# Nirma Ltd. - Gujarat, India

**Q-SEP Model: Q-SEP®** 6008
**Total Q-SEP Membranes:** 170
**Permeate Flow:** 510 $m^3$/hr
**Application:** Seawater Treatment

## The Facility

Nirma is a multi-sector FMCG brand, headquartered in Gujarat in western India. Nirma manufactures products ranging from cosmetics, soaps, detergents, salt, soda ash, lab products and injectables. It is not only the largest selling detergent brand in India but also world number one in soda ash capacity. Nirma has about 18,000+ employees and annual turnover of $1.1 billion (Rs. 7,000 Crores).

## Project Overview

Gujarat is a water scarce region and Nirma wanted to treat seawater to augment water supply at their plant and reduce dependence on rain water. When Nirma expanded their facility to include a new soda ash plant and a new power plant, they had an increased requirement for fresh water, and selected Aquatech as the EPC contractor to design and supply the new 25 MLD Seawater RO system. Aquatech selected QUA's Q-SEP® hollow fiber membranes as the pretreatment to SWRO system because of the unique features the membrane offers.

Tube Settler ▶ Media Filtration ▶ Q-SEP® Taking UF to a different level ▶ Seawater RO

## QUA Solution

Q-SEP® Ultrafiltration (UF) skid for Nirma comprises of 170 membranes arranged in a five row configuration with each row having 34 membranes. The sub headers of individual rows are connected to a main header.

*The inlet seawater parameters of the plant are:*

| Parameter | Unit | Inlet Seawater (UF Feed) |
|---|---|---|
| pH value at 25°C | | 7.2-8.31 |
| Temperature | °C | 25-40 |
| TDS | mg/L | 29,535-43,858 |
| Turbidity | NTU | <5 |
| Feed Flow | $m^3$/hr | 550 |

*Q-SEP Outlet Parameters:*

| | |
|---|---|
| Product Flow | 510 $m^3$/hr |
| Recovery | >90% |
| Guaranteed $SDI_{15}$ post UF | < 3 |

QUA's Q-SEP membranes are able to produce water with a low silt density index (SDI) due to their narrow pore size distribution. The lower product SDI leads to less frequent and easier cleaning of downstream RO membranes. Q-SEP's ability to provide high quality water for RO systems allows it to be an integral solution for seawater desalination systems.

# Q-SEP® Hollow Fiber Membranes

Q-SEP® hollow fiber ultrafiltration modules contain membranes manufactured with QUA's innovative patented "Cloud Point Precipitation" method. This process ensures a high pore density along the length of the fiber and uniform narrow pore size distribution in the membrane. Q-SEP modules deliver superior performance characteristics and product water quality that surpass the quality from conventional UF modules. The narrow pore size distribution allows the membrane to produce water with a low silt density index (SDI). The lower product SDI leads to less frequent and easier cleaning of downstream RO membranes. In addition , the Q-SEP membranes provides an excellent rejection of bacteria and viruses.

Q-SEP UF membranes are made of modified hydrophilic polyether sulfone (PES) material that offers high fiber strength and excellent low fouling characteristics, resulting in higher membrane productivity. These hollow fiber membranes operate under a low transmembrane pressure in an inside-out flow configuration for superior performance. Applications of Q-SEP UF include pretreatment to RO systems (brackish and seawater applications), purification of surface and well water for potable applications, filtration of industrial water, and wastewater recycle and reuse.

# About QUA

QUA is an innovator of advanced membrane technologies that manufactures and provides filtration products to address the most demanding water challenges.

Q-SEP®

HOLLOW FIBER ULTRAFILTRATION

FEDI®

FRACTIONAL ELECTRODEIONIZATION

CeraQ™

CERAMIC MEMBRANES

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MEMBRANE BIOREACTOR

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