

Our Story

Sur Desalination Plant



الشرقية لتحلية المياه
Sharqiyah Desalination

Introducing the Sur Desalination Plant

Today's rapid population and economic growth brings many challenges such as water shortage. To prevent over-extraction of fresh water, turning to alternative resources has become a necessity. Desalination of sea water is a high potential solution to face potable water scarcity and thanks to innovative technologies, it becomes more and more ecologically and economically efficient.

The Sur Desalination Plant puts a lot of effort into reducing the environmental impact of the desalination process. Two outstanding aspects are:

Energy recuperation and re-use due to Energy Recovery Devices (ERD)

Reduces the impact of the operations on the environment and also operating expenses

Innovative water intake based on beachwells

Allows a lighter pre-treatment (thanks to natural sand filtration) and allows a better water quality

Facts & Figures

Build-Own-Operate (BOO) contract signed in 2007 (duration: 2 + 20 years)

Extension of the
**plant signed
in June 2014**

(additional 5 years of operations and
51,000 m³/day of production capacity)

Largest beachwell
catchment worldwide:

over
200,000 m³/day

Drinking water produced:

80,000 m³/day

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100,000,000 m³
produced in October 2014

Population served: **375,000** inhabitants

Triple certification:

ISO 9001, ISO 14001, OHSAS 18001

Minimal impact on the marine and coastal ecology

**Recycling of
over 97%**

of mechanical energy
and saving up to

40%
more energy

than a conventional
Reverse Osmosis (RO) plant



Sur Desalination Plant: 6 step process



1 Beachwell Catchment

The seawater flow necessary for the Reverse Osmosis process is extracted from the ground by 28 individual coastal beachwell units dispatched in three clusters.

This specific type of catchment offers the following advantages:

- Highly flexible pumping design
- Very stable quality of seawater with constant salinity, low temperature amplitude and low pH
- Very low colloidal clogging or bio-fouling index (Silt Density Index SDI15<2)

28 beachwells (each 80m deep)

Raw water capacity: 9,000 m³/h

2 Pre-treatment

Before passing through the Reverse Osmosis membranes, the extracted seawater must be treated with a two step filtration system. First, the water is treated by sand filters for large particle and bio-cell removal. Then, the seawater is 'polished' by micronic cartridge filters.

14 pressure media filters (sand filters)

11 micronic cartridge filters (5 microns)

3 High-pressure Pumps and Energy Recovery

To fight against the Osmotic Pressure and to comply with the required operating conditions, the seawater needs to reach a pressure level of 60 bar which is achieved by using high pressure pumps. This process is energy consuming. To optimize and reduce the final product price, Energy Recovery Devices (ERD) with a high recovery grade (97%) have been implemented.

8 high pressure pumps (60 bar)

24 ERD (97% efficiency)

40% energy reduction per produced m³ (in comparison with a conventional plant)

4 Reverse Osmosis (RO)

The separation of salt from seawater is achieved through high performance Reverse Osmosis membranes.

The plant is equipped with more than 7,000 Reverse Osmosis membranes which are the heart of the process and require great care to ensure high performance and a long life for each membrane.

Monitoring the operating data of Reverse Osmosis membranes guarantees a final product that complies with the most stringent International Standards of potable water.

First pass: 8 independent trains, each equipped with 114 pressure vessels (PV)

Each PV contains 8 membranes

Total Reverse Osmosis capacity: 80,000m³/day

5 Post-treatment

The demineralized water coming out of the Reverse Osmosis membranes is not potable yet. It has to be re-mineralized to comply with the potabilisation requirements. Therefore, limestones are dissolved into the demineralized water with the help of CO₂ injection which guarantees essential minerals (such as calcium and magnesium) in the final product.

4 limestone storage filters

Limestone reactor size: 72m³ each

6 Drinking Water Storage

Before storage, the potable water is disinfected and preserved with a Sodium Hypochlorite injection. The massive concrete reservoirs have been designed to store two days of potable water production in two separate tanks of 80,000m³ each.

2 reservoirs

Total storage capacity: 160,000m³



Focus on operations



To ensure the equipment used within the plant functions at optimum capacity, Maintenance and Asset Management play a major role in the plant activity.

A dedicated Computerized Maintenance Management System (CMMS) has been implemented to plan, follow-up, record and guide our maintenance team on their daily assignments.

Remote control tablets connected with the CMMS makes sure that all maintenance engineers and technicians have access to the required information as well as instruction to perform an efficient maintenance task. Finally, a long-term renewal plan of all assets based on criticality and risk assessments has been implemented to better plan the required investments.



Control Room

With more than 2,000 pieces of equipment connected on a Centralized Supervisory Control and Data Acquisition system (SCADA) hosted in our control room, our operation team is permanently monitoring the performance of the plant 24/7 and all year long.



Laboratory

Every day, more than 100 parameters are analyzed in our laboratory following the international standard procedures of analyses. The water is analyzed at each step of the process to secure its compliancy with the operating conditions as well as with the Omani Standard for potable water.

Focus on Corporate Social Responsibility

Tree Planting Project

Life is always possible, even in the most extreme ambient conditions. To show this, more than 200 halophyte trees have been planted as a symbol of life. The trees are salt-tolerant and have been planted by our employees' children.



World Water Day: Visit of Children

Sur Desalination Plant is regularly hosting children and schools to raise awareness on water scarcity and desalination. The World Water Day is of course one of these particular days where young Omanis from local schools are taught about how precious drinking water is.



Focus on Corporate Social Responsibility

Community Area

As a key driver for team bonding, cultural diversity and exchange, our Community Area is composed of sport facilities as well as a gathering hall to host staff and their families after work and at weekends. This area is also a strong communication tool where most of our events are organized with the participation of local associations or ministries.



Towards a Sustainable Development

Access to basic services and equitable resource distribution remain crucial issues today as societies undergo profound transformations. For Sharqiyah Desalination Company, access to water, waste management, and energy are the very core of our businesses and expertise. And, because the areas we serve depend on us, we strive for continuous improvement in providing those services. In this context, sustainable development forms an integral part of our day-to-day operations.



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A JOINT VENTURE

