

# Reverse Osmosis

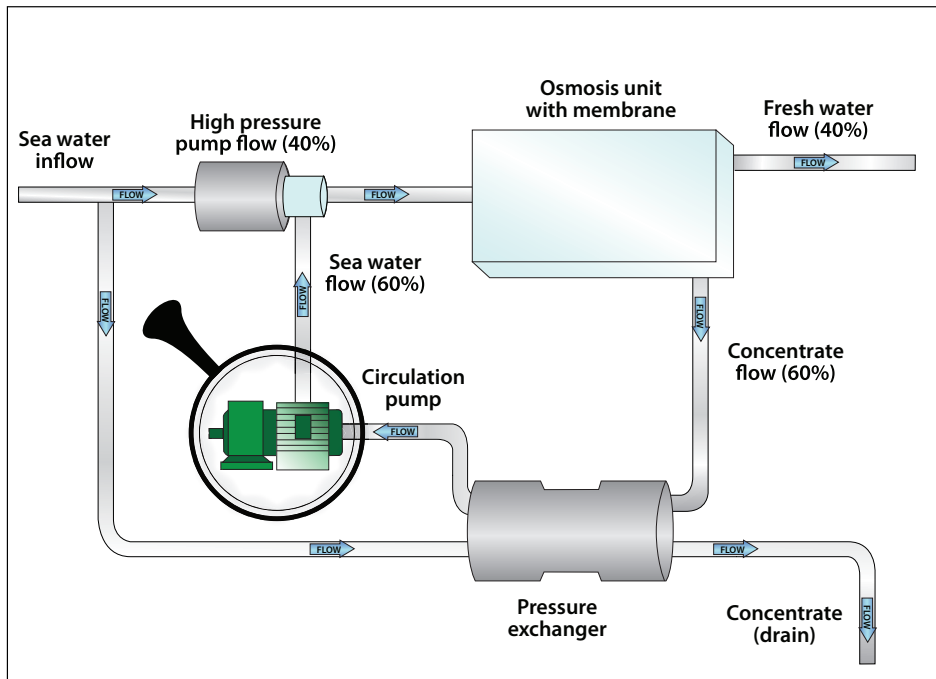
*Industrial reverse osmosis is used in several processes where a solution is needed to produce a reduced or increased concentration of a fluid.*

*Reverse osmosis can be found in many industries, each with the need to separate the solid and liquid parts.*



## Process examples

- Desalination of salt water
- Desalination of waste salt solutions in electronics and batteries manufacturing
- Wastewater purification
- Water deionization
- Food industry



*Left: An example of a reverse osmosis system*

### Process points

Reverse osmosis uses a high pressure pump to push a fluid through a membrane which processes the original fluid into two different concentrations – A filtrate, which is a lower concentration such as fresh water which is channelled off and a higher concentration such as salt water which is either recirculated into the membrane or channelled off to be processed further or disposed of.

An industrial plant will use extreme pressures in passing the liquid through

a membrane. The recirculation of the high concentration solution will be at a reduced pressure, however it will still be high.

Depending on the media itself, the high concentration solution may also be corrosive and increase wear on plant equipment.

Energy input is very high at desalination plants, which places energy efficiency as a high-priority.

### Pumping requirements

A pump is required to recirculate the concentrated solution from the membrane where reverse osmosis occurs to the high pressure pump. The pump(s) must be able to handle high pressures, potentially corrosive media and high flow rates.

## The solution

The Verdermag Global HSP range of mag-drive centrifugal pumps provide the optimum solution for high system pressure applications such as processing plants where reverse osmosis lines are in operation.

The HSP range is particularly effective in applications where medias are pumped at high pressure. Samples can be tapped off the mainline and pumped through a densitometer/sample extractor.

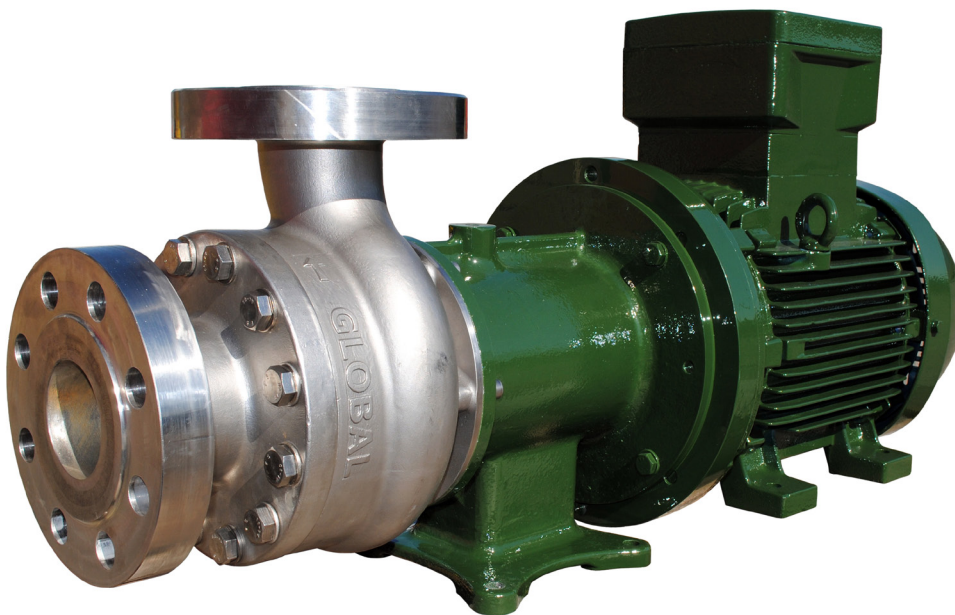
The pump range is built with an incredibly high-duty casting and assembled with high quality compenantry.

The Verdermag Global range is renowned in the industry for its exceptional reliability and performance. Each unit is built with simplicity, reliability and longevity in mind.

The customer and their process are at the forefront of design and development. Every unit has a

wide array of specification options including internal materials, coatings and product testing. There is a high level of interchangeability for spare parts and a highly qualified team of service engineers to assist with all maintenance. ATEX certified models are available.

All Verdermag Global pumps are built for heavy duty applications and require little or no maintenance. All models in the series are hermetically closed rather than using mechanical seals so the units are 100% leak-free.



*Left: A Global High Pressure model. The range is suitable for high pressure systems and recirculation of fluids found in the desalination process, oil and chemical industries, food production and many more.*