Reverse Osmosis Water Maker for the Oil & Gas Industry
Veolia for the O&G industry

Veolia Water Technologies is dedicated to creating water solutions for the global oil & gas industry. Oil and gas exploration and production processes are highly complex and capital intensive. Production companies face several challenges including safety, climate, geographical hazard, and environmental constraints, especially as difficult to access areas become attractive to develop. Water is a major component in all phases of oil and gas production.

Veolia provides sustainable management solutions for handling and treating produced water, and for production of injection water. With innovative technologies and a long history of serving the industry, Veolia provides solutions both onshore and offshore for reverse osmosis water, produced water treatment, and water injection.

What is Reverse Osmosis?

The Reverse Osmosis (RO) membrane is designed to remove over 99% of the mineral/ionic and ~90% of the organic contaminants as well as the bacteria from the water. This is accomplished by using high pressure pumps to overcome the osmotic pressure and forces the water through the semipermeable membranes. As the water passes through the membrane, the contaminants are left behind and rejected in a highly concentrated stream.

The RO is usually protected by the pretreatment system and designed to conservatively provide long run cycles between cleanings while maximizing performance to this vital component of the system.

“Veolia’s strength comes from its broad and extensive experience in our industry (ie. O&G). The local support during project execution is also a differentiator.” Quote from a Client, February 2015.
RO Water Maker Package Description

A Reverse Osmosis system is used for independent and reliable fresh supply for onshore and offshore facilities. The reverse osmosis is ideal for fresh water generation – being easy to operate, economical and producing excellent water quality.

RO Water Makers are designed for automatic operation. They will run unattended for long periods of time and require little or no maintenance during operation. All reverse osmosis systems are skid mounted, completely pre-assembled on a frame for the last amount of onboard installation work. They are pre tested in our workshop testing facilities, both electrically and hydraulically.

As Veolia’s objective is to provide reliable and long lasting equipment, the RO water maker unit come with a built in concentrate displacement device that will extend the membrane operation cycle. Also, a chemical cleaning device (CIP) can be provided with the systems in order to make cleaning of the membranes easier and less time consuming for the operators.

Typically, the RO water maker package consists of:

- MMF (Multi Media Filter)
- RO Guard Filter
- RO High Pressure Feed Pump
- RO pressure vessels + membranes
- Chemical dosing
- CIP built in cleaning and rinsing device (optional)

Process Flow Diagram - Typical RO Water Maker System

The process flow diagram shows the general configuration of an RO plant. Generally a booster pump is used to provide the required osmotic pressure. The filter system protects the membranes from suspended particles in the feed water. The application of a scale inhibitor extends the membrane lifetime to a maximum. After pre-treatment, the high pressure pump feeds the Reverse Osmosis modules. Permeate (i.e. desalinated water) passes the membranes, while the remaining seawater takes up the rejected salts and leaves the modules as concentrate back to the sea. The post treatment, i.e. chlorination and mineralization, makes it potable and noncorrosive.

The reverse osmosis membranes removes salts and minerals, and also all kind of impurities hazardous to human health such as viruses, bacteria, legionella; it is a safe method to produce perfect fresh water. The quality of the water is in accordance with European, international WHO and US health standards.

Veolia RO Water Maker Standard Package

Standard Packages according to pre-determined flow rate ranges have been created to lower cost and improve their competitiveness.

The standard designs comply with:

- API, ASME, ISO or manufacturer codes to meet O&G requirements.
- Hazardous area requirements

However, the RO Water Maker can also be designed & built to customer specifications.
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