HygroMatik®

member of CAREL group CAREL

Reverse osmosis systems

for hygienic water treatment

WaterLine RO

Hygienic.
Efficient.
Safe.

HygroMatik since 1970 – More than 50 years – Quality and Innovation

Reverse Osmosis Water Treatment

EFFECTIVE PROTECTION FOR AIR HUMIDIFICATION AND COOLING SYSTEMS

REDUCES LIME AND SALTS

Before our drinking water is fed into the water pipes, it flows through numerous different layers of rocks. Depending on the region, it therefore contains more or less minerals such as calcium and magnesium. If this water is used, for example, in steam humidifiers **for air humidification,** it can accumulate in the form of lime and salt deposits on the heating elements and damage them.

For this reason, we recommend precautionary water treatment with a **WaterLine reverse osmosis system** from a hardness level of **18.8 °e (268 ppm).** Harmful deposits can be reduced by up to 95%.

The maintenance effort and thus the operating costs of air humidification and cooling systems can be noticeably reduced by water treatment and the average operating time is significantly extended.

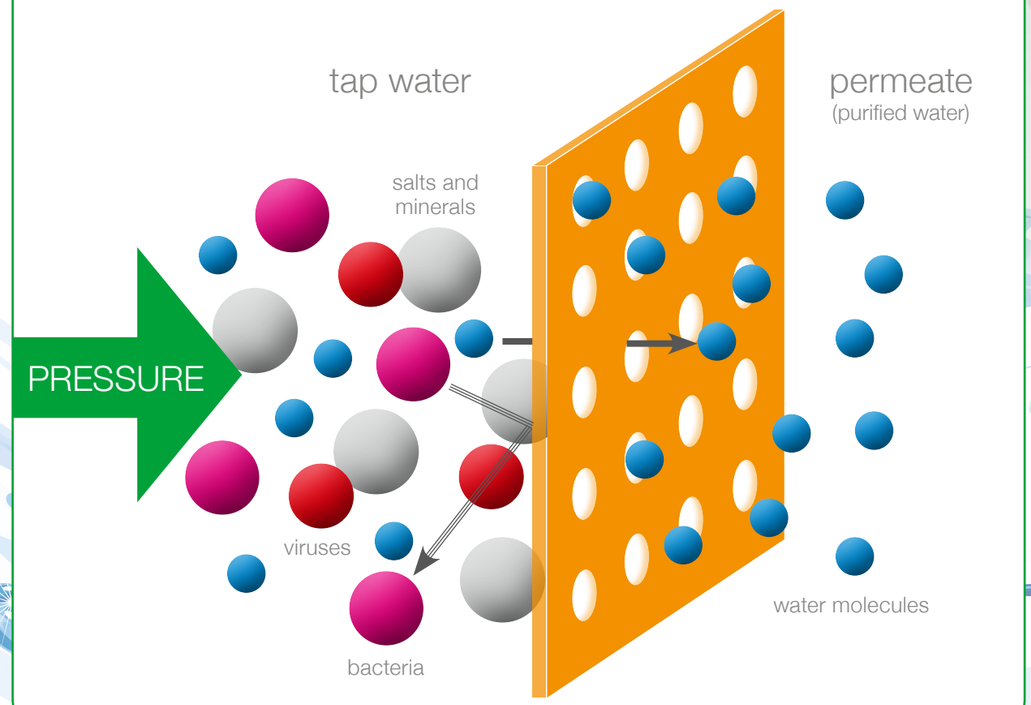
AVOIDS VIRUSES AND BACTERIA

But not only lime and salt crystals are removed from the water by the cleaning process. The water treatment with a WaterLine RO system is also a very effective protection against viruses and bacterial contamination in air humidification and cooling systems.

Viruses and bacteria present in the water are filtered out by the process of reverse osmosis – even before they reach the air humidification systems. This prevents them from spreading and being released into the room air.

For this reason, the integration of a system for water treatment using reverse osmosis is particularly recommended when planning air humidification systems **in hygienically sensitive application areas.**

FUNCTIONAL DIAGRAM
OF REVERSE OSMOSIS PROCESS



WHAT HAPPENS AT THE REVERSE OSMOSIS PROCESS?

In the reverse osmosis process, the water to be treated is forced under high pressure through a **semi-permeable membrane with pores less than 0.001 µm.** This makes it possible to separate undesirable components of tap water, such as viruses, bacteria, minerals, pesticides, hormones and heavy metals from the water molecules.

Result: Permeate - water with an above average high degree of purity.

Compact in 4 performance classes from 25 to 140 l/h

WaterLine ROC (Reverse Osmosis Compact)

Pressure expansion tank with wall bracket
Volume optionally 18 or 40 litres
Stand pressure expansion tank possible on request

MANY FUNCTIONS – SIMPLE OPERATION

The integrated control and operating unit with its clearly laid out display enables convenient and simple operation of the WaterLine ROC system.

- Display of fault and operating messages
- Maintenance indicator and operating hours counter
- Conductivity display (permeate) with adjustable limit value of maximum permissible water conductivity (safety shutdown of the system can be capitalised if the limit is exceeded)
- External release via potential-free contact possible
- Programmable forced flushing
- Integrated pressure switch

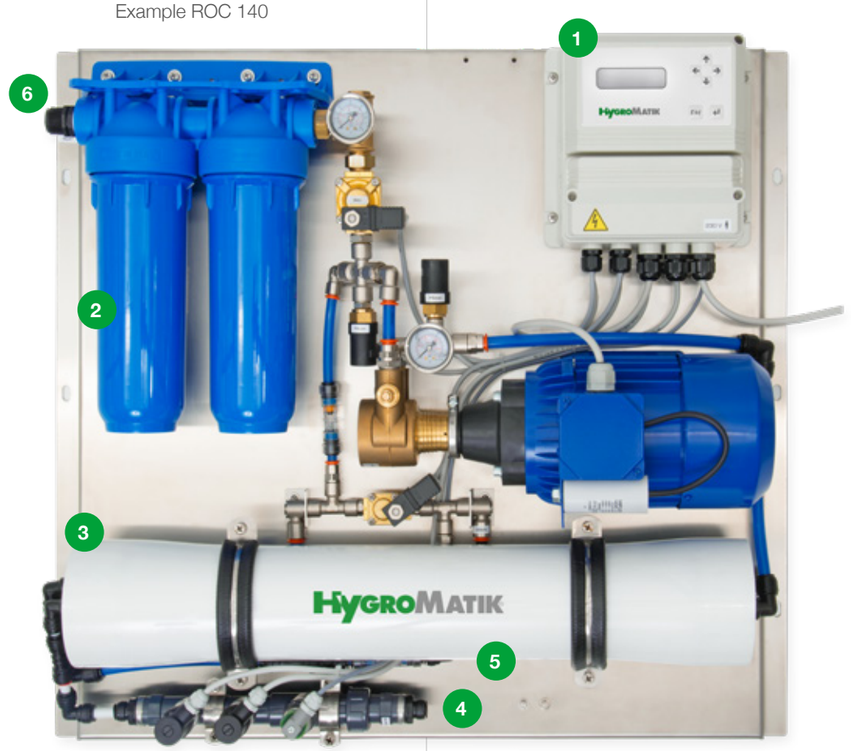
Optional functions and components:

- Adjustable blending unit to increase permeate conductivity (when used with electrode steam humidifier and optional conductivity sensor)
- External UV disinfector for maximum hygiene
- Expansion tank for constant pressure between 2-4 bar

SPACE-SAVING WALL MOUNTING AND QUICK INSTALLATION

The WaterLine ROC can be mounted on a load-bearing wall in the tightest of spaces. To make the installation as quick and easy as possible, the entire system is supplied on a corrosion-resistant mounting plate ready for connection. It is attached to a load-bearing substructure via 4 mounting points (Ø 10 mm).

Example ROC 140



1. Control and operating unit
2. Two pre-filters for water components with 10 and 5µm (only ROC 140)
3. Pressure tube with membrane
4. Permeate connection
5. Concentrate connection
6. Raw water connection

MAINTENANCE-FRIENDLY AND COMPACT SYSTEM DESIGN

Despite the compact system design, the change of the pre-filter as well as the membrane can be done quickly and easily.

The WaterLine ROC system is also characterised by long maintenance intervals. With optimum water quality (drinking water up to 25.0 °e with maximum salt content [TDS] 357 ppm (>1000 µS/cm)). The membrane can be used for up to one year.

WATER PRETREATMENT

In order to protect the membrane of the WaterLine ROC system from excessive wear caused by lime deposits, additional water pretreatment should be planned, depending on the water hardness of the raw water:

- **Up to 25 °e (357 ppm):** Possible without water pretreatment
- **Above 25 °e (357 ppm):** Water softening with softening unit (e.g. WaterLine Double)
- **Exception up to 35 °e (500 ppm):** Dosing pump for antiscalant possible
- Dosing pump optional available for WL-ROC-140

Power in 6 output classes from 160 to 1,200 l/h

WaterLine ROL (Reverse Osmosis Large)

MANY FUNCTIONS – SIMPLE OPERATION

The integrated control and operating unit with its clearly laid out display allows convenient and simple operation of the WaterLine ROL system.

- Display of fault and operating messages
- Maintenance indicator and operating hours counter
- Conductivity display for permeate and untreated water with adjustable limit value of the maximum permissible water conductivity (safety shutdown of the plant if this is exceeded)
- External release and alarm message possible via potential-free contact
- Programmable forced flushing
- Integrated pressure switch

Optional functions and components:

- External UV disinfector for maximum hygiene
- Expansion tank for constant pressure between 2-4 bar

QUICK INSTALLATION

The WaterLine ROL is supplied completely pre-assembled on a stable support frame and is thus prepared for quick installation and commissioning.

WATER PRETREATMENT

In order to protect the membrane of the WaterLine ROL system against rapid wear caused by lime deposits, additional water pretreatment has to be planned, depending on the hardness of the raw water:

- **Up to 35 °e (500 ppm):** Optionally with integrated dosing pump, injection point and empty canister for antiscalant or softening system
- **Above 35 °e (500 ppm):** Water softening with softening unit (e.g. WaterLine Double)

Pressure expansion tank with stand
Volume optionally 80 to 500 litres

1. Control unit
2. Prefilter for water components with 10 and 5µm
3. Pressure tube with membrane
4. Permeate connection
5. Concentrate connection
6. Dosing pump for antiscalant
7. Tank for antiscalant mixture

Hygienic, easy to maintain, durable

HIGH-QUALITY COMPONENTS

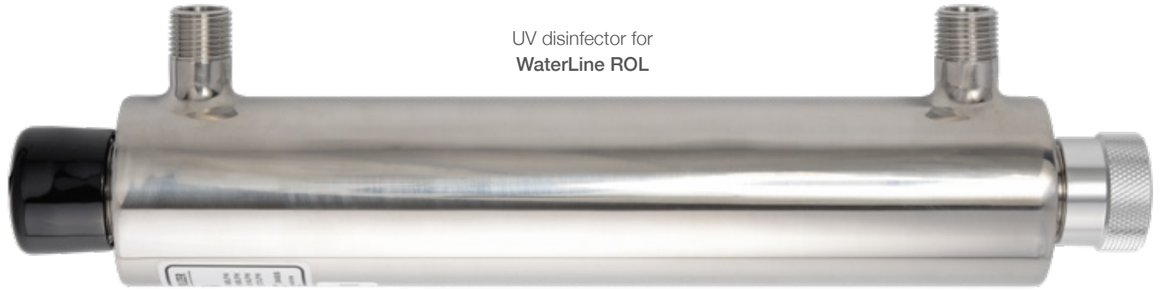
DURABLE PRESSURE EXPANSION TANKS

The generated permeate is stored in a pressure expansion tank. The pure water is simply and efficiently kept at a pressure of 2-4 bar and is available to supply the air humidification system as required. Seven sizes can be combined depending on the design of the system. The 18 and 40 litre sizes are supplied for wall mounting with brackets and fixing materials, all larger models are supplied with stands.

WHICH SIZE FITS WHICH SYSTEM?

	18 litres	40 litres	80 litres	100 litres	200 litres	300 litres	500 litres
WL-ROC-25	✔	(✔)					
WL-ROC-40	✔	(✔)					
WL-ROC-80	(✔)	✔	(✔)				
WL-ROC-140	(✔)	✔	(✔)				
WL-ROL-160		(✔)	✔	(✔)			
WL-ROL-320			(✔)	✔	(✔)		
WL-ROL-460				(✔)	✔	(✔)	
WL-ROL-600				(✔)	✔	✔	(✔)
WL-ROL-1000				(✔)	✔	✔	(✔)
WL-ROL-1200				(✔)	✔	✔	(✔)

✔ recommended (✔) possible



UV disinfector for
WaterLine ROL

UV disinfector
for **WaterLine ROC**

UV DISINFECTOR FOR MAXIMUM HYGIENE

An UV disinfector ensures maximum hygiene conditions. The lamp irradiates the permeate flowing through with UV rays and very effectively removes any biological contaminants still present, such as bacteria, viruses, moulds, spores and yeast fungi.

The procedure is a purely physical process **without the addition of chemicals and is therefore easy to handle, harmless to health and easy to maintain.**

ANTISCALANT DOSING PUMP

To prevent the lime and magnesium residues present in the raw water from being deposited on the membranes and impairing their performance or shortening their service life, the integrated dosing pump with adjustable timer function injects an antiscalant into the raw water pipes at fixed intervals. The HygroMatik Pragmaclean 309 antiscalant complies with the German drinking water regulations.

Antiscalant protects the membrane and extends its lifetime by up to five years.

Dosing pump for all
WaterLine ROL and ROC 140

WHICH WATERLINE RO FITS WHICH HUMIDIFICATION SYSTEM?

	required	recommended
Steam humidifier		
HygroMatik StandardLine (heater type)		✔ ROC
HygroMatik FlexLine (heater type)		✔ ROC/ROL
HygroMatik FlexLine Plus / Process		✔ ROC/ROL
HygroMatik HeaterSlim		✔ ROC
HygroMatik StandardLine (electrode)	✔ ROC + blending	
HygroMatik FlexLine (electrode)	✔ ROC + blending	
HygroMatik MiniSteam	✔ ROC + blending	
Adiabatic humidifier		
HygroMatik High Pressure System (HPS)	✔ ROL	
HygroMatik Low Pressure System (LPS)	✔ ROC/ROL	
CAREL humiFog	✔ ROC	
Ultrasonic nebuliser		
CAREL humiSonic direct	✔ ROC	

WL-ROC-25 to 80

WL-ROC-140

WL-ROL-160 to 1200

Technical data — wall mounted compact units **WL-ROC**

Type	WL-ROC-25	WL-ROC-40	WL-ROC-80	WL-ROC-140
Permeate capacity [± 10%] [l/h at 15°C]	25	40	80	140
Water consumption during operation [l/h]	50	80	160	280
Permeate yield [%]	50	50	50	50
Number of membranes	1 x 12“	2 x 12“	2 x 12“	1 x 21“
Membrane pressure max. [bar]	10			
Water hardness max. [°e (ppm)]	25 °e (357 ppm) without pretreatment (otherwise: softening system)			
Salt content max. (TDS) [ppm]	700			
Water feed conductivity max. [µS/cm]	1000			
Inlet water temperature [°C]	5-25			
Inlet water pressure [bar]	2-5			
Water pressure permeate max. [bar]	4			
Electrical power supply [kW]	0.3	0.3	0.3	0.6
Rated power [V/Hz]	230V / 1Ph / N / 50Hz			
Feed water inlet	3/4“ AG			
Permeate pipe connection	John Guest Ø 10 mm			
Water outlet	John Guest Ø 8 mm			John Guest Ø 12 mm
Dimensions W x H x D [mm]	420 x 580 x 235			770 x 700 x 220
Operating weight [kg]	19	21	21	41
Flushing function	no			yes
Antiscalant dosing pump	no			optional *
Conductivity measurement	1 x permeate monitoring with alarm function included			
Blending kit for electrode humidifier	optionally available			

stand systems **WL-ROL**

Type	WL-ROL-160 *(AS)	WL-ROL-320 *(AS)	WL-ROL-460 *(AS)	WL-ROL-600 *(AS)	WL-ROL-1000 *(AS)	WL-ROL-1200 *(AS)
Permeate capacity [± 10%] [l/h at 15°C]	160	320	460	600	1000	1200
Water consumption during operation [l/h]	320	470	920	1200	1500	1770
Permeate yield [%]	50	68	50	50	68	68
Number of membranes	2 x 40“	4 x 40“	2 x 40“	2 x 40“ XL	4 x 40“	4 x 40“ XL
Membrane pressure max. [bar]	10					
Water hardness max. [°e (ppm)]	can only be operated with an upstream softening plant or antiscalant dosing device					
Salt content max. (TDS) [ppm]	750					
Water feed conductivity max. [µS/cm]	1000					
Inlet water temperature [°C]	5-25					
Inlet water pressure [bar]	2-5					
Water pressure permeate max. [bar]	4					
Electrical power supply [kW]	1.0	1.0	1.7	1.7	2.1	2.1
Rated power [V/Hz]	230V / 1Ph / N / 50Hz					
Feed water inlet	3/4“ AG					
Permeate pipe connection	John Guest Ø 15 mm				3/4“ AG	
Water outlet	John Guest Ø 15 mm				3/4“ AG	
Dimensions W x H x D [mm]	940 x 1555 x 510		1090 x 1555 x 700			
Operating weight [kg]	75	83	100	100	125	125
Flushing function	yes					
Antiscalant dosing pump	only included in antiscalant („AS“) version					
Conductivity measurement	1 x raw water monitoring, 1 x permeate monitoring and alarm function included					
Blending kit for electrode humidifier	not possible					

* Operation with antiscalant dosing pump possible. The permeate yield in ROL systems increases to 75% when using softened water.

Subject to technical changes.

Our service for 100% customer satisfaction

- Long availability for replacement parts
- Technical hotline +49 4193 895-293
  or hotline@hygromatik.com
- HygroMatik distributes in more than 45 countries
- Operating manuals, planning data and information
  on workshop events available online at
  www.hygromatik.com

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