WATER TREATMENT PLANT BASED ON REVERSE OSMOSIS TECHNOLOGY

Capacity: 25000 litres Per Hour
TECHNICAL SPECIFICATIONS

Flow Rate:
Feed Water : 48000 LPH
Treated Water : 25000 LPH

1 RAW WATER PUMP

Purpose: To feed the Dual Media Filter at pressure more than 2.0 bar, which is min. operating pressure for filter.

Specifications:
- a) MOC : CI
- b) Type : Horizontal Centrifugal
- c) Flow Rate : 30000 liters per hour
- d) Head: 35 m
- e) Power Required : 2.2 KW
2 DUAL MEDIA FILTER

Purpose
To remove the total suspended solids, dirt, iron and reduce silt density index which can foul the membranes

Specifications
Vessel:
- Make: PPF Fabricated
- Material of Construction: SS 304
- Diameter: 1400 mm
- Height: 2400 mm
- Shell Thickness: 3 mm
- Dish Thickness: 4 mm
- Testing Pressure: 10 kg/cm²
- Opening: Top & Bottom
- Quantity: 1 No.

Valve:
- Make: Prahar / Initiative, India
- Material of Construction: Noryl
- Type: Multiport Single lever value
- Size: 2 inches
- Maximum Flow Rate: 14,000 LPH
- Working Pressure: 2-4 Bar
- Working: Down-Flow

Media:
Mixed bed sand media consisting of the following
- Gravel
- Pebbles
- Quartz Sand
- Anthracite
Average Porosity 50 micron particulate size
3 ACTIVATED CARBON FILTER

Purpose
To remove the total color, smell, odor, from the water.

Specifications
Vessel:
- Make: PPF
- Material of Construction: SS 304
- Diameter :1400 mm
- Height : 2400 mm
- Shell Thickness: 3mm
- Dish Thickness: 4 mm
- Testing Pressure : 10 kg/cm²
- Opening : Top & Bottom
- Quantity : 1 No.

Valve:
- Make: Initiative
- Material of Construction : Noryl
- Type : Multiport Single lever value
- Size : 2 inches
- Maximum Flow Rate : 30,000 LPH
- Working Pressure : 2-4 Bar
- Working : Down-Flow

Media:
Mixed bed sand media consisting of the following
- Gravel
- Pebbles
- Carbon
- Average Porosity 50 micron particulate size

Bed depth : 1800 mm
Pipelines & Accessories:
Pipes and fittings in SS 304

4 DOSING SYSTEM
Purpose: To dose antiscalant chemical to protect the scaling formation on RO membranes.
Specifications:
   a) MOC : PP
   b) Capacity : 5 LPH
   c) Pressure : 7 Bar
   d) Qty. : 1 No.
   e) Make : SEKO / Etatron DS, Italy

5 MICRON FILTER
Purpose: To remove the fine particles up to 05 microns and reduce silt density index levels to acceptable level.
Specifications:
   Cartridge Filter & Housing
   Housing:
      a) Make: Pentair India
      b) MOC of Housing: PP
      c) Length : 20"
      d) Diameter: 4.5"
      e) Quantity : 2 no.
   Cartridge:
      f) Make : Filtermation, Malaysia
      g) Cartridge MOC : Polypropylene
      h) Length: 20"
      i) Diameter : 4.0"
      j) Quantity: 2 no.
      k) Micron rating : 05 micron

6 HIGH PRESSURE PUMP: 2 nos
Purpose
To feed the Reverse Osmosis Membrane at pressure more than the osmotic pressure taking into consideration flux rate, flow and recovery.

Specifications
a) MOC : Stainless Steel 304
b) Type : Vertical Multistage
c) Flow Rate : 48000 liters per hour
d) Head : 100 mwc
e) Power Required : 11 KW
f) Electrical : 440 V, three phase , 50 hz
g) Cycle : 2900 rpm
h) Make : Grundfos.

7 RO MEMBRANE

Purpose
To remove the major part of TDS up to 98% by Reverse Osmosis Membranes arranged and designed to give adequate flow and recovery.

Specifications
a) Type : Spiral Wound
b) Diameter of Membrane : 8.0 inch
c) Length of Membranes : 1 Mt.
d) No. of Membranes : 10
e) Recovery per Membrane : 10-15%
f) Salt Rejection per Membrane : 98-99%
g) Make of Membranes : Dow/Hydranautics, USA
h) System Recovery : 60-65 %

8 RO PRESSURE TUBE

Purpose
To pack Reverse Osmosis Membranes and operate at high pressure up to 300 psi

Specifications
a) MOC : FRP
b) Diameter of Pressure Vessel : 8.2 inch  
c) Length of Pressure Vessel : 3.2 meters  
d) Thickness: 4 mm  
d) No. Pressure Vessels : 2  
e) No. of Membrane per Vessel : 5  
f) Make : wave cyber / Code line USA  
g) Position : Horizontal, Series  
h) Arrays : 5 No.

9 RO CLEANING SYSTEM  
Purpose: We provide a flushing system, which shall help to clean the membrane and get rid of the foulness that get deposited on the membranes.

Specifications:  
a) Flushing Time : 15 minutes  
b) Flushing Media : Treated Water / Chemical  
c) Flushing Tank Size : 500 L  
d) Tank MOC : HDPE  
e) Flushing Pump : SS Pump will be used  
f) Semi automatic with two ball valves operation

10 ELECTRICAL PANEL  
Purpose: A control panel is provided as a safety measure for the pumps & other electrical items.

Specifications:  
a) Complete Starters, Overload relays, and single-phase preventor for Pump.  
b) Voltmeter, Ammeter, MCB’s , indicating lights  
c) Push Buttons  
d) Rocker Switches for Dosers  
e) Incomers, Auto-Manual Switches

11 INSTRUMENTATION
a) Flow Meter: To measure the online flow of water
b) TDS Meter: To measure the online TDS of water
c) Low Pressure Switch: To protect RO pump from dry running
e) High Pressure Switch: To protect RO pump from back pressure
f) Pressure Gauges: For calculate $^P$ for each unit in RO system

**Specifications**

**Rota Meter:**
- Quantity: 2 Nos. (permeate & reject line)
- Range: 30 cu.m. per hour
- Make: Flowstar, India/ Aster, India

**Digital TDS meter:**
- Quantity: 1 No. (permeate line)
- Range: 0 – 500 PPM
- Optional Features:
- Make: Aster, India

**Pressure Switch:**
- Quantity: 2 No. (Low & High)
- Range: 0-450 psi
- Make: Indfos, India

**Pressure Gauges:**
- Quantity: 7 No.
- Range: 0 – 7 bar
- Dai Size: 6 inches
- Type: Bourdon
- Make: Feibig/Guru, India

**12 ph DOSING SYSTEM**

**Purpose**
To dose Sodium Bi-carbonate for enhance product water
Specifications

PH.

- a) MOC : PP
- b) Capacity : 5 LPH
- c) Pressure : 7 Bar
- d) Qty. : 1 No.
- e) Make : Etatron DS, Italy

13 OZONATOR

- 1 no
- a) Capacity : 50 Gm/ Hr.
- b) Make : Creative Concept India
- c) MOC : SS 304
- d) Quantity : 1 No

14 SS PUMP FOR OZONE BLENDING

- a) Capacity: 25000 LPH
- b) Make: Wilo / Kirloskar,
- c) MOC: Ozone resistant SS 304

15 U.V.Sterlizer

- a) Capacity : 25000 lph
- b) MOC : SS 304
- c) Make : Standard with Philips
- d) Quantity : 1 No.
PLUMBING & FITTINGS

a) Valves, pipelines RO module is in SS304 after MF, till the permeate line termination point.
b) NRV’s, pressure relief valves, wherever needed
c) The System will be on common SS base frame.