# RO

## Reverse Osmosis equipments

A range of Reverse Osmosis equipment
designed to provide
the highest performances
with flow rates demand
from 50 to 1000 l/h

# RO REVERSE OSMOSIS

Direct Osmosis is a phenomenon that happens normally in nature, for instance in the cells of all living organisms, and it is the process where with two solutions of different concentration divided by a semi-permeable membrane (that is allowing water but no salts to go through), the more diluted solution tends to move naturally towards the more concentrated solution till the concentration of the two solutions becomes the same; the pressure created on the membrane because of this flow is called Osmotic Pressure.

**Exploiting this principle, it is possible to reverse the process by applying a similar but adverse pressure to the concentrated solution to obtain from it a solution of lower concentration: this process is called Reverse Osmosis.**

The osmotic membrane carrying out the best filtering level achievable, behaves like a barrier not only against the salts and inorganic substances making up the saline composition of the water, but also against organic substances such as pesticides, pyrogens, viruses and bacteria; a nominal rejection (reduction capacity) of 100% can be reached with bacteria.
The bigger the difference between the pressure applied and the osmotic pressure, the bigger is the quantity of water produced per unit of surface of semi-permeable membrane.
The supply pressure required varies according to the type of water and salinity to be treated (therefore according to the relative osmotic pressure to overcome):

- System water: from 2-3 up to 18-20 bar
- Brackish water: from 7-8 up to 34-40 bar
- Sea water: from 50-55 up to 70-85 bar

The most suitable membrane (as far as type and dimension are concerned) must be chosen for each system, following a modular criterion, so that the chosen membrane is arranged following a system of elements in series and in parallel.
A reverse osmosis membrane cannot remove 100% of salts (even if today 99.5% can be achieved) and cannot treat 100% of the supplied solution, therefore a reverse osmosis system has a Supply, a Product (also called Permeate) and a Discharge (also called Reject or Concentrate).
These days reverse osmosis technology has undergone such quick development that compact, simple, versatile systems are achieved, characterized by constant output, both in terms of water produced and its quality.
No civil or industrial business exists that can do without specifically treated water; from the water for boilers that must have precise chemical-physical specifications to process water (chemical and pharmaceutical, food, drink industries, etc.) that must adhere to stringent production requirements, the possibilities for use of the reverse osmosis process can be considered endless.
In this sector too, reverse osmosis technology has conquered a leading role thanks to its adaptability, cost-effectiveness and running simplicity.

The RO reverse osmosis systems by ATLAS FILTRI use very high quality components and are designed to meet the requirements of any customer, on the basis of the analysis results of the origin water; apart from a standard range, on request ATLAS FILTRI can provide specific solutions.
Every installation can be fitted with pre- and post-treatment systems; ATLAS FILTRI can boast a wide experience in the water treatment and filtering sector, with a wide range of items and equipment for both the domestic/civil and industrial sectors.

## TECHNICAL FEATURES

- **Domestic uses:** cleaning-up of drinking water, elimination of any smells and tastes connected to the presence of chlorine or chlorine derivatives, pesticides, insecticides, fungicides, heavy metals, micro-organisms, strong reduction in salt content.
- **Technical uses:** in all processes where demineralized water is used, production of drinking water from wells or sources with values within their operational conditions.

**NOTES: The system is suitable to treat water with certain chemical-physical and microbiological characteristics that might require pre-treatments, so it's always necessary to have a complete analysis of the water to be treated.**

## CERTIFICATIONS

prodotto conforme a D.M. 25/2012

EAC

The products are tested and certified under the most stringent procedures worldwide, **in compliance with DM 25 (Italy) and with the sanitary certification EAC/Ghostreghistrazia (Russia).**

## SYMBOLS LEGEND

For domestic use

For technical and industrial use

# CHEMICALS

### FLOCON 135 - ANTISCALANT FOR REVERSE OSMOSIS SYSTEMS

Flocon 135 is an aqueous solution of a specialized phosphinocarboxylic acid, highly effective in controlling the deposition of inorganic scale forming salts on membrane surfaces.
Special features:
- Excellent control of carbonate and sulphate scales for cost effective operation
- Compatible with all major membranes
- International potable water approvals
- Dispersant
- Iron tolerant

Flocon 135 is not affected by chlorine or other oxidizing biocides under normal conditions of use; it may be used in membrane systems using chlorine and sodium metabisulphite.
Flocon 135 is an aqueous solution of an organic acid and as such is corrosive in its concentrated form. Corrosion resistant dosing equipment should therefore be used. Examples of suitable materials are 316L stainless steel, or plastics such as GRP, PVC and PE.
Flocon 135 is certified to ANSI / NSF Standard 60 for use in reverse osmosis systems producing potable water.
Packaging: 25 kg (net weight) Plastic drums

### FLOCON 260 - ANTISCALANT AND ANTIFOULANT FOR REVERSE OSMOSIS SYSTEMS

Flocon 260 is an aqueous solution of a specialized polycarboxylic acid, highly effective in controlling the deposition of inorganic scale forming salts and particulate fouling on membrane surfaces.
Special features:
- Excellent control of carbonate scales, sulphate and fluoride for cost effective operation
- Effectively control both soluble and insoluble iron
- Effective against silica fouling
- Dispersant
- Compatible with all major membranes
- International potable water approvals

Flocon 260 is not affected by chlorine or other oxidising biocides under normal conditions of use; it may be used in membrane systems using chlorine and sodium metabisulphite. Flocon 260 is an aqueous solution of an organic acid and as such is corrosive in its concentrated form. Corrosion resistant dosing equipment should therefore be used. Examples of suitable materials are 316L stainless steel, or plastics such as GRP, PVC and PE.
Flocon 260 is certified to ANSI / NSF Standard 60 for use in reverse osmosis systems producing potable water.
Packaging: 25 kg (net weight) Plastic drums

### FLOCON B38 - SANITISER FOR REVERSE OSMOSIS SYSTEMS

Flocon B38 is a fast acting high performance biocide for application as a sanitiser in reverse osmosis systems; it can also be added to the feedwater flow for predetermined times in between episodes of system sanitisation to control bio-film growth.
Special features:
- Fast acting
- Effective at low concentrations
- Effective against a broad spectrum of microorganisms
- Compatible with thin film composite membranes

Once or twice weekly treatments with Flocon B38 will effectively control bio-film growth.
Packaging: 25 kg (net weight) Plastic drums

### FLOCLEAN MC3 - ACID MEMBRANE CLEANER

Floclean MC3 is a low pH formulation that has been designed specifically to remove metal hydroxides, calcium carbonate and other similar scales from polyamide and polysulfone membrane surfaces.
Special features:
- pH adjusted to 3.0+ 0.5
- Highly effective at ambient temperatures
- Contains no surfactants and is quickly rinsed away
- Contains organic acids, detergent builders and chelating agents

It can be used at temperatures from 15°C (60°F) up to the maximum recommended by the membrane manufacturer.
Packaging: 25 kg (net weight) Plastic drums

### FLOCLEAN MC11 - BASIC MEMBRANE CLEANER

Floclean MC11 is a high pH formulation that has been designed specifically to remove organics, silt and other particulate deposits from polyamide, polysulfone and thin film composite membrane surfaces.
Special features:
- pH adjusted to 10+ 0.5
- Highly effective at ambient temperatures
- Contains no surfactants and is quickly rinsed away
- Contains detergent builders, chelating agents

It can be used at temperatures from 15°C (60°F) up to the maximum recommended by the membrane manufacturer.
Packaging: 25 kg (net weight) Plastic drums

### ANHYDROUS SODIUM BISULPHITE - CHLORINE NEUTRALIZER FOR REVERSE OSMOSIS MEMBRANES

The chlorine neutralizer is a sodium bisulphite reducing formulation suitable to remove free and combined chlorine from supply water in reverse osmosis systems; as a matter of fact it is well known that in time the presence of free chlorine can ruin the membranes and affect the quality of the water produced by the osmosis systems. Thanks to the normal regular shutdowns, the neutralizer is suitable for maintaining the membranes of the reverse osmosis systems.
Packaging: 25 kg (net weight) bags