

More than Pure Water

Membrane technology

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Effective Water Treatment

Membrane filtration ensures an efficient and at the same time environmentally friendly water treatment with a minimum consumption of chemicals. Depending on your individual task, you will receive the optimal solution for the removal of particles and minerals ensuring lowest operating costs.

With our comprehensive know-how in the performance and capabilities of different types of membranes, we implement application-optimised treatment solutions with precisely matched pre- and post-treatment.

Priority is attached to economic aspects such as life time of the membranes, energy efficiency, and process automation.

Type series	Ultrafiltration Dulcoclean®		Reverse osmosis Dulcosmose®			
	UF eco	UF	ecoPRO	TW	BW	SW
Permeate output (m³/h)						
50						
45						
40						
35						
30						
25						
20						
15						
10						
5						
Salt content mg/l	< 1.000	< 40.000	< 1.000	< 1.000	< 5.000	< 10.000
Particle removal	✓	✓	✓	✓	✓	✓
Particle removal and desalination			✓	✓	✓	✓

Ultrafiltration Systems Dulcoclean® UF and UF eco

are used in water treatment to remove finest particles and turbidity. The membrane forms a safe germ barrier so that bacteria, parasites and viruses are reliably removed from the water – even during fluctuating water quality, e.g. after heavy precipitation.

Ultrafiltration is not only an established process in drinking water treatment. The method is also becoming increasingly important in the pre-treatment before desalination or in swimming pool water treatment.

Reverse Osmosis Systems Dulcosmose® ecoPRO

are specifically suitable for the desalination of drinking water for industrial applications.

The ecoPRO series with their high degree of standardisation offer an optimal price/performance ratio.

These systems achieve maximum permeate output at low operating pressures and thus guarantee low investment and operating costs.



Nanofiltration and Reverse Osmosis Systems Dulcosmose®



Reverse Osmosis Systems Dulcosmose® Series TW are universally suited for drinking water desalination in a wide range of industrial applications. State of the art low-pressure membranes ensure a high level of availability and recovery given a high rate of salt rejection. The systems achieve maximum permeate outputs at low operating pressures.



Reverse Osmosis Systems Dulcosmose® Series BW are specifically designed for brackish water desalination for drinking water supply as well as for industrial applications. Using state of the art low-pressure membranes, a system salt rejection rate of up to 99 % and a recovery of up to 80 % can be achieved.



Reverse Osmosis Systems Dulcosmose® Series SW are specifically used to produce drinking water by seawater desalination. The high pressure piping is made of seawater-resistant stainless steel. The units have a system salt rejection rate of more than 99 %. It is especially here that the integrated cleaning concept and the energy recovery pay off.

Nanofiltration Systems Dulcosmose® Series NF are a cost effective alternative to reverse osmosis systems for special tasks. Areas of application include the partial softening and the elimination of polyvalent anions (e.g. sulphates, phosphates).



Compact and Economic



The Dulcoclean® UF eco is a compact ultrafiltration system in the lower capacity range ready for connection.

- Minimum energy and water consumption through fouling-dependent backwashing
- High bacteria and virus rejection rate
- Automatic integrity check guarantees highest possible treatment reliability
- Operation possible without using any chemicals
- Fully-automatic operation with monitoring of all relevant operating parameters such as differential pressure and flow rate
- Alarm message activates potential free contact or SMS in case of malfunctions

The Dulcoclean® UF are ultrafiltration systems in the upper capacity range which are adapted to customer specifications.

- Minimum energy and water consumption through economic dead-end operation
- Continuous filtration performance and efficient cleaning ensured by speed-controlled filtration and backwashing pumps
- Highest operating reliability ensured by fully-automated PLC controller with data memory and user-friendly touch panel
- Integration of pre- and post-treatment as well as an optional waste water neutralisation
- Compact design ensures convenient installation in existing room or in a container

System type	Filtration capacity* at 15 °C m³/h	Number of membranes 4" pcs	Connected load Filtration/ backwashing W	Dimensions H x W x D mm
Dulcoclean® UF eco 1	max. 1.0	1	5 / 8	786 x 149 x 149
Dulcoclean® UF eco 2	max. 2.1	1	5 / 8	1,268 x 149 x 149
Dulcoclean® UF eco 3	max. 2.1	2	5 / 35	868 x 267 x 358
Dulcoclean® UF eco 4	max. 3.9	2	5 / 35	1,368 x 267 x 358

* Filtration capacity depends on the water quality and the water pressure upstream of the system. The filtration capacity reduces with increasing filtration duration.

System type	Filtration capacity* at 15 °C m³/h	Number of membranes 8" pcs	Connected load kW	Dimensions H x W x D mm
Dulcoclean® UF 2	5.4 - 9.0	2	6	2,250 x 600 x 2,600
Dulcoclean® UF 3	8.1 - 13.5	3	8	2,300 x 650 x 3,300
Dulcoclean® UF 4	10.8 - 18.0	4	8	2,300 x 650 x 4,000
Dulcoclean® UF 5	13.5 - 22.5	5	10	2,300 x 650 x 4,500

* Filtration capacity depends on the water quality
Systems with filtration capacities of up to 90 m³/h are designed project-specifically.



For further information, please visit:

www.promaqua.com/membranetechnology

Powerful and price attractive



Reverse Osmosis Systems Dulcosmose® ecoPRO are standard systems for modern drinking water desalination in industrial applications. Equipped with “ultra low-pressure” membrane, they guarantee maximum permeate capacity at a salt rejection rate of up to 95 % and at low operating pressure and thus ensure low investment and operating costs.

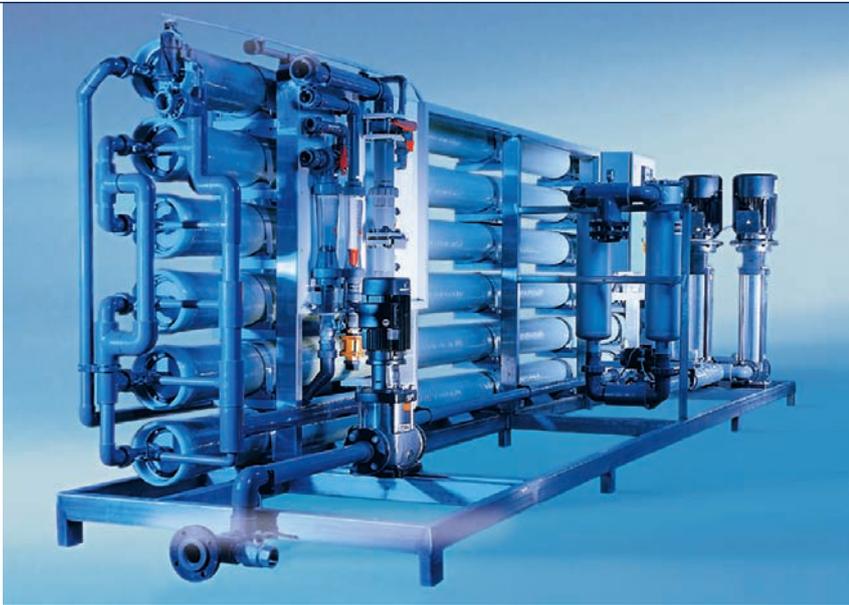
- The types ecoPRO 100 - 1500 are mounted on a stable and corrosion-free polypropylene frame
- The larger types ecoPRO 1800 - 2700 are mounted on a high-quality, double powder-coated steel frame
- Easy and safe operation thanks to microprocessor controller with numerous programming options and clear text indication of the operating mode
- Conductivity measurement and temperature monitoring
- Optionally available: Integrated cleaning concept and flushing option to improve the life time of the membranes

System type	Permeate capacity at 15 °C l/h	Number of membrane 2,5" or 4" pcs	Connected load kW	Dimensions H x W x D mm
ecoPRO 100	100	1	0.37	1,400 x 500 x 320
ecoPRO 200	200	2	0.55	1,400 x 500 x 320
ecoPRO 300	300	1	1.10	1,500 x 600 x 400
ecoPRO 550	550	2	1.10	1,500 x 600 x 400
ecoPRO 600	600	2	1.50	1,850 x 800 x 800
ecoPRO 900	900	3	1.50	1,850 x 800 x 800
ecoPRO 1200	1,200	4	1.50	1,850 x 800 x 800
ecoPRO 1500	1,500	5	2.20	1,850 x 800 x 800

System type	Permeate capacity at 15 °C l/h	Number of membranes 4" pcs	Connected load kW	Dimensions H x W x D mm
ecoPRO 1800	1,800	6	2.2	1,750 x 2,500 x 750
ecoPRO 2400	2,400	8	2.2	1,750 x 2,600 x 750
ecoPRO 2700	2,700	9	2.2	1,800 x 3,500 x 750



The Right System for any Application



Reverse osmosis systems by ProMaqua are designed depending on the raw water quality. The **series TW** is the universal model for modern drinking water desalination. The **series BW** is suitable for brackish water desalination and the **series SW** for seawater desalination. We offer everything one-stop, from the definition of the task to a comprehensive after-sales service. With our know-how in the performance and capabilities of different types of membranes, we implement application-optimised treatment solutions with precisely matched pre- and post-treatment. Priority is attached to economic aspects such as life time of the membranes, energy efficiency, and process automation.

- High system salt rejection rate of more than 99 %
- Recovery depending on raw water of up to 80 %
- Easily accessible and service-friendly layout
- Central control by in-house microprocessor controller with graphical display or industry PLC with touch panel and integrated conductivity measurement
- Long life time of the membranes ensured by integrated cleaning concept and automatic flushing system
- Seawater desalination systems with energy recovery from the concentrate flow
- No interface problems and smooth operation with short project realisation times
- Joint commissioning and training of the staff in operation at site on request

System type	Permeate capacity at 25 °C l/h	Number of membranes 4" or 8" pcs	Connected load kW	Dimensions H x W x D mm
PRO 0300TW – PRO 0400TW	3,000 - 4,000	3 and 4	3	1,800 x 3,000 x 1,000
PRO 0500TW – PRO 1500TW	5,000 – 15,000	5 - 12	3 – 11	1,800 x 4,000 x 1,000
PRO 2000TW – PRO 5000TW	20,000 – 50,000	18 - 48	11 - 22	1,800 x 7,000 x 1,200
PRO 0200BW	2,000	9	4	1,800 x 3,500 x 750
PRO 0300BW - PRO 0400BW	3,000 - 4,000	3 - 4	6 - 8	1,800 x 3,000 x 1,000
PRO 0500BW - PRO 1100BW	5,000 - 11,000	5 - 11	8 - 15	1,800 x 4,000 x 1,000
PRO 1200BW - PRO 1500BW	12,000 - 15,000	12 - 15	15 - 19	1,800 x 5,000 x 1,000
PRO 2000BW - PRO 3000BW	20,000 - 30,000	21 - 29	19 - 30	1,800 x 6,000 x 1,200
PRO 4000BW - PRO 5000BW	40,000 - 50,000	42 - 51	37 - 45	1,800 x 7,000 x 1,200

System type	Permeate capacity at 25 °C l/h	Number of membranes 4" or 8" pcs	Connected load without energy recovery kW	Connected load with energy recovery kW	Dimensions H x W x D mm
PRO 0078SW	780	6	5.5		1,800 x 3,500 x 1,000
PRO 0185SW - PRO 0360SW	1,850 - 3,600	3 - 6	11 - 18.5	6.6 - 8.6	1,800 x 4,000 x 1,000
PRO 0490SW - PRO 0610SW	4,900 - 6,100	8 - 10	22 - 40.5	13.2	1,800 x 5,000 x 1,200
PRO 0730SW	7,300	12	44	17.2	1,800 x 5,000 x 1,400
PRO 0920SW	9,200	15	60	21.5	1,800 x 6,000 x 1,500
PRO 0980SW	9,800	16	60	25.0	1,800 x 5,000 x 1,500
PRO 1230SW	12,300	20	75	34.0	1,800 x 6,000 x 1,500
PRO 1470SW - PRO 2900SW	14,700 - 29,000	24 - 48	90 - 160	49.5 - 82.5	1,800 x 7,000 x 1,500



References

Proven World-Wide



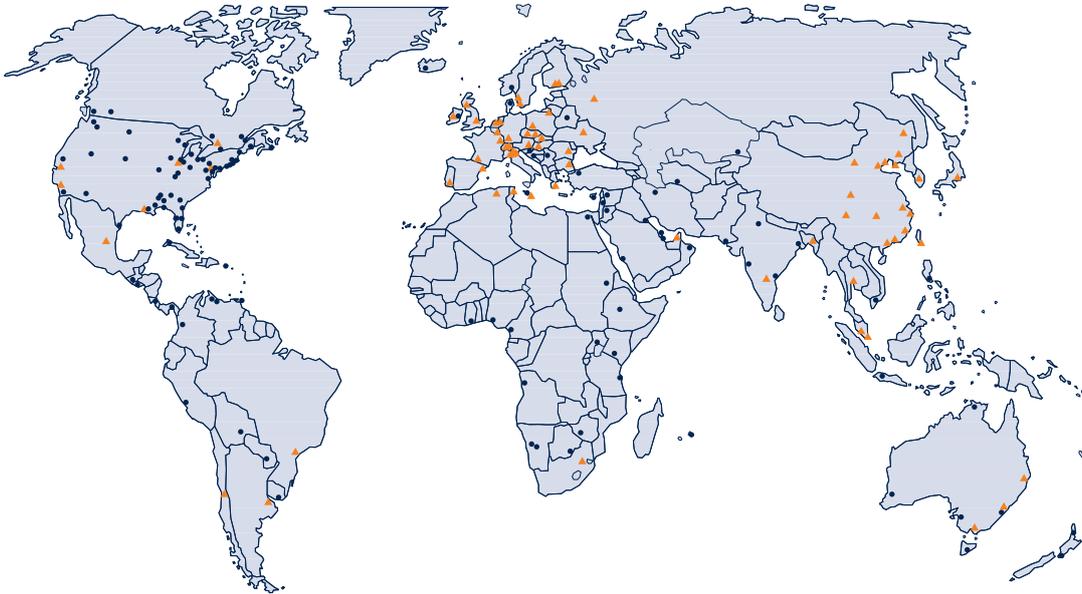
List of some references from different industry applications:

<u>Plant Engineering</u>	<u>Raw Water</u>	<u>Industry</u>	<u>Country</u>	<u>Capacity m³/d</u>
Dulcoclean UF eco	Spring water	Municipal water supply	Germany	80
Dulcoclean UF	Spring water	Municipal water supply	Slovenia	5,200
Dulcosmose NF	Well water	Municipal water softening	Italy	72
Dulcosmose TW	Town water	Electroplating	Germany	132
Dulcosmose TW	Town water	Cosmetics	Germany	600
Dulcosmose TW	Town water	Power station/power generation	Peru	144
Dulcosmose TW	Town water	Automobile	Slovakia	3,600
Dulcosmose TW	Town water	Beverage/table water	Germany	408
Dulcosmose TW	Town water	Beverage/soft drinks	Bulgaria	4,800
Dulcosmose TW	River water	Power station/power generation	Hungary	624
Dulcosmose TW /EDI	Town water	Printed circuit boards	Slovakia	800
Dulcosmose BW	Brackish water	Brewery	Thailand	720
Dulcosmose BW	Brackish water	Irrigation	Ethiopia	720
Dulcosmose SW	Seawater	Hotel	Mauritius	800
Dulcosmose SW	Seawater	Hotel	Greece	1,800



For further information, please visit:
www.promaqua.com/membranetechnology

World-Wide Contact



ProMaqua is a member of the ProMinent group of companies and is represented in more than 100 countries of the world. This guarantees a world-wide availability of the products and short distances to the customer. All over the world, we offer identical quality standards for products and services. For you at site: Experience and know-how in water treatment and metering technology.

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