

Water and Wastewater Treatment Plant 1500 Megawatt Power Plant - Nubaria, Egypt

A Case Study



Key Data

Location	Nubaria, Egypt
Plant Type	Water Treatment Plant
Capacity	225m ³ /h process water 40m ³ /h potable water
Use	Power Plant
Client	West Delta Electricity Production Company (WDEPC)
End User	Egyptian Electricity Holding Company
Contract Type	Design and Build on Turnkey Electromechanical Basis

Introduction

The Egyptian economy experienced a massive growth in the early part of 2003, resulting in an increase in demand for electric power. As part of its utilities' expansion plan, the Egyptian government decided to construct a new power station at Nubaria, the township located 120km north-west of Cairo, and awarded the project to Merito. The project was designed to utilise Egypt's abundant natural gas resources and high efficiency turbines which are characterized by their low carbon dioxide emissions.

As part of the project, Merito constructed several water and wastewater treatment plants to cover the entire scope of water treatment requirements for the site.

Scope of Work

Merito was in charge of the design and erection of the complete electromechanical works for the water and wastewater treatment plant package, including:

- Nile River intake chlorination utilizing sodium hypochlorite shock dosing
- Raw water pre-treatment system incorporating solid contact clarifiers followed by dual media filters to provide 225m³/h for process water and 40m³/h for potable uses
- Potable water system utilizing activated carbon media filtration and disinfection
- Ion exchange demineralization plant comprising 3 streams of skid-mounted activated carbon polishing filters, clarification exchangers, degassers, anion exchange columns and mixed bed vessels, producing 1500m³/day per stream
- Chemical wastewater neutralization for waste regeneration
- Wastewater treatment package that includes; clarification, filtration and neutralization
- Oil separation package to cater for 100m³/h of oily water separation through an API separator and DAF units
- Sanitary sewage treatment package to handle a daily flow of 400m³/day
- Sludge dewatering system utilizing two sludge thickeners and filter presses
- Five chemical injection systems for steam turbine units to control biological growth, condition the water for the condensate system, deaerator, heat recovery boiler drums and circulating water
- Turbine steam and water analysis systems comprising two analyzer shelters each housing sample conditioning equipment, instrumentation, probes, analyzers, racks and cabinets
- Fully automated SCADA work stations



Key Benefits

- A total solution for the power plant water and wastewater treatment needs
- Efficient design that takes into consideration the stringent requirements of the owner and the project manager
- Client ease of mind with all requirements handled by one contractor; Metito
- Novel technology and reliable design that meant trouble free operation
- Technologies with minimal carbon footprint and the use of low carbon emission equipment therefore minimal environmental impact
- Timely execution of the water and wastewater treatment plant package which was imperative for the start-up of power plant
- Full local support from a well-established company with local presence and global knowhow, guaranteeing world-class quality deliverables

