



# CHENNAI METROPOLITAN WATER SUPPLY AND SEWERAGE BOARD

## 100 MLD SWRO MINJUR DESALINATION PLANT

South Asia's First Largest Sea  
Water Reverse Osmosis Plant



### HIGHLIGHTS

1. CAPACITY: 100 MLD
2. Energy Efficient Treatment Process
3. Recovery rate 45%
4. Ceaseless operation since July 2010.
5. Automated Plant with SCADA control

### 100 MLD SWRO MINJUR DESALINATION PLANT

#### Background:

In order to bridge the demand supply gap and as drought proofing measure and to augment supply of drinking water to Chennai City, Government of Tamil Nadu and CMWSSB has established a 100MLD sea water desalination plant at Kattupalli Minjur on “Design, Build, Own, Operate and Transfer (DBOOT) basis” .

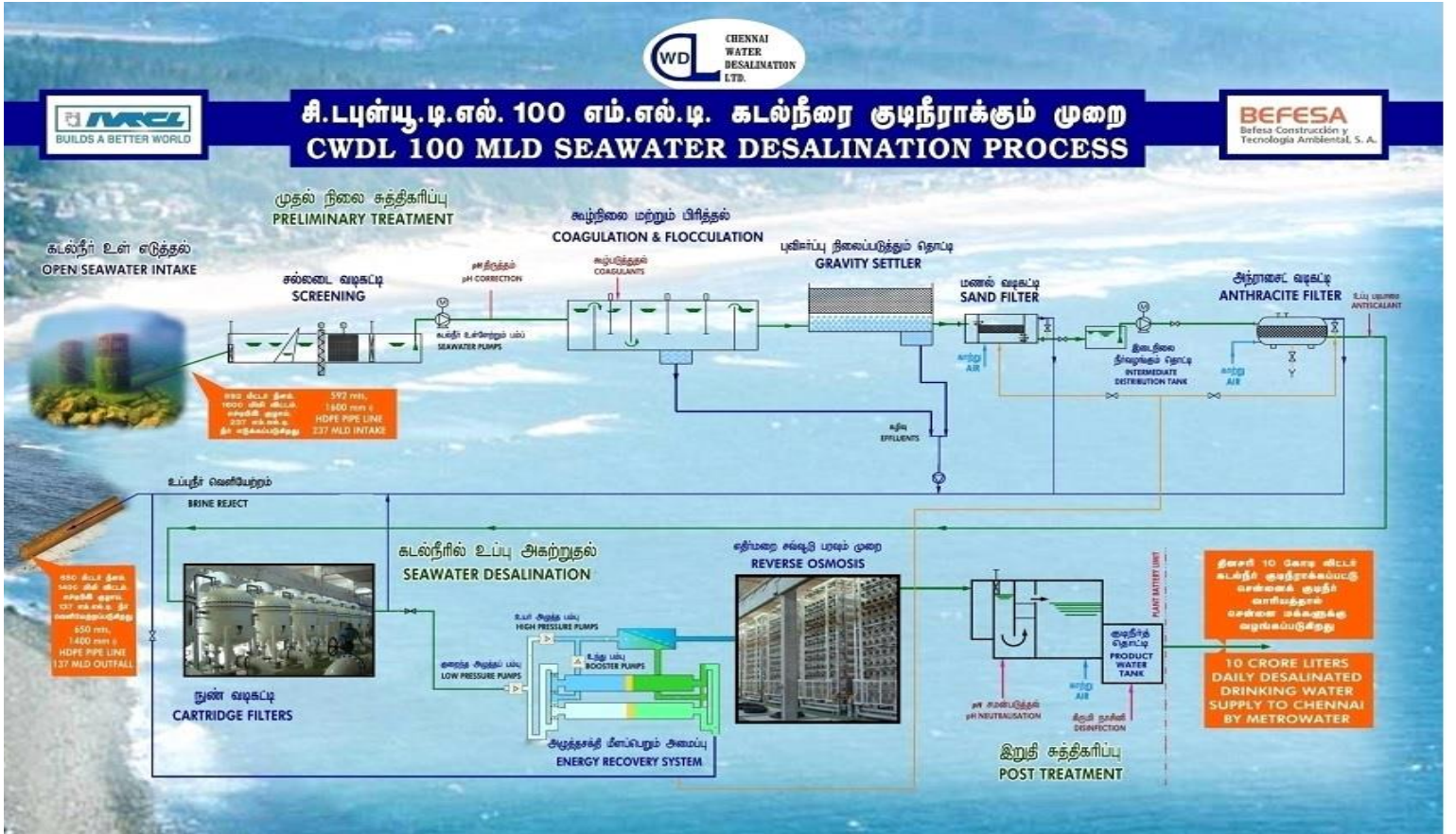
CMWSS Board has entered in to a bulk water purchase agreement for a concession period of 25 years with M/s Chennai Water Desalination Limited (M/s CWDL) consortium company of M/S IVRCL Infrastructures Ltd and project Ltd, Chennai and Befesa ,Spain for setting up the plant during September 2005.

The project was completed at a cost of Rs 500crores and commercial operation of the plant was commenced on 25.07.2010. CMWSS Board is purchasing product water from M/s CWDL from Commercial Operation Date (25.07.2010).

Characteristics	Sea Water Quality (Avg)	Product Water Quality (Avg)	Desirable Limit (IS-3025)
pH	8.16	8.25	6.5 - 8.5
Total Dissolved Solids in ppm	22000 - 40000	470	< 500
Free Residual Chlorine in ppm	0.5	0.5	0.2 - 1.0
Chlorides in ppm	16500-17300	220	< 250

“MAKING CHENNAI WATER  
POSITIVE”

# 100 MLD SWRO MINJUR DESALINATION PLANT PROCESS FLOW DIAGRAM



## Process:

The quantity of raw water drawn is 235 MLD and quantity of product water produced is 100MLD. The selected process for the Desalination Plant at Minjur is **Reverse Osmosis (R.O.) Membrane Conventional Method**. The pre treatment consists of coagulation and Flocculation chamber, Gravity settlers, Dual media filters, Pressure sand filters and cartridge filters for removal of suspended solids. Then the feed water is sent through High Pressure Pumps to Reverse Osmosis Membranes. The R.O. Membranes removes the dissolved solids. Then the water is remineralised by adding chemicals such as lime, carbon-di-oxide and sodium hypochlorite solution for disinfection. The final product water is conveyed to the City distribution. The reject water from the R.O. is let into the sea by 1600mm dia HDPE pipe line.

**Chemical Dosing unit for Pre-Treatment**



**Pre-treatment  
Lamellas in Gravity Settlers**



**Pre-treatment  
Pressure Filter Vessels**



**Pre-treatment  
Cartridge Filters**



**RO Process Unit, Pressure vessels &  
Energy Recovery System**



**Post-Treatment  
CO2 Dosing unit**



### Conveyance of Product Water:

The product water is conveyed from Kattupalli to Chennai city via 1000mm dia pipe line laid for a distance of 27Km from Kattupalli to Manali Underground tank and from there it is distributed to Manali, Ennore, Kathivakkam and other newly added area and also to Madavaram Underground tank. From Madavaram product water pump house, water is pumped to 300MLD water treatment plant at Redhills through 900mmdia DI pipe line for a distance of 9.3KM and further it is distributed to Central and Western parts of Chennai city.