WASTEWATER
REUSE & GREEN ENERGY

WORLI Mumbai

Advanced wastewater treatment & preservation of the local ecosystem

2025-03-31

A showcase of advanced and compact solutions for sustainable future

The Municipal Corporation of Greater Mumbai (MCGM) has launched a program to build 7 wastewater treatment plants in Mumbai. In 2022, SUEZ won the contract for Worli, the largest of these plants, for the design, construction, and operation for a period of 15 years. This new plant aims to improve the treatment capacity and quality for 2.5 million Population Equivalent in the Mumbai region. This project is part of an approach to resource recovery, environmental protection, and reduction of climate impact.

Client objective

The construction project of the Worli wastewater treatment plant aims to improve the quality and reliability of wastewater treatment in order to:

- **Restore the quality of the Arabian Sea** with a treated effluent of quality that is 100% compliant with the latest local standards (NGT[1]) in terms of pollution control.
- **Reuse 50% of the treated water** for municipal and industrial non-potable use with water quality compliant with CPHEEO[2] standards.
- **Achieve class A biosolids quality** (US EPA[3]) with a dry matter content of 25% allowing for reuse in soils without health risk.

This project involves building a new water treatment plant on an area of only **8.5 hectares**, **with a treatment capacity of 500,000 m³ of water per day**, while keeping the existing plant operational during the construction period. This represents a dual challenge of implementation and maintaining operations.

Our Solutions

In order to achieve the treatment objectives while minimizing the land and environmental footprint of the plant, we have integrated several **advanced and compact technologies:**

- A primary physico-chemical decantation **Densadeg®** integrating a sludge pretreatment by thickening in the same structure.
- The **Ultrafor®** process integrates both a biological treatment by activated sludge and a clarification by immersed ultrafiltration membranes.
- A mechanical sludge thickening **Drainis® GDE**.
- A 2-phase methanization with upstream biological hydrolysis **Digelis® BH_A** with advanced heat recovery that allows the sludge to be sanitized while moving towards energy self-sufficiency.

Benefits

For the first time in the city of Mumbai, the treated effluents will comply with the strictest quality standards, allowing both the protection of marine ecology and recycling half of the treated water from the plant, i.e., 250,000 m³/day for municipal and industrial use. The plant will produce up to 39 GWh of green electrical energy per year from biogas, making it 75% self-sufficient and one of the SUEZ wastewater treatment facilities with the lowest carbon footprint in India.

31,800 t CO_2/year avoided

Equivalent to **30 500** Paris – New Delhi flights

Differentiating factor

Our expertise as a designer, builder, and operator, as well as our ability to manage complex projects, are key factors that have allowed us to create this efficient and environmentally friendly plant in a constrained space, while ensuring the continuity of service of existing facilities. SUEZ has met the challenge of adjusting its design to save as many trees as possible on this sensitive site.

[1] NGT: National Green Tribunal | [2] **CPHEEO** Central Public Health & Environmental Engineering Organisation |
[3] US EPA : United State Environnemental Protection Agency

suez

WORLI , Advanced Wastewater Treatment Plant

Treatment line in detail

250,000 m³/d
treated effluent recycled for Non-potable reuse

WATER LINE: Compactness and high treatment water quality

High-rate lamellar settling with sludge recirculation

The Densadeg® is a proven process which integrates the functions of :

- Coagulation and flocculation, lamellar settling which increase the speed of clarification and decreases footprint.
- Sludge densification due to the sludge recycling allowing a constant sludge concentration inside the flocculation reactor.

It easily and quickly adapts to variations in the quality and quantity of raw water.

Compact, robust and efficient secondary treatment

Ultrafor® is a compact process that guarantees water quality beyond the most demanding standards. The waters to be treated are sent to a reactor where they meet a purifying bacterial mass before passing over the membranes. Ultrafor® uses filtration from the outside to the inside, allowing effective removal of suspended matter. The membranes, grouped into submerged cassettes, have a cut-off threshold of 0.035 µm, eliminating bacteria and helminth eggs and reducing fecal coliforms. Finally, the system has advanced automation for optimal membrane filtration in terms of energy.

Our larger Ultrafor® reference
with 480 cassettes of this size at Worli site

SLUDGE LINE: Class A biosolids for land dispossal and green energy production

Biological hydrolysis of organic matter and optimized anaerobic digestion phase

After the thickening stage with Drainis® GD process, the sludge goes to a boosted digestion in 2 steps, the Digelis® BH_A solution, including upstream biological hydrolysis followed by mesophilic digestion with an Advanced Heat Recovery system. Worli includes 3 biological hydrolysis tanks, 3 mesophilic digesters (12,300 m3 each), 2 gas holders and a biogas treatment.

This design with a Digelis® BH_A allows to reduce the overall digestion volume by 40% compared to a conventional digestion and to produce US EPA Class A biosolids for land disposal.

Advanced Heat Recovery System Digelis® CleanHX

NATURE PRESERVATION

Improve global plant ergonomy without modifying plant efficiency

Located in the heart of Mumbai city in India, the massive 500MLD Wastewater treatment facility of Worli is to be constructed at a site that boasts more than 1200 trees. SUEZ took up the challenge to adjust the design of the plant to mitigate tree uprooting and thus ensure that a maximum of trees ultimately remain at their current location. In the near future, SUEZ plans to commit to planting more than 10 000 new trees in the suburbs of Mumbai! The entire initiative showcased SUEZ's sustainable values with a strong emphasis towards environmental protection and recovery.

207 trees retained
against 36 initially planned

-20%
trees cutting

TYPE OF CONTRACT
DBO
Design, Build & Operate

CONTRACT DURATION
DB: 2019 – 2024
O&M: 2024 - 2039

CAPACITY OF THE WHOLE PLANT
500,000 m³/day
Expandable up to 800,000 m³/day during the monsoon season

POPULATION SERVED
2.5 Million PE

SUEZ Engineering & Construction
www.suez.com