

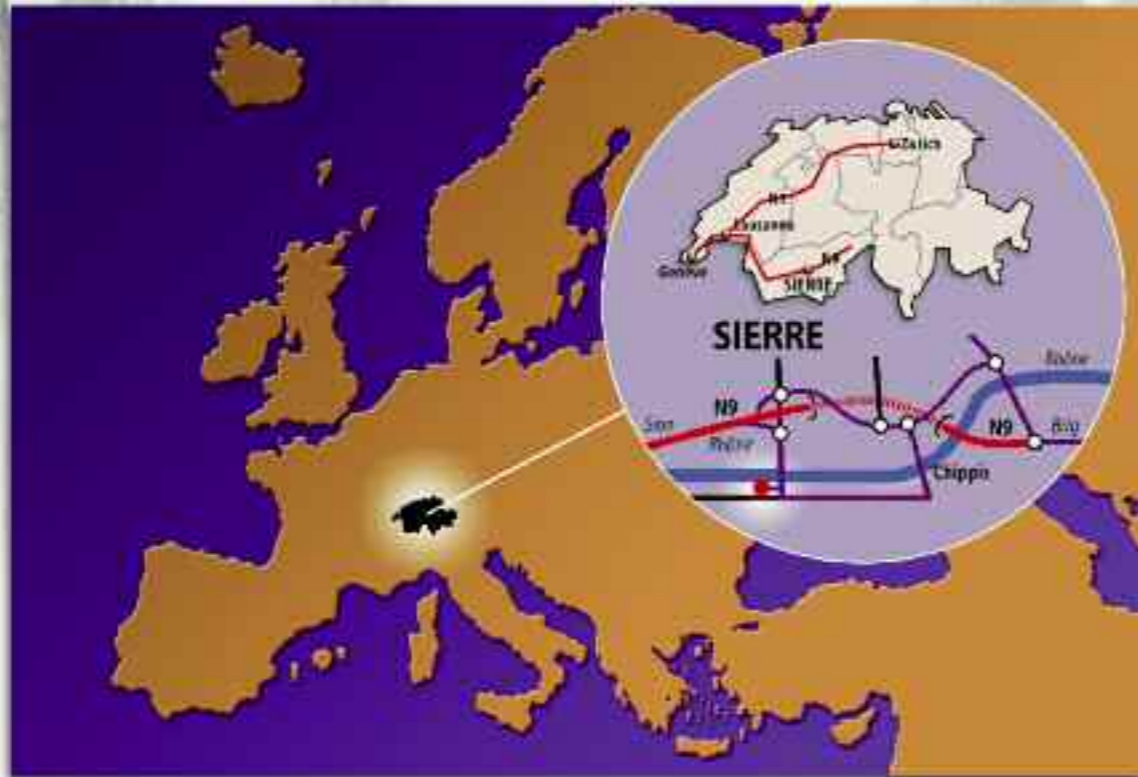
membratec

Your partner in producing high quality drinking water

Production of drinking water by ultrafiltration Specifications

Daily capacity standard	100 to 30'000 m ³
Turbidity	< 0.03 NTU *
Reduction in micro-organisms (E.coli)	> 99.9999 %
Pressure drop across the membrane	0.2 to 0.8 bar
Electricity consumption	0.05 to 0.12 kWh/m ³
Yield (drinkable water / feed water)	92 to 98%
Membrane service life	7 to 8 years

* For feed water turbidity up to 500 NTU.



Membratec offers highly effective systems for the treatment of water for human consumption:

- design of the plant tailored to the needs of the end-user,
- erection and commissioning on site,
- R&D for finding solutions to specific problems,
- laboratory, pilot plant and on-site testing,
- personalised after-sales service,
- technical support to production.

**Membratec, a team of highly qualified specialists,
offering you a wide range of services.**

membratec

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CLAIR

Comme de l'eau de roche...



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Membrane separation processes

Water treatment systems

Membrane techniques

The various membrane techniques (microfiltration, ultrafiltration, nanofiltration and reverse osmosis) all serve to separate the constituents of a fluid according to their size, by means of a physical barrier, the membrane.

Separation

The particle size level at which separation occurs is determined by the choice of membrane cutoff, defined as the size of the smallest particles it will retain.

Membrane cutoff

The membrane cutoff is chosen such that the pore size of the membrane is substantially smaller than the diameter of the smallest particles to be eliminated. This has the effect of greatly delaying the membrane fouling.

Excellent performance in service

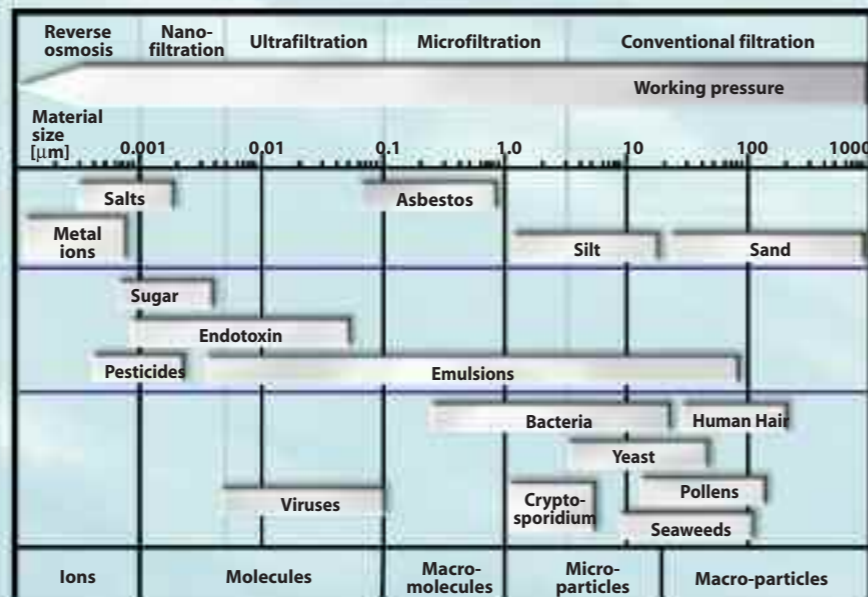
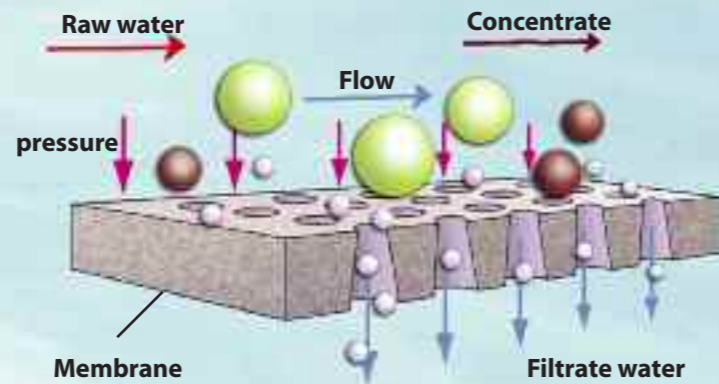
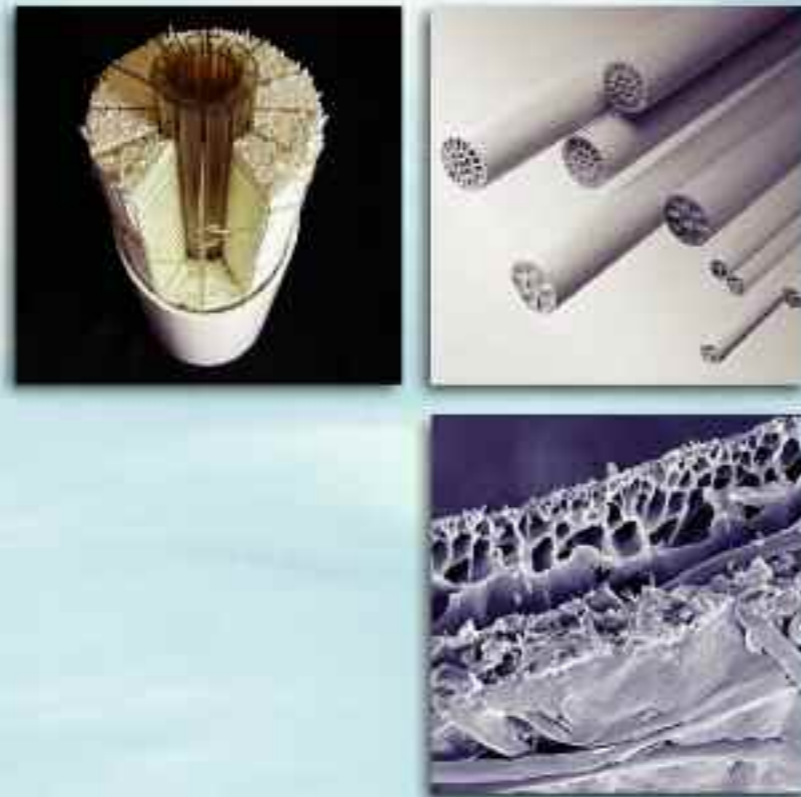
Membrane separation performs well in service because:

- the membrane forms a complete barrier;
- the asymmetrical structure of the material ensures that separation takes place at the surface and not throughout its depth;
- the fluid flow is tangential to the surface of the membrane, ensuring a continuous cleaning effect.

Resistance of the membranes

Material used	T max. (°C)	pH
Cellulose acetate	35	3-8
Polyamide	50	3-11
Polyethersulphone	80	2-12
Ceramic	350	0-14

The thermal resistance and chemical compatibility of the membrane determine the type of cleaning agents that may be used for maintaining it, and the effectiveness of the cleaning procedures depends directly on them.



Ultrafiltration

Ultrafiltration is perfectly suited to the production of drinking water from surface water, because the membrane cutoff is well below the size of the principal micro-organisms but above that of mineral salts.

Treatment of turbid water

In certain regions, in karst land for example, there are often periods when the water may be excessively turbid. At such times, even when the turbidity reaches levels as high as several hundred NTU, the water is easily clarified by ultrafiltration.

Mechanical disinfection

During such periods of high turbidity, the bacteriological quality of the water deteriorates rapidly. Ultrafiltration disinfects the water mechanically by eliminating the micro-organisms it may contain (faecal bacteria, viruses, parasites and so on).

Treatment with chemical products is superfluous

Chlorination of filtered water is not necessary. Its use is only justified if it is needed to protect the distribution network.

Compactness and modularity

Ultrafiltration plant is very compact, its height being less than three metres. Its modular design makes it possible to increase production rapidly, and thus to respond quickly and economically to population growth and to increases in consumption.

Associated treatments

Feed water having more complicated quality problems such as the presence of dissolved pollutants requires associated treatment, complementary to ultrafiltration

	Coagulation	Nanofiltration	Activated carbon	Oxidation
Organic matter	○	○	○	
Iron and manganese	○			○
Colour	○	○		
Pesticides, herbicides		○	○	
Nitrates, nitrites		○		



Ultrafiltration-plant 10'000 m³/day

Ease of use

The equipment is reliable and operates entirely automatically. A PLC governs the different sequences of production, back-washing, disinfection and membrane cleaning.

The control panel is provided with a user-friendly interface. The plant can be controlled remotely, by fixed or mobile telephone.

Waste treatment

Back-washing water contains no chemical products and can be returned to the river.

Effluent from disinfection or membrane cleaning is generally collected and neutralised on the spot, before being returned either to a sewer or to the natural environment, according to the prevailing regulations.



Ultrafiltrations-plant 150 m³/day



Ultrafiltration-plant 2'200 m³/day