

OKHLA New Delhi, the largest Wastewater Treatment Plant in India, sets the tone



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Resource preservation, REUSE and energy self-sufficiency

Delhi, the capital of India, is located on the right bank of the Yamuna River, at the edge of the Ganges plains. Its geographical position, at an altitude of 250 meters and about 650 kilometers from the Great Himalayas, plays a key role in water supply. The city mainly draws its water from the Yamuna River, the Ganges, and groundwater, thus ensuring a constant supply of this essential resource for its residents.



New Delhi

Client objective

This project, funded 81% by the central government and 19% by the Delhi government, is part of the Yamuna Action Plan III (YAP-III) aims at restoring the water quality of the heavily polluted Yamuna River. Moreover, our client, Delhi Jal Board, is facing new challenges related to the evolution of sludge sanitization regulations. These regulations require a modernization of the sludge treatment to comply with the Class A biosolids standards of US EPA*. The new Okhla plant with a capacity of 564,000 m³/day will be the largest in India built in one stage. It will replace the existing facilities which will be demolished when the new plant is put into operation.

Our solutions

In 2019, SUEZ won the contract for the design, construction, and operation of this new plant for a period of 11 years. Our design incorporates cutting-edge technologies to ensure high-quality treated water suitable for non-potable reuse and discharge into the Yamuna River, in accordance with the latest national standards requiring a total nitrogen content of less than 10 mg/L.

The water line includes a **Sedipac® D** lamellar settling tank to remove suspended solids, an activated sludge process for biological nutrient removal, tertiary filtration on **Compakblue®** rotary disc filters, and UV disinfection to eliminate coliforms.

The sludge line includes:

- gravity thickening for primary sludge, and thickening on **Drainis® Turbo** and **GDE** for secondary sludge,
- advanced anaerobic digestion **Digelis® BH_A** to produce biogas and Class A sludge.
- **Heliantis®** solar drying to achieve a dryness of 60%

Benefits

Our compact and efficient treatment process will allow to:

- Restore the water quality of the Yamuna River.
- **Reduce sludge volume by 40%.**
- **Produce Class A sanitized biosolids** to facilitate their recovery as fertilizer for local agriculture.
- **Produce electricity** from biogas to achieve **60 to 70% energy self-sufficiency.**
- Reduce overall sludge treatment costs.

Finally, the sludge dried in greenhouses can be reused by municipal waste plants as energy supplement to fuel.

182 000 m³/d of recycled water
for non potable
urban & industrial uses

Approximately **107 Nm³/h** of biogas
converted into electricity and heat

Differentiating factor

SUEZ stands out with its comprehensive and innovative vision of wastewater treatment, aiming to create a **sustainable and profitable plant**. SUEZ's advanced heat recovery system allows an **80% reduction in the operating costs of the anaerobic digestion workshop**, thus reinforcing its unique positioning in its sector. Our design also allowed the size of the plant to be reduced from 124 hectares to 47 hectares, saving over 600 trees.

*U.S. Environmental Protection Agency

Moving toward energy self-sufficiency and the production of hygienized sludge

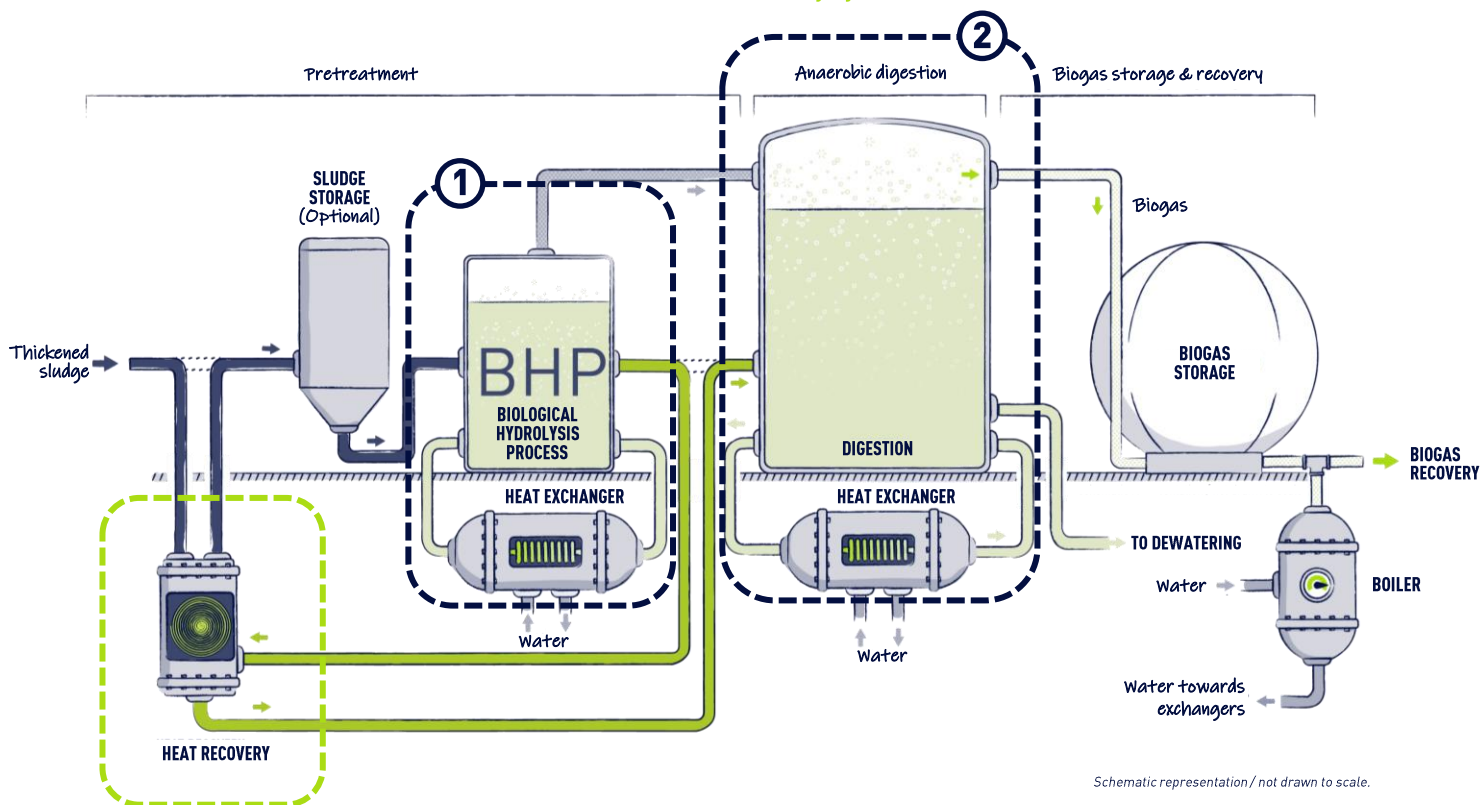
The world's largest two-phase anaerobic digestion and solar drying unit

The new sludge treatment line at the Okhla wastewater treatment plant is equipped with biological sludge hydrolysis for boosted digestion and an advanced heat recovery system. The combination of these two processes represents a significant step towards the region's energy independence and a reduction in energy consumption. In addition, biological hydrolysis produces sanitized sludge, ensuring reuse in compliance with health safety standards.

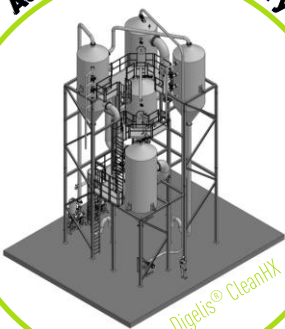
- 3 thermophilic digesters of 3 600 m³ each
- 3 mesophilic digesters of 12 000 m³ each
- Total digestion volume: 47 000 m³

Digelis® BH_A

A boosted digestion in 2 stages
with upstream **biological hydrolysis ①** follow by **mesophilic digestion ②**
and advanced heat recovery system



Advanced Heat Recovery



100% autonomous anaerobic digestion system
due to advanced heat recovery

More efficient
preheating

Significantly
reduced footprint

PERFORMANCES

- Sludge flow rate: up to 210 m³/h
- Preheating temperature of fresh sludge: **≥ 30°C**
- Cooling temperature of hot hydrolyzed sludge: **38°C**

LAYOUT

- Height: **16.7 m**
- Footprint: **51 m²**

TYPE OF CONTRACT

DBO

Design, Build and Operate

CONTRACT DURATION

DB: 2019 – 2024
O&M: 2024 – 2035

CAPACITY OF THE PLANT

564,000 m³/d

POPULATION SERVED

3.5 Million PE