

# MARKET LEADERS IN FILTRATION

## RONA™ OSMOSIS SYSTEM

REVERSE OSMOSIS

RO systems are available in various sizes, Progressive's Reverse osmosis spiral wound cartridges offer a filtration level of up to 1 angstrom (0.0001µm).

A typical water filtration system consists of the following; Pre-treatment system to protect the RO (reverse osmosis) cartridges. RO systems can be followed by Progressive's UV steriliser or Ozone. Progressive has frame mounted skids to accommodate a range of applications and volumes. We can accommodate volumes from 100 litres per hour to 150,000 litres per hour. The process of pre-treatment:



1. Media filtration- use a filtration bed consisting of one or more layers of media granules. May be quartz sand, manganese sand, garnet, gravel or anthracite granules and may use more than one size range of granule. The granules have the ability to remove suspended particulates, iron, manganese or hydrogen sulphide.
2. Activated carbon filtration- used in the removal of dissolved and suspended organics, chlorine and chloramines. It can be of great assistance in reducing contaminant concentrations.
3. Water softening- using ion-exchange resins can prevent scale formation within RO systems by removing the hardness (multivalent cations)



in RO feedwater. The most common of these ions include calcium (Ca+2), magnesium (Mg+2), and iron (ferrous Fe+2), which tends to be soluble. Also the softener can be regenerated with an even higher concentration of salt.

4. Acid injection- the most effective way to prevent calcium carbonate scale formation is to lower the feedwater PH via the injection of an acid. The acid will convert bicarbonate ion into carbon dioxide
5. Scale inhibition and dispersion- are very effective at preventing the fouling of the RO membrane elements due to formation of scale. They slow the precipitation by inhibiting salt crystal growth.
6. Cartridge pre-filters- are recommended directly upstream of the RO high pressure pump and front end to protect the RO membrane elements from debris. These filters can also remove suspended solids that might otherwise foul the RO membrane. The filters can have a pore size rating from 5-25 U. m.

## RONA™ CROSS

CROSS FLOW SYSTEM SYSTEM

Progressive Group has available a completely new, compact, mobile ceramic CERinox crossflow filter.

That is specially intended for smaller and medium sized beverage producers and for the filtration of very different liquids.

The filter can be used for the filtration of very different products. Equipped as standard with a tubular cooler, work can be carried out on the product without increasing the temperature.

The CERinox is a compact crossflow filtration plant equipped with ceramic tubular membranes. There are standard units available that have different automation levels. From manually controlled units up to fully automated plants.

The cross-flow principle as shown on the following picture is characterised by the flow directions of the unfiltered and filtered liquid, which are perpendicular to each other.

The preferably-turbulent flow of the unfiltered liquid, which is parallel to the membrane's surface, prevents particles from depositing on the membrane or carries away already deposited substances. Hence the throughput of filtered liquid through the membrane is kept high. A pressure gradient across the membrane forces the filtered liquid to penetrate the membrane.



### Benefits of Ceramic over Polymeric membranes

- Resistance to the full range of pH {1 14}
- Resistance to chlorine up to 1,000 ppm
- Resistance to a wide range of temperatures (0 to 100°C)
- Resistance to a maximum pressure of 10 bar
- A guaranteed membrane life of 8 years
- Ability to clean extremely aggressively and maintain constant performance.
- No unforeseen and unplanned breakdowns (membrane failures).
- Individual ceramic elements can be changed out (huge cost saving)

Our Crossflow systems are designed and built to handle punishing 24/7 Operations where breakdowns cannot be tolerated. Polymeric membranes are prone to random and very inconvenient failure with a typical life expectancy of 1-2 years.

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