



Project Review

Seawater Intake and Return System - Sohar



PROJECT PROFILE

Seawater Intake and Return System is a major infrastructure project developed by Ministry of National Economy to provide cooling water for various industries being established in the Sohar Industrial Area.

Project

Seawater Intake & Return System for Sohar Industrial Area on Engineering, Procurement & Construction (EPC) basis.

Location

Sohar, Sultanate of Oman

Client

Ministry of National Economy

Client's Representative

Public Establishment for Industrial Estate (PEIE)

Clients Engineer

Fichtner GmbH, Germany

Modelling & Design Consultants

Mott MacDonald & Co. LLC - Civil Structure and MEI Works
HR Wallingford - Hydraulic Modelling Works
Gulf Engineering Consultancy — Plant Buildings

HSE Record:

- 2.73 Million Man-hours without LTI
- 1.21 Million Kilometer without LTI

ONSHORE CIVIL WORKS ON EPC BASIS

Modelling, Engineering, Procurement and Construction of complete Seawater Pumping Station, Ancillary Buildings & External Works

Seawater Pumping Station

Capacity

- Overall Pumping Capacity - 335,000 Cum/hr.
- 10 screen bays of 40,000 Cum/hr each
- 48 Pump Bays to accommodate maximum pump capacity of 16,000 Cum/hr each.

Salient Features

- Pumping Stations Dimensions:
L -190 m, W- 76 m, D -13.20 m
Raft - 1.60 to 2.60 m thick
Wall - 0.90 to 1.70 m thick
Roof Slab - 0.35 m to 0.90 m thick
Roof Beams - 1.20 m x 2.20 m size
- Earthworks - 215,000 Cum
- Concrete volume of 47,000 Cum
- Reinforcement qty of 8000 MT.
- All walls cast in single pour using specially designed proprietary formwork system.
- No expansion joints provided either in rafts or walls in order to achieve maintenance free structure. The roof slab built unrestrained by the walls i.e with suitable sliding joints.

Electro-chlorination Plant Building:

For Electro-chlorination plant and equipment of 16,800 kg of chlorine production per day, including Civil & Building services.

Substation Building:

For 33/11Kv Substation including Civil & Building services.

Damboard Storage Structure:

RCC structure, 35M x 12M x 6M to store 67 Numbers of Damboards.

External Works:

General development including Area Grading, Earthworks, Filling, Roads, Paving, Fencing, Outdoor Lighting, Fire hydrants, all necessary Electro-mechanical utilities etc.

ELECTRO-MECHANICAL WORKS ON EPC BASIS

Seawater Pumping Station:

Mechanical works involved 10 sets of Rake Bar & Band Screens with Wash Water Assembly, Damboards, Solid Handling and Shock Dosing facilities.
Complete electrical works involved necessary Cabling and Cathodic Protection.
Instrumentation works involved centralised supervisory control and monitoring system based on PLC controls for single window integrity and operation of the complete facility.

Electro-Chlorination Plant:

Hypo-chlorite system including generators (8 Nos), Flushing Booster Pumps, Seawater Booster Pumps/Filters, Storage Tanks (3 Nos - 110 Cum Cap.), Continuous Dosing Pumps, Online Chlorine Measurement System, Hydrogen Sensors, Central Control Monitoring System, Electrical & Instrumentation Works and 3 Nos Overhead Cranes.

33 kV Substation Building:

Complete Electrical System involving 33kV and 11kV Switchgears, 20MVA Transformers, Capacitor Banks, DC & LVAC systems and associated cabling works.

OFF SHORE WORKS (BY CONSORTIUM PARTNER M/S STFA)

Complete Modelling, Engineering, Procurement and Construction of Intake Channel Breakwaters, Dredging and Outfall Structure.

BEC'S ONGOING INVOLVEMENT

Operation and Maintenance of complete Seawater Intake and Outfall System infrastructure on 24/7 basis for a period of 4 years.

The scope includes Inspection of Breakwaters, Oil barriers and monitoring of Intake and Outfall facilities. The specialist maintenance includes Electro-chlorinators, Rake Bar and Band Screens, Transformers, Rectifiers and Switchgears.



Top: Sheet Piling, Cofferdam, Dewatering System

Bottom & Inset: Raft Concreting in progress





Top: Seaside view

Left: Electro-Chlorination Plant

Bottom: Finished Pumping Station



Top: RCC Walls in Pump Bays, Distribution Bay (Single Lift)
Pump Bay Roof Slab

Centre: Seawater intake - Break Water

Right: Pump Bays- ready to receive pumps.



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