

INDIA'S WIDEST JASH-MAHR "MM2MM" MULTIRAKE SCREENS AT BRITANNIA STORMWATER PUMPING STATION IN MUMBAI



Location:

Britannia storm water pumping station is located at Reti Bunder Bey, near Reay Road Railway station in south Mumbai, India.

About the project:

After one of the worst floods in Mumbai on 26th July 2005 which took life of hundreds of people, Municipal Corporation of Greater Mumbai launched a Rs. 3535 Crores (543 Million USD) Brihanmumbai Storm Water Drain (BRIMSTOWAD) project. Britannia storm water pumping station is a part of this project.

After a delay of eight years for want of NOCs from Mumbai Port Trust and Maharashtra Coastal Zone Management Authority (MCZMA), finally the construction work of project started in June 2014 at an estimated cost of 116 Crores (17.8 Million USD). The pumping station became operative in 2016.

The pumping station is housed with 6 VT pumps having pumping capacity of 518 MLD (137 MGD) each. During storm and heavy rains the pumps can totally discharge 3110 Million liters (821 Million gallon) of storm water every day.

Role of storm water pumping station at Britannia outfall:

In the monsoon, Mumbai gets an average rainfall of 2420 mm (96"). However sometimes rains per day can be as high as 400 mm (15") and if this is accompanied with high tide then gravity flow from the drains to the sea does not take place. This results in to severe flooding which can reach few feet in low lying areas inundating businesses, homes, vehicles and railways stations and costing millions in losses with related loss of life due to drowning.

Britannia Storm water pumping station is expected to aid in mitigating water logging problem in flood prone areas of Hindmata area, Abhudaya Nagar, Petit Lane, Jijibhoy Lane, Madkebau Chowk, Lalbaug and areas surrounding Reay Road and Byculla.



Flooding intensity in Mumbai City

Project Details	
Project	3110 MPL storm water PS at Britannia outfall
Customer	Municipal Corporation of Greater Mumbai
EPC Contractor	Unity-M&P-WPK Consortium
Consultants	Montgomery Watson Harza

Screen Details	
No of Screens	6
Flow capacity per screen	518.4 MLD (137 MGD)
Screen Width	3500 mm (137.79 Inch)
Screen Length	10375 mm (408.46 Inch)
Bar Spacing	60 mm (2.36 Inch)
Material of Construction	AISI 316
Raw material consumed	78,000 Kgs (171960 lbs)
Net weight of the bars	10,800 Kgs. (23810 lbs)
Breaking Load of chain	140 KN (31473 lb-f)

Role of Multiraking Screen:

Most storm water drains in Mumbai have people living on both side of the drains and treating these drains as their sewage and garbage disposal dump throughout the year. Paths leading to these drains are encroached making cleaning of these drains very difficult. Heavy rains during monsoons move all this garbage accumulated round the year towards the storm water pump stations and this can severely affect the functioning of pumps. Multi raking Screens are installed to ensure that pumps function smoothly and all the entrapped garbage on screen is removed out constantly.



Assembled Screen at Jash Plant



Screens after installation at site



Screens under operation during plant opening day

Special Design Consideration for Jash-Mahr Maschinenbau “MM2MM” Multiraking Screens:

Preventing heavy debris from entering in to the intake structure and ensuring continual operation of all the pumps installed at the time of flooding was the real challenge. The screens have to be very sturdy with low maintenance.

To combat the above challenge, Jash manufactured and supplied 6 “MM2MM” Multi-raking screen based on the design provided by our wholly owned subsidiary Mahr Maschinenbau, Austria. Each of these screens measures 3500 mm (138”) in width and 10375 mm (408”) in length with bar spacing of 60 mm (2.3”). The bars are of rectangular section of 15 mm x 60 mm (9/16” x 2-3/8”) and the screen field length of 3060 mm (120.5 Inch). Each screens weighs nearly 15,000 kgs (33,070 lbs) with the weight of bars alone being nearly 10,800 kgs (23810 lbs).

As all six screens were to be installed side by side and as the walls between the adjacent screens were narrow, the drive motor of each screen was hitting that of the other adjacent screen. Our design team came out with the solution of providing the drive from the center of the screen. The motor was mounted at the center of the screen and the power transferred to the drive shaft through heavy duty Triplex chain and sprocket on either side of the screen. The screens were provided with anti-jam removal feature and were designed to be removed out of the channel for future maintenance, if any.

All the 6 screens were designed, manufactured and supplied within 10 weeks, 2 weeks ahead of schedule. The screens were commissioned in Oct 2015 and are in operation since then. In addition to these screens Jash has also supplied 6 nos. 3500 x 6000 (WxH) mm & 2 nos. 3750 x 5250 (WxH) mm Aluminum Stoplogs, 6 nos. 3500 x 2000 (WxH) mm Cast Iron Sluice Gates and 2 nos 3750 x 5200 (WxH) mm Steel Mitre Gates for this project.

For more details about Storm Water Pumping station, Mumbai, India, please follow the link given hereunder:

- https://youtu.be/rhe2vdR_8Fk (News coverage - Magic Bricks NOW)
- <https://www.youtube.com/watch?v=brLFzpKqJx0> (News coverage - Mirror NOW)

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