

Panama wastewater treatment plant



In September 2009, SUEZ signed a contract with the Panama's Ministry of Health to design, build and operate for four years the first urban wastewater treatment plant for the capital city, in Consortium with Odebrecht, one of Brazil's largest construction companies.

The plant construction was financed by the Japan International Cooperation Agency (JICA) and the Panamanian government. The project was part of an ambitious environmental protection and wastewater treatment program launched in Panama at the turn of the millennium which also includes plans for, among others, constructing waste water collectors, pumping stations and connecting sewers.

The plant is aimed at cleaning up the Bay of Panama by treating the effluent before it is released into the environment. With a capacity of 238,000 m³/day, the plant treats effluent from one million of the city's inhabitants. The plant includes the facilities for biological treatment and sludge digestion, while streamlining energy costs by implementing cogeneration and heat recovery systems.

Located in the seaside mangrove swap and soon surrounded by the city, the plant has been designed to blend seamlessly into the environment.



a complex design for deep pumping stations

The effluent is conveyed to the plant by two pumping stations "Tunel Interceptor" and "Matías Hernández" located outside of the Plant.

Common discharge on a 8 Km underground pipeline connecting both stations with the plant :

- Pumping raw water "Tunel Interceptor" (4 + 1 submersible pumps ;
Qu = 0.92 m³/s at 42 m)
- Pumping raw water "Matías Hernández" (3 + 1 submersible pumps ;
Qu = 0.47 m³/s at 24 m)

Mechanical debris removal is installed at the pumping stations :

- Mechanical bar-screening for debris removal at "Tunel Interceptor" (2 + 1 with 40 mm separation)
- Mechanical bar-screening for debris removal at "Matías Hernández" (1 + 1 with 40 mm separation)
- Mechanical Detritus Press System in both pumping stations

robust and approved technologies with worldwide reputation



water treatment line

pretreatment

- 4 water lines
- Fine screening (6 mm separation) (4 units)
- 1 grease concentrator system
- 1 mechanical detritus press system
- 1 mechanical sand classifier separator

biological treatment

- Nitrification-Denitrification (N-DN) and phosphorus removal
- 4 aeration tanks – circular form and piston type (45,000 m³), Ø47 m

secondary settling

- 8 circular clarifiers of Ø43 m with scraper & suction sludge bridges (degrémont® technology)
- 2 contact chambers for chlorination (gas evaporation).
- Discharge of the treated water in to a Modular Distribution Chamber (MDC) to the river. The modularity concept of the MDC will allow the construction of the future extensions (next phases planned in 2025 and 2035) without any interruption.



energy autonomy of the sludge zone



sludge treatment line

- Sludge biological pre-thickening on 2 gravity thickeners (Ø 9 m).
- 3 gravity belt thickeners with polymer dosing.
- Anaerobic digestion on 2 digesters of 5000 m³ each with Cannon mixers (degrémont® technology).
- Sludge dewatering (2 + 1) centrifuges and quicklime dosing.



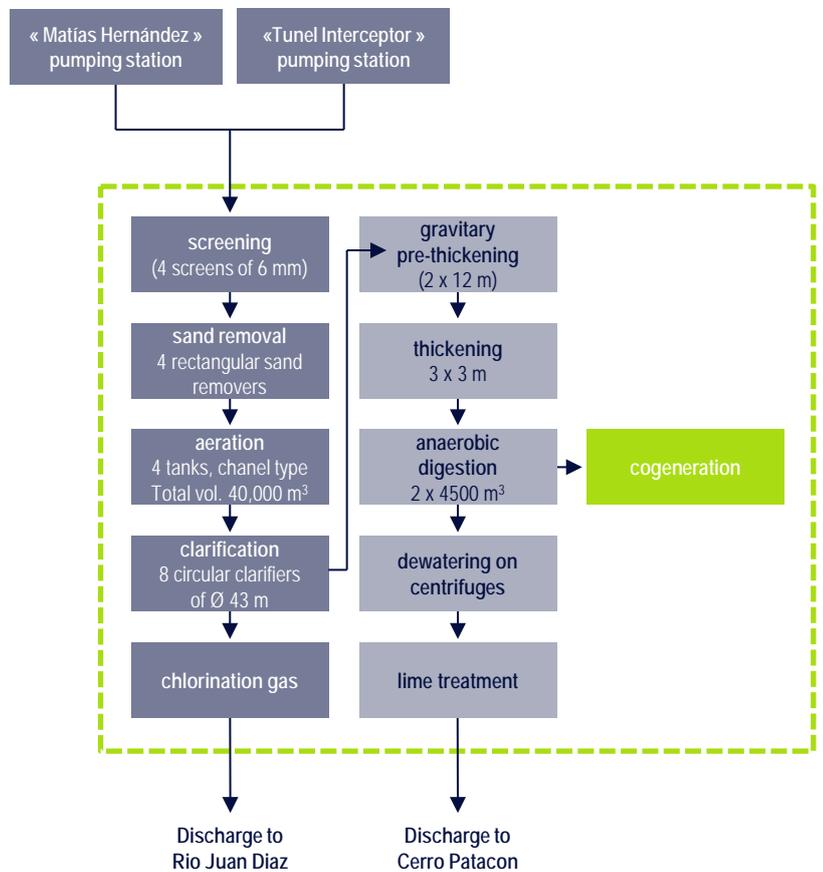
odour control solutions adapted to each area

air treatment

- Azurair™ C** technology (chemically scrubbing foul air in the towers) :
 - 1 Azurair™ C for the pumping stations,
 - 1 Azurair™ C for the pretreatment and sludge area (with 2 towers in series : acid and basic).
- Azurair™ A** technology (adsorption on activated carbon) :
 - 1 Azurair™ A for the Modular Distribution Chamber.

biogas production

- Flexible biogas holder (1,500 m³), dewatering and desulphurization systems for biogas and reuse in cogeneration (700 kW).
- Biogas from the sludge produces 100% of the electricity needed for the sludge zone (buildings and digesters), representing 18% of the plant's total energy needs in nominal conditions (load and flow).





stakeholders

Client :

**Gobierno de Panama
– Ministerio de Salud (MINSa)**

Consulting Engineer :
Nippon Koei

Construction :

**Consortium Constructora Norberto
Odebrecht (Leader) / SUEZ**

Odebrecht scope : civil Works for effluent treatment plant and pumping stations, incoming pipe, outfall pipe

SUEZ scope : engineering, electrical & mechanical supply, erection, commissioning, testing for effluent treatment plant and pumping stations

Operation & Maintenance :
SUEZ (100%)

**construction completed 4 months
before the contractual date**

key dates

construction period

- start of the construction period
November 2009
- contractual completion date
September 2013
- water line effective completion
May 2013
- sludge line effective completion
July 2013

4 years operation & maintenance contract

- from May 2013 to May 2017

protection of the environment

- Integration of the plant in its natural environment
- Foundations with landfill and piles depending on the natural swampy soil
- Limitation of odors nuisance to the surrounding population
- Optimization of the energy consumption of the plant: use of biogas produced for electric power generated by cogeneration

safety of the persons and works

- High safety for chlorine handling and storage
- Closing structures installed to protect from generation of dangerous gases and bad smells
- Ergonomics and ease of operation of the plant

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Since March 2015, all the Group brands (Degreмонт, Ozonia, Aquasource, Ondeo IS, Ameriwater, Infilco, Poseidon...) became SUEZ.

Meanwhile, from now on, the technologies and know-how of our Treatment Solutions offer will be distinguished with the label **degreмонт®**.

