METITO

Commitment to a Cleaner Environment

East Port Said Seawater Reverse Osmosis Desalination Plant, Egypt

A Case Study

Key Data

Location	Port Said Governorate, Egypt
Plant Type	Seawater Reverse Osmosis Plant (SWRO)
Capacity	150,000m³/day expandable to 250,000m³/day
Use	Drinking water
End User	Govenment of Egypt
Contract Type	Engineering, Procurement, Construction (EPC)

Introduction

The Egyptian Government awarded the joint venture (JV) comprising Metito and Orascom the East Port Said Seawater Reverse Osmosis (SWRO) Desalination Plant under the Armament Authority of the Egyptian Armed Forces and technical supervision of the Engineering Authority of Egyptian Armed Forces-Water Department. The project is in alignment with Egypt's water security targets by securing the domestic water requirement for a new urban and industrial area in East Port Said. The 150,000m³/day plant is the primary source of drinking water for almost 1 million residents.

The USD130 million plant is built on 79,000m², including an area designated for future expansions to provide up to 250,000m³/day of clean drinking water. The project site was carefully selected to be in proximity to East Port Said city, which is the key beneficiary of the produced water.

With hard work, commitment, and dedication to the highest level of quality, health, safety, and environmental specifications, the East Port Said SWRO plant completed 5million man-hours without a single injury or time lost during the construction of the plant. This was an outcome of regular audits carried out through the series of health, safety, and environment (HSE) training.

Metito's scope of work for this turnkey project covers the design, supply, installation, commissioning, startup, operation, and maintenance for one year.

The project was commissioned and delivered in 2021. Metito is currently performing the operation and maintenance.

Innovation

The East Port Said SWRO plant is a true testament to Egypt's progressive and visionary leadership. It is a great example of how the Egyptian Government engages with the private sector in achieving national water security targets and in improving the quality of life for its citizens.

Metito utilized the most suitable selection of processes for the East Port Said plant according to the location parameter including:

- Using water beak type seawater intake instead of pipes, due to the location's shallow seabed
- A unique intake design by implementing Dissolved Air Flotation (DAF) and Ultra Filtration (UF) in pre-treatment to overcome the high turbidity of seawater in East Port Said
- Pressure exchanger for the most efficient energy recovery
- A calcite filter for post-treatment is also used for a safer transfer through the network
- %50 standby power generation system to ensure continued water production in case of a blackout
- Soil improvement techniques and piling to overcome the low soil-bearing capacity

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Sustainability

Through Metito's sustainability-focused solutions and employing advanced methods to recover energy from reject water (i.e., highly saline concentrated water), the East Port Said plant is designed to use the least amount of energy per cubic meter of produced water. This positively impacts operations and significantly reduces the project's carbon footprint.

The standard power consumption of a plant per cubic meter of treated water was 5.5Kwh/m^3 was reduced to 3.5Kwh/m^3. Furthermore, attending to unique environmental measures, a total power saving of 109,500,000Kwh/year was also achieved. The plant minimizes its environmental impact by disposing of the highly concentrated saline water, the waste produced by the desalination process, in an eco-friendly and safe manner through a complex chemical process. The water is treated with specialized acids to equalize the pH level of the reject water and bring its salinity as close as possible to normal seawater, to protect the marine life in the water drainage area.

Metito is a circular economy enabler. Providing access to clean water betters public health and eliminates water-borne infections. This directly supports economic development, which is in line with the UN's Sustainable Development Goals No. 11 – sustainable cities, and No. 6 – clean water and sanitation.