



PARAMOUNT-ONEIC TECHNOLOGIES LLC.

An ISO 9001:2000 Company

DESALINATION

Introduction

PARAMOUNT - ONEIC, Muscat, Oman is a pioneer in the field of Water and Waste Water Treatment in the Arabian Gulf region and possesses experience in successfully commissioning and installing a number of units outside the Arabian Gulf region.

The company operates on the principle of "evolving treatment procedures in Water and Waste Water Treatment with different treatment steps including system integration in making a Water and Waste Water Treatment plant sustainable, technically viable and economically feasible".

PARAMOUNT - ONEIC thus espouses this effort in providing unique solution to the various necessities in treatment of Water and Waste Water in an environment surrounded by largely product based and EPC based



Why Desalination?



The modern world is behest with additional human needs and demands better quality in all walks of life. Technology is continuously adapted to this growing need with scarcity of natural resources to cater the ever growing population.

Earth has one-fourth of its area covered by land mass with the rest being the vast expanse of sea. It is hence imperative to tap this large available resource to cater the needs of the expanding cities and other population centers.

Providing an adequate and reliable source of good quality water has become an important mandate, with **desalination** a key part of the solution.

Basic Principle of Operation

PARAMOUNT - ONEIC adopts the utility of integrated membrane process in removing the high dissolved solids (dissolved salts as in general terminology) from sea water or brackish water from underground aquifers to produce process water for industrial utility or drinkable water for community purposes.



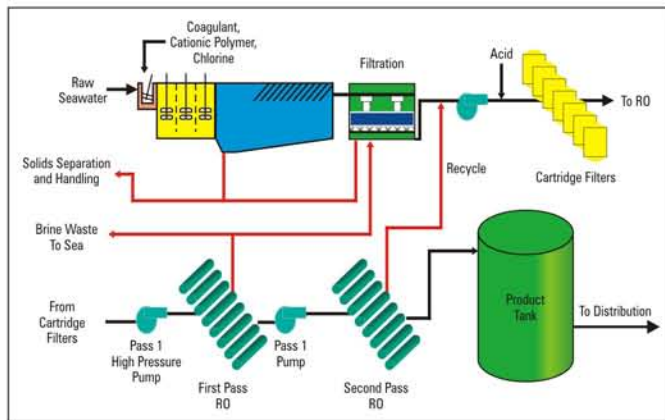
Desalination Plant System Design

PARAMOUNT - ONEIC is adapted to select the most appropriate design requirement from the place where the sea water/ brackish water is pumped for treatment and takes care of the design of the entire pre-treatment steps, RO (Reverse Osmosis) unit, post treatment steps and reject management of water.

PARAMOUNT - ONEIC has developed infrastructure and strategic alliances to manufacture superior quality of the critical components and equipments of the treatment units at its work shop located in Rusayl Industrial area, Muscat, Oman.



Pre-Treatment



Sea water from its intake facility (after pump house) is screened of large solid matter prior to pre-treatment for removal of suspended solids and correction of pH.

An additional step, if required of filtration (pressure sand filter followed by activated carbon filters) is added dependent on the type of intake. The water is passed through Cartridge micron filters prior to passing through the membranes.

Design of filtration using Ultrafiltration (UF) methodology or microfiltration (MF) methodology is adopted based on pilot plant trials to optimize the treatment steps keeping in mind the economy and ease of operation required.

PARAMOUNT - ONEIC also offers nano filtration (NF) technology integrated in a desalination system - NF-SWRO (Sea Water Reverse Osmosis). The NF plant receives non-coagulated filtered seawater and reduces turbidity and microorganisms and hardness. The overall concentration of TDS (Total Dissolved Salts) is reduced by approx. 50%, producing permeate that is far superior to seawater as a feed to SWRO. This makes it possible to operate a SWRO plant at a high recovery rate. The high water output combined with a reduction of chemicals and energy (by about 25 – 30%) allows producing good quality water from seawater at a 20 - 25% lower cost compared to conventional SWRO.



Reverse Osmosis Unit

Two stage or two pass RO unit are designed to maximize the recovery of water in the system.

Modular design of the RO units is adopted to adapt with the varying capacity requirement and with an eye for future expansion requirements.

Adequate and appropriate dosage of suitable chemicals is applied to avoid scaling and bio fouling of membranes thereby increasing sustained operation of the unit.

Skid mounted CIP (chemical in plant) units are the norms of PARAMOUNT - ONEIC's design to enable effective periodic cleaning of RO membranes.

The chemical storage units are fabricated in the company's work shop. Tanks with material of construction from mild steel to stainless steel are provided with accessories like agitators and pump skids and interconnecting piping and fittings to ensure superior quality and efficient use of resources.



Post Treatment

Permeate from RO modules are de-gassed and pH corrected in post treatment step.

Re-mineralization of RO water is a required post-treatment step to make water drinkable. Adequate injection of chemicals allows calcium ions to re-create some hardness and alkalinity in the water to achieve the standards specified by the World Health Organization. A non-toxic, non-hazardous additive is preferred in potable water.

Process Equipments / Systems Offered

- Aerators
- Pressure sand filters
- Tanks & vessels
- Activated Carbon Filters
- Agitators/Mixers
- Clarifiers/Thickeners
- Oil Separator Mechanism
- Sludge Mixers
- Clariflocculators
- Vacuum Drum Filters
- Tilted Plate Interceptors & Separators
- Activated Sludge Package Plants
- Air Flotation Unit (DAF)
- Packaged Sewage Treatment Plants
- Incinerators
- Membrane Based MF/UF/RO Package Systems
- Multi Effect Evaporator
- SO₂ Scrubber
- Coiled Pipe Flocculator
- Plastic Media Biotowers
- Flue Gas Desulphurisation (FGD)
- Trickling Filter Arms



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