CASE STUDY REF: 021

INDIA'S FIRST PERFORATED JASH-MAHR TRAVELLING BAND SCREEN FOR 100 MLD SWRO NEMMELI DESALINATION PLANT OF CMWSSB AT CHENNAI

Location of Travelling Band Screen

Project Details	
Project	**100 MLD Nemmeli Desalination Plant**
Customer	Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB)
EPC Contractor	VATECH Wabag
Contract No	EPC-PO-19772-10P76

Jash-Mahr Travelling Band Screens Details	
Screen Size	2000 mm (Width) x 18021 (Height) mm
Quantity	2 nos
Flow Capacity	5500 Cubic meter / hour
Perforation	4 mm
Type	Through Flow
Manufacturer	JASH Engineering Ltd.
Operation	Self-Cleaning Type
MOC	Stainless Steel AISI 316 L with Sacrificial Anode
Client name	VATECH Wabag

Location:

Vatech Wabag set up a 100 MLD Sea Water Reverse Osmosis Plant at Nemmeli on the Sea Coast of Chennai, India. This was the 2nd Largest Desalination plant made in India.

Purpose of 100 MLD Nemmeli Desalination plant:

Being a city that depends extensively on ground water, replenished by an average annual rainfall of 1,276 mm, Chennai experiences a chronic water problem. The city receives about 985 Million-Liters-per-Day (MLD) of water from ground and surface water sources, against the demand of 1,200 MLD. To alleviate the freshwater problems, the state government decided to implement desalination of sea water.

Vatech Wabag set up 100 MLD Desalination Plant at Nemmeli. Reverse osmosis (RO) technology is employed at the plant to desalinate the sea water, which contains aluminium and turbidity. Pre-treatment of the raw sea water includes coagulation-flocculation, gravity, and pressure filtration. The filtered water is then pumped to the plant where it undergoes various preliminary treatments before being passed through the RO trains. The water is then forced through the RO membranes at high pressure. The membranes retain the salts and pass on the desalinated water to the next stage, namely, the post-treatment process. The treated water is then flavoured and stored in an underground water tank, from where it is pumped to the reservoir and then released into the city grid.

The RO technology of the plant produces 100 MLD of desalinated water from 273 MLD of sea water.

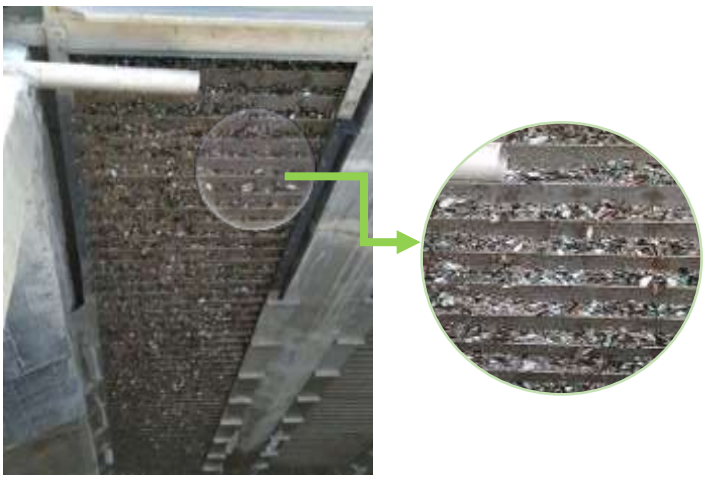
Role of Jash at 100 MLD Nemmeli Desalination plant:

The plant was initially commissioned without provision of fine screening. As a result the water being pumped was pushing fine solids to the plant and this lead to frequent breakdowns within the plant. Jash was asked by Wabag to propose a solution to this problem and it was mutually decided that fine travelling band screens with 4 mm perforation should overcome the problems faced. Hence 2 nos fine perforated Through Flow travelling band screens of capacity 5500 Cub.m/hr. at depth of 15 meters was decided to be installed in the existing intake chamber. Jash supplied the entire screening package comprising of 2 nos Jash-Mahr Through Flow type Travelling Band Screen along with its spray wash, Control Panel and Instrumentation system.

The width of intake chamber was 4.5 meters and there was no wall in between. Due to water scarcity CMWSSB was not willing to give shutdown for more than a week for making related civil works like partition wall and for screen installation. It was also observed that the flow will hit the proposed central column and the water velocity at over 1.5 m/s was too high for a fine screen. To divert the water flow equally on both the screens a divergent cone was proposed to be placed in front of pipe and to reduce the velocity a perforated pipe was proposed in front of sea water intake pipes so that the velocity will reduce below 1 m/s. To form the required dividing central column for the proposed 2 Nos Travelling Band screens we also proposed use of hollow precast blocks anchored over each other from bottom to top and then pouring grout in the hollow central part while screen installation proceeds side by side. All these concepts proposed were agreed by CMWSSB and Vatech.

Special profiled panels were designed to ensure that required quantity of water pass through from the 4 mm perforation provided in them and also having the strength to carry the thrust of water and flow velocity of max 1m/s. Due to heavy load of sea shells special panels were designed in form of a basket to carry these sea shells trapped by the screen till top of the platform and discharge these out of the water channel so that there is no accumulation of such material in front of screen.

The 2 screens were manufactured and supplied in 2019 but could not be taken up for installation for over a year as CMWSSB could not give shutdown. Finally shutdown was given in end of March 2020 and the 2 screens with related civil works were installed and commissioned within allocated time and are in successful operation since April 2020.



JASH ENGINEERING LTD,
31, Sector-C, Industrial Area, Sanwer Road, Indore-452015 (MP), India
Phone : +91 (731) 2720143, 2721143,
Email : info@jashindia.com,

SUBSIDIARIES:
Rodney Hunt Inc., **USA.**
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