickness:	1.0 MM
CONTROL PANEL WITH CONDUCTIVITY	2 NO.S
MICRON FILTER	4 NO.S
Moc	HDPE
Length	20 INCHES.
U.V.SYSTEMS	4 no.s
MOC	Stainless Steel..
Service Flow	1,000 Liters per Hour
Make .	Alfa
Thickness	1 MM
Length	1 Meter
Dia	3 INCHES
Location	Before Sand Filter & After S.S.Tank Out-Let.
L.P and H.P Switches	4 Set

Given below is the typical monthly preventive maintenance check list:

A Typical RO PM Checklist:

- Test RO feed water TDS, and water hardness content
- Log RO pump pressure, flow rate
- Test RO product water TDS and log flow rates
- Test RO reject water TDS and log flow rates
- Log Recovery %
- Log Rejection %
- Log pressure gauge readings. Change RO pre-filters
- Check salt/ chemical tank levels and add as needed. Repair any minor leaks. Update PM Logs

Maintenance schedule:

	Multimedia Filter		
	Maintenance:	Frequency:	Recommendation
1	Check Pressure Drop	Every visit	Monthly
2	Back wash filter / Rinse for 10 minutes	as needed	**Daily****
	Carbon Filter		
	Maintenance:	Frequency:	
3	Back wash filter / Rinse for 10 minutes	as needed	**Daily****
	Water Softener		
	Maintenance:	Frequency:	
4	Check Hardness	every visit	Monthly
5	Fill Brine Tank	as needed	
6	Regenerate Softener	as needed	**Based on OBR (Output between Regeneration)****
	Micron Cartridge Pre-Filters		
7	Check Pressure Drop	every visit	Monthly change
8	Log and replace cartridges as needed	as needed	
	Anti Scaling Dosing Pump		
	Maintenance:	Frequency:	
9	Log Chemical level	every visit	**Daily (depends on running hours of RO)****
10	Log Chemical addition	every visit	**Daily (depends on running hours of RO)****
11	Repair/rebuild chemical pump	as needed	
	Reverse Osmosis Unit		

	Maintenance:	Frequency:	
12	Log Product water profile*	every visit	Monthly
13	Log Feed profile*	every visit	
14	Log Brine profile*	every visit	
15	Log Inspection Report	every visit	
16	Log and Report Action Alerts	every visit	
	(Profile: TDS, pH, Temperature, Pressure, Hardness, Rejections Rate, Recovery Rate, etc)		
	Ultraviolet Sterilizers		
	Maintenance:	Frequency:	
17	Replace UV Lamps	as needed	
18	Micro-bio testing, giving the time and date		if required, done by external labs at extra cost
	Sub Micron Cartridge Filters		
	Maintenance:	Frequency:	
19	Check Pressure Drop	every visit	
20	Log and replace cartridges as needed	as needed	Qtrly Change

**daily maintenance or as needed tasks to be done by the hospital technical staff

Common spares required:

Pumps are the most likely failure points due to voltage fluctuations; it is highly recommended to have a standby pump for Raw water pump, High pressure pump, anti-scalant pump and booster pump. As any failure in any of the pumps can stall the RO and effect the functioning of the equipment in ICU. Typical repair times for pumps ranges from 3 days to 10 days.

AMC – Annual Maintenance Contract (labour only): post warranty

1st Option: Monthly visits. Cost per annum Rs. 28,000 plus tax with escalation of 10% per annum.

2nd Option: Complete RO Plant Maintenance including Filter changes and Antiscalant chemicals except RO Membranes – Rs.1.35 Lakhs plus tax with escalation of 10% per annum

CMC – Comprehensive Maintenance Contract (labour and spares): post warranty
Covers all equipment related spares, repair and maintenance including RO Membranes – 3 Lakhs plus tax with escalation of 10% per annum.

Micron filters – 48
Anti-scalant chemicals – 12 x 5 litres cans

Pumps

RO Membranes

Media (Sand)
Activated carbon

Other consumables required for running Softener:

Salt – 35 Kgs/day – 12,000 Kgs approx. / annum – approx. cost Rs.15/kg. 35 Kgs/day is an approximation, this might change depending on OBR (Output Between Regeneration).
Resin – (200 to 250 litres) – change frequency approx. 1 to 1 ½ years; per change Rs. 1 lakh

Power Supply: 3 Phase power, 32 Amps MCB with two power points and switches, 2.5 Sq mm wiring, 2 lights and 2 fans.

Pictures of inlet and outlet: Drain line from the machine is dropped into the outlet, otherwise, a cap with a hole is given to insert the machine drain line.

Plumbing: Plumbing will be concealed with required no. of inlet points, the RO line will be at a height of 15" from FFL (Finished Floor Level) with 3/4th inch dia. Drain pipe will be at height of 4" to 6" typically at or above skirting level with a slight downward gradient. RO Line will be done with cPVC material with the least possible joints. Drain line will be done with normal PVC material.

RO Shed: Roofing sheets will be used for roof as well as walls with required supporting structures in steel to withstand normal weather conditions. The shed will be secured with a door with no gaps on all sides at floor level to prevent rodents entering the RO room. RO Shed will be set up in 15' x 30' space on terrace.