



# CHENNAI METROPOLITAN WATER SUPPLY AND SEWERAGE BOARD

## 100 MLD SWRO NEMMELI DESALINATION PLANT

India's Second Largest Sea  
Water Reverse Osmosis Plant



### HIGHLIGHTS

1. CAPACITY: 100 MLD enhanced to 110 MLD
2. Energy Efficient Treatment Process
3. Recovery rate 45.4%
4. Ceaseless operation since January 2014.
5. Automated Plant with SCADA control

### 100 MLD SWRO NEMMELI DESALINATION PLANT

#### Background:

As a drought proofing measure and to augment supply of water to the Southern parts of Chennai City, CMWSS Board has set up a 100MLD capacity Seawater Desalination Plant on Engineering, Procurement and Contract (EPC) basis.

The Government of Tamil Nadu accorded Administrative Approval for the work of "Construction of 100 MLD SWRO Desalination plant at Nemmeli" at a cost of Rs.914.42 Crores with GOI grant of Rs.871.24 Crores and Rs.43.18 Crores from GoTN for this project

CMWSS Board awarded the work of "Construction of 100MLD SWRO Desalination plant at Nemmeli and O&M period of 7 years" to M/s.VA Tech Wabag Ltd., Chennai in consortium with IDE Technologies, Israel" This Plant was commissioned in February 2013.

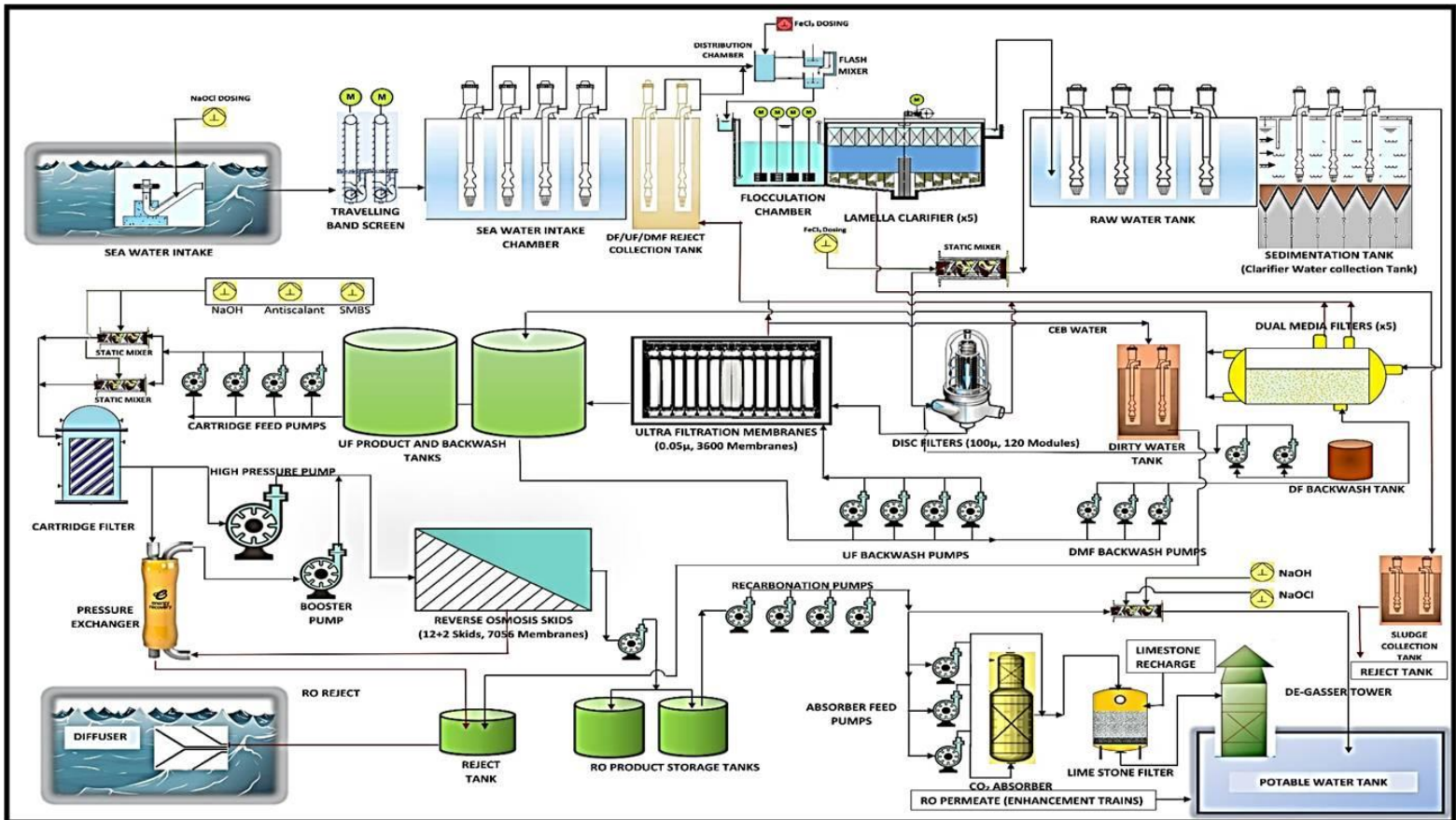
The Sea Water Reverse Osmosis Desalination Plant is entirely different process from the existing conventional Surface Water Treatment Plants. The Total Dissolved Solids (TDS) of Sea Water ranges from 28000 to 41000 ppm (Surface water TDS ranges from 150 to 300 ppm) which requires special process (Reverse Osmosis (R.O) process) for obtaining potable water standards. The quantity of raw sea water drawn is 265 MLD and quantity of product water produced is 100MLD.

Characteristics	Sea Water Quality (Avg)	Product Water Quality (Avg)	Desirable Limit (IS-3025)
pH	8.17	8.27	6.5 - 8.5
Total Dissolved Solids in ppm	28000 - 41000	480	< 500
Free Residual Chlorine in ppm	0.5	0.5	0.2 - 1.0
Chlorides in ppm	16695	217	< 250

“MAKING CHENNAI WATER  
POSITIVE”

# 100 MLD SWRO NEMMELI DESALINATION PLANT

## PROCESS FLOW DIAGRAM



1. **Pre - Treatment Process :** The pre treatment consists of Coagulation & Flocculation chamber, Lamella Clarifier, Disk Filters, Ultra Filters and Cartridge Filters for removal of suspended solids of size upto 0.05 microns. In this process the colloidal particles, virus & bacteria are removed.
2. **Reverse Osmosis Process :** The UF permeate is sent through High Pressure Pumps (at about 60 bar pressure) to Reverse Osmosis Membranes. The R.O. Membranes removes the dissolved solids of size up to 0.001 microns. The major cost factor involved in the SWRO treatment process is the Power cost, Energy Recovery Instruments are installed to save the power cost. During this process all the minerals are removed from the feed water.
3. **Post - Treatment Process:** The water is remineralised by adding chemicals such as lime, carbon-di-oxide for achieving the desired alkalinity and hardness. Then Sodium hypochlorite solution is added for disinfection.
4. The rejected water from the R.O and other plant processes flows back into the sea by 1200mm dia HDPE pipe line and dispersed into the sea as per the environmental norms.



Intake Section.



UF BUILDING - DISC FILTERS



Reverse Osmosis (RO) Section.

### Conveyance of Product Water:

To convey the product water from the Desalination Plant to the Chennai City's water distribution network, CMWSS Board developed the infrastructure facilities at an estimated cost of Rs.145.61 Crores including Operation & Maintenance for a period of 7 years.

The project envisages two stage pumping at plant site and at various intermediate Water Distribution Stations in Akkarai, Velachery, Pallipattu and Tiruvanmiyur to convey the product water from Nemmeli to the Chennai City. About 10 lakh people are being benefitted by this project.

## Upcoming Projects:

In order to bridge the ever increasing demand of water supply, the Hon'ble Chief Minister, under Rule 110 has announced in the Tamil Nadu Legislative Assembly on 16.04.2013 to formulate 150MLD SWRO Desalination Plant at Nemmeli and 400MLD SWRO Desalination Plant at Perur, Nemmeli Village.

The project of construction of **150MLD SWRO Desalination Plant at Nemmeli** has been awarded to M/s Cobra - Tecton Consortiums, Spain on 27.05.2019 for an value of Rs. 1689.35 Cr (Inclusive of O&M cost for 20 years). The Hon'ble Chief Minister has laid the foundation stone for the project on 27.06.2019. The Project work has been commenced and is in progress. The Project Management Consultancy work has been awarded to M/s. TWIC on 04.06.2019. The Project is expected to be completed by December 2021. The product water will be distributed to the areas of Ullagaram Puzhuthivakkam, Velachery, Madipakkam, Sholinganallur, Town panchayats, St.Thomas mount, Medavakkam, Kovilambakkam, Nanmangalam, Keelkattalai, Moorasampettai, Pallavaram (part), IT sectors & Industries. Around 9.00 lakh people will be benefitted by this project.

The **400 MLD SWRO Desalination plant** is proposed at Perur nearer to Nemmeli. The Project Management Consultancy work has been awarded to M/s.SMEC International Pty limited, Australia in consortium with 3 others on 06.11.2019. The PMC will support in bid document preparation & tender assistance, design works and construction supervision. All the works are expected to be completed and the plant will be put into use before November 2024. The product water will be distributed to the areas of Tambaram, Pammal & polichalur, Pallavaram(part), Madambakkam, Sembakkam, Chitlapakkam, Peerkangaranai, Perungalathur, Thiruneermalai, Kundrathur, Kattankulathur, Mangadu, ThiruPorur, Thaiyur, Velichal, Padur, Siruseri, Mambakkam, Sonalur, Ponmar, Thandalam, Kanathur Reddikuppam, Pudupakkam, Kolathur, Industries, commercial & floating, Alandur, Valasaravakkam, Mathur & Madhavaram, Virugambakkam, IT sectors & Industries. Around 22.67 lakh people will be benefitted by this project.

The **Tamil Nadu Salt Corporation Limited (TNSC)** is having about 3000 acres of salt pan land nearer to the desalination plant and they have proposal to use the brine water (high salt concentration) discharged from the 100 MLD Nemmeli Desalination plant for the production of salt.