

Solutions for Industrial Field

Wastewater Treatment and Water Recycling

10,000 m³/day Design-Build-Operate CETRP1 Phase-1 Project

- Sohar, Sultanate of Oman

- 1st Successful Industrial Wastewater Treatment and Recycling Plant in Oman -



Highlights

We, Toshiba, meet our customer needs with technical expertise and extensive experience while achieving both economic efficiency and environmental preservation

- The cost-effective wastewater treatment plant produces recycled water to industries at a competitive price.
- Client risks are minimized by offering effective DBO^(*1) contracts.
- Our project complies with new environmental regulations in Oman.

(*1) DBO: Design Build Operate

Project Overview

Client	Majis Industrial Services SAOC
Location	Sohar, Oman
Capacity	Wastewater treatment: 10,000 m ³ /day (phase1) Production of recycled water: 7,500 m ³ /day
Year of Delivery	September 2016
Plant Description	Biological wastewater treatment plant of 10,000 m ³ /day capacity and recycling plant (reverse osmosis) produce 7,500 m ³ /day of process water with very low TDS (less than 25 ppm). Wastewater discharged from petrochemical, power, fertilizer, methanol, steel and iron processing plants must be treated with domestic sewage.



Customer Overview

Majis Industrial Services SAOC provides water and wastewater services at Sohar Industrial Port Area (SIPA).

Majis is also responsible for monitoring, collecting, treating, recycling and reusing wastewater to the extent possible at SIPA by the policy makers of the government of Oman.

Challenges

- Implement pollution control measures to protect the SIPA's water environment.
- Offer affordable water tariff to clients.

Current Issues in Oman

Oman is one of the most water scarce nations in the MENA region with only 416 m³ water/person/year, compared to average 1,429 m³ water/person/year in the rest of the region. Industries in SIPA, such as petrochemical, power, fertilizer, methanol, steel and iron processing plants, require cooling and process water for non-stop operation. Among environmental issues, more emphasis is put on air pollution and water discharge.

From January 2014, laws and regulations in Oman prohibit the discharge of wastewater other than brine and cooling water to the marine environment.

This policy change implies that treated wastewater can no longer be discharged into the ocean.

Customer Requirements

- Comply with new environmental regulations that prohibit the discharge of wastewater other than brine and cooling water in Oman's waters while maintaining the water environment and meeting industrial water demands.
- Build a cost-effective wastewater treatment plant to produce recycled water to industries at a competitive price.
- Minimize client risks related to the operation of wastewater treatment and recycling plants.

Proposed Solutions

Design & Engineering	<ul style="list-style-type: none"> • Carry out design through detailed analysis to produce recycled water from wastewater to the extent possible. • Include a process to maximize the use of existing assets based on comprehensive study of existing treated industrial wastewater assets and discharges requirements. • Carry out plant design to minimize power and chemical consumption. • Integrate online monitoring stations into CMS^(*2). <p>(*2) CMS: Central Monitoring Station</p>
Procurement	<ul style="list-style-type: none"> • Set up a dedicated procurement network to ensure procurement of cost-effective equipment and significant reduction in capital cost, compared to other companies.
Construction	<ul style="list-style-type: none"> • Minimize construction requirements while converting sewage treatment plants into wastewater treatment plants.
O&M^(*3)	<ul style="list-style-type: none"> • Carry out O&M for 5 years. • Minimize client risks while assuming the DBO contractor is fully responsible for the entire process from online discharge monitoring to process water production. • Propose O&M teams with trade effluent experts to deal with tenants, MECA^(*4), SEU^(*5) and SIPC^(*6). <p>(*3) O&M: Operation and Maintenance (*4) MECA: Ministry of Environment and Climate Affairs (*5) SEU: Sohar Environment Unit (*6) SIPC: Sohar Industrial Port Company</p>

Solution Contribution

- **Recycling of wastewater**

Recycle wastewater in order to effectively reduce the environmental impact of discharges, and produce water at a lower cost, compared to seawater desalination.

- **Reliability of recycling technology**

Comply with the prohibition on the discharge of industrial wastewater into the marine environment, and provide reliable and cost-efficient solutions.

- **Re-use application**

Ensure recycled wastewater quality meets customer needs and expectations through the system.

Photos of CETRP1 Phase-1

The Project CETRP1 Phase-1 is currently in operation to produce extremely high quality (TDS less than 25 ppm) process water for reuse in industries.



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