

## RO Process

Reverse osmosis (RO) is a membrane technology method which can remove many types of large molecules and ions from solutions. Reverse osmosis takes place when the water is moved across the membrane against the concentration gradient, from lower concentration to higher concentration. In this process, a semi-permeable membrane which allows the passage of water, but not ions or larger molecules is used. In reverse osmosis, fresh water is on one side and a concentrated aqueous solution is on the other side of the semi-permeable membrane. If normal osmosis occurs, the fresh water will cross the membrane to dilute the concentrated solution. In reverse osmosis process, pressure is exerted on the side with the concentrated solution to force the water molecules across the semi-permeable membrane to the fresh water side. The result of reverse osmosis is that the solute is retained on the pressurized side of the membrane and the pure solvent is allowed to pass to the other side of it.



# Who we are?

Bonian institute was established in 2002 by some young Iranian scholars. Based on high skilled human resources as our core competency, we developed our business in high-tech industrial fields; one of which is Desalination technology. By cooperating with our strategic partners, we got good achievements in development of desalination technology in both scientific and Industrial aspects.

Bonian's engineering team is now capable to design (Basic and Detail) Thermal and Membrane Desalination plants in various situations and capacities. By cooperation with our partners we provide desalination plants (EPC projects) with capacities from 60 to 18000CM/D.

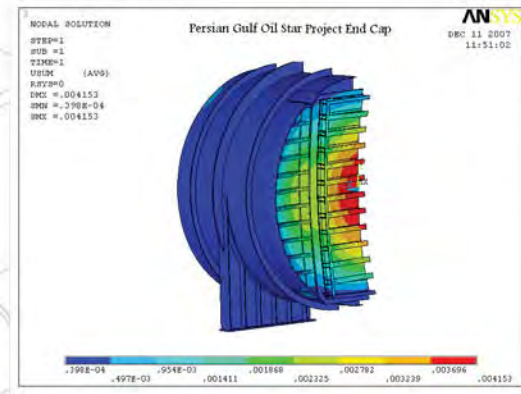
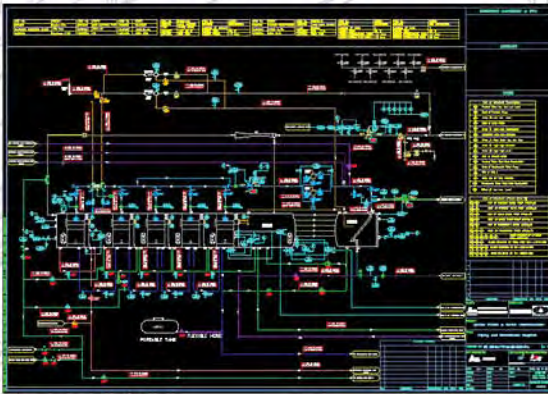
Bonian's professional team also provides consultancy and Engineering supervision services while our elite R&D team supports our presence at the edge of knowledge in Desalination field.

Reliability and quality of our services have been proven in several projects which you can find in our reference list.



Desalination Technology value chain





## What we do?

- Design and construction monitoring of thermal desalination plants with a variable capacity up to 25000 m<sup>3</sup>/d, using two individual codes of designing and simulation of MED desalination units
- Design and construction of semi-industrial pilots specifically in the field of water industry
- Design Zero Liquid Discharge Units
- Design and implementation of hybrid desalination plants
- Providing engineering consultation on industrial water treatment plants and selecting optimized water solution for industrial units in terms of technical issues and local conditions
- Holding professional training courses about water and utility plants
- Preparing techno-economical documents and tender documents for Water treatment systems



# Reference Examples



Complete Design of four 4000 m<sup>3</sup>/day  
MED-TVC Units – South Pars Gas Field, Phases 15 & 16





Complete Design of four 4500 m<sup>3</sup>/day  
MED-TVC Unit – Qeshm Island, Qeshm Water and Power Co.



Complete Design and supply of one 1000 m<sup>3</sup>/day  
BW RO Unit – Ruhubelent, Turkmenistan





Process optimization of two 1800 m<sup>3</sup>/day  
MED-TVC Units – Lavan Island, Lavan Oil refinery Co.



Feasibility study of using desalination units beside 25 MW  
and 162 MW gas turbines - Mapna group