

Turnkey Water Quality Monitoring Solution for a Desalination Facility



Objective

Process monitoring, optimisation and regulatory compliance

Parameters

- Online TOC
- Calcium Hardness
- Total Alkalinity
- Conductivity
- pH
- ORP
- Temperature
- Turbidity
- Chlorine Dioxide
- Chlorine
- PAH and Chlorophyll

Problem

Veolia has secured a \$320 million contract for the construction of the Hassyan-desalination plant, which aims to become the most energy-efficient plant in the world to strengthen water security in the United Arab Emirates.

- With a capacity of 818,000 m³ per day, this reverse osmosis desalination plant will supply drinking water to 2 million people.
- 35% less energy to desalinate seawater over the past ten years, thanks to advanced reverse osmosis technologies combined with Veolia's expertise.
- This new generation of plants, at the forefront of energy efficiency, is fully aligned with Veolia's GreenUp strategic plan, accelerating the deployment of solutions to preserve water resources.

As part of this, Sidem (Veolia's desalination branch) developed a partnership with Hach to provide a complete solution for analytical measurements.

To meet the project's requirements and milestones, Sidem relied on Hach for a **turnkey solution to ensure optimised engineering time and perfect integration of all components.**

This approach also allowed Veolia to have a single point of contact for coordinating subcontractors, ensuring optimal installation of analysers under challenging conditions (high UV exposure, extreme temperatures, sand/wind). This was essential to maintain continuous operation of the facilities.

At the end of the plant's construction, water quality must comply with the final client's requirements. Any non-compliance would violate the water production agreement, and potential financial penalties could cancel contractual agreements.



Anashell analyser shelter for the TOC analyser and turbidity sensor

Integrated System Consisting of

- 103 Instrument Racks of 13 types, ranging from 1200 mm to 2500 mm
- 7 Cabinets of 4 sizes, from 1500 mm to 4000 mm
- 6 Analyser Shelters, ranging from 2000 mm to 7000 mm

Solution

To address the project's challenges, our client opted for a customised turnkey solution. Our service covered all needs – from design plans, manufacturing, and instrument integration to commissioning analysers on-site – providing full support until the installations were fully operational.

Specifically, we delivered various integrated systems, including: 103 self-supporting racks, 7 cabinets, and 6 analysis shelters.

All systems were factory-tested and verified in the presence of the client. Additionally, we provided a complete manufacturer's dossier, SEI4C maritime packaging, and full assistance in compliance with contract requirements.



Anarack analyser rack for pH sensor



Anashell analyser shelter for Calcium Hardness, Total Alkality and Chlorine analysers, turbidity and pH sensors

Benefits

- Streamlined procurement by using a single supplier for the entire service, reducing complexity in managing and coordinating multiple vendors.
- Factory integration significantly reduced installation time and constraints on-site.
- Each system was pre-tested at the factory and delivered ready for installation, minimising assembly errors.
- A complete range of analysers dedicated to seawater desalination, recognised for quality and reliability under demanding site conditions.
- Real-time water quality monitoring by our analysers optimises process control, responsiveness, and decision-making in case of deviations.
- A local Hach team ensured long-term follow-up, initially handling analyser commissioning and later spare parts management.
- Our shelters, cabinets, racks, and components were designed to withstand the extreme coastal and desert conditions of the UAE.



Anashell analyser shelter for Turbidity, ORP, pH and conductivity sensors

Details & Components

Integrated system consisting of:

- 4 Biotectors – for online TOC and organic load monitoring
- 3 EZ Series analysers for Calcium Hardness
- 3 EZ Series analysers Total Alkalinity
- 180 Conductivity sensors
- 16 Temperature sensors
- 17 pH/ORP sensors
- 11 Ultraturb turbidity sensors
- 12 ClO₂ analysers
- 4 CL17sc chlorine analysers
- 3 PAH analysers – for hydrocarbon detection

All coupled with Hach SC4500 generation transmitters.



Anarack analyser rack for pH, conductivity and temperature sensors

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