



**WTS**

## **Water Treatment System**

The ideal water for humidification

# Reverse osmosis water treatment system

The secret to efficient and hygienically safe operation of evaporative humidification and cooling systems is the quality of the water.

Supplied with drinking water, it generates demineralised water with characteristics that make it ideal for use with humidifiers and evaporative cooling systems.



## Why use demineralised water?

For heater or gas-fired steam humidifiers, the treatment minimises the build-up of mineral salts and fouling in the boilers, increasing their working life: maintenance is reduced, and there is no unit downtime for periodic cleaning.

In adiabatic humidifiers, demineralised water avoids fouling of the nozzles, the build-up of mineral salts in air handling units (filters and droplet separators) and the introduction of mineral dust into the humidified environments. Maintenance costs are reduced, and the hygiene of

ventilation systems is improved, as the RO water has been purified of all bacteria and pollutants.

In the specific case of ultrasonic humidifiers, the elasticity of the transducers will not be affected by scale: CAREL humiSonic components are guaranteed to work without interruption for a minimum of 10,000 hours!

Limits on the maximum conductivity and hardness of water are also defined by standards such as UNI8884, VDI6022, VDI3803, L8.



### Easy commissioning

WTS is pre-calibrated, so as to get up and running very quickly. The automatic "flushing" procedure minimises maintenance requirements.



### Integration

The new WTS system guarantees perfect operation with Carel humidifiers.



### Maximum hygiene

WTS supplies reverse-osmosis water, further purified of all bacteria and pollutants by the ultraviolet disinfection system.

## What is reverse osmosis?

It is a technique by which the water to be purified is pumped at high pressure through a semipermeable membrane, whose pores measure less than 0.001  $\mu\text{m}$  in diameter: most of the dissolved ions are filtered by the membrane, producing extremely pure water. **The removal of minerals**, measured as a percentage of the original content, **varies from 95% to 99% and even higher**. Automatic operation and limited running costs extend the use of this technology, with undisputed advantages.

## Comparison with water softening

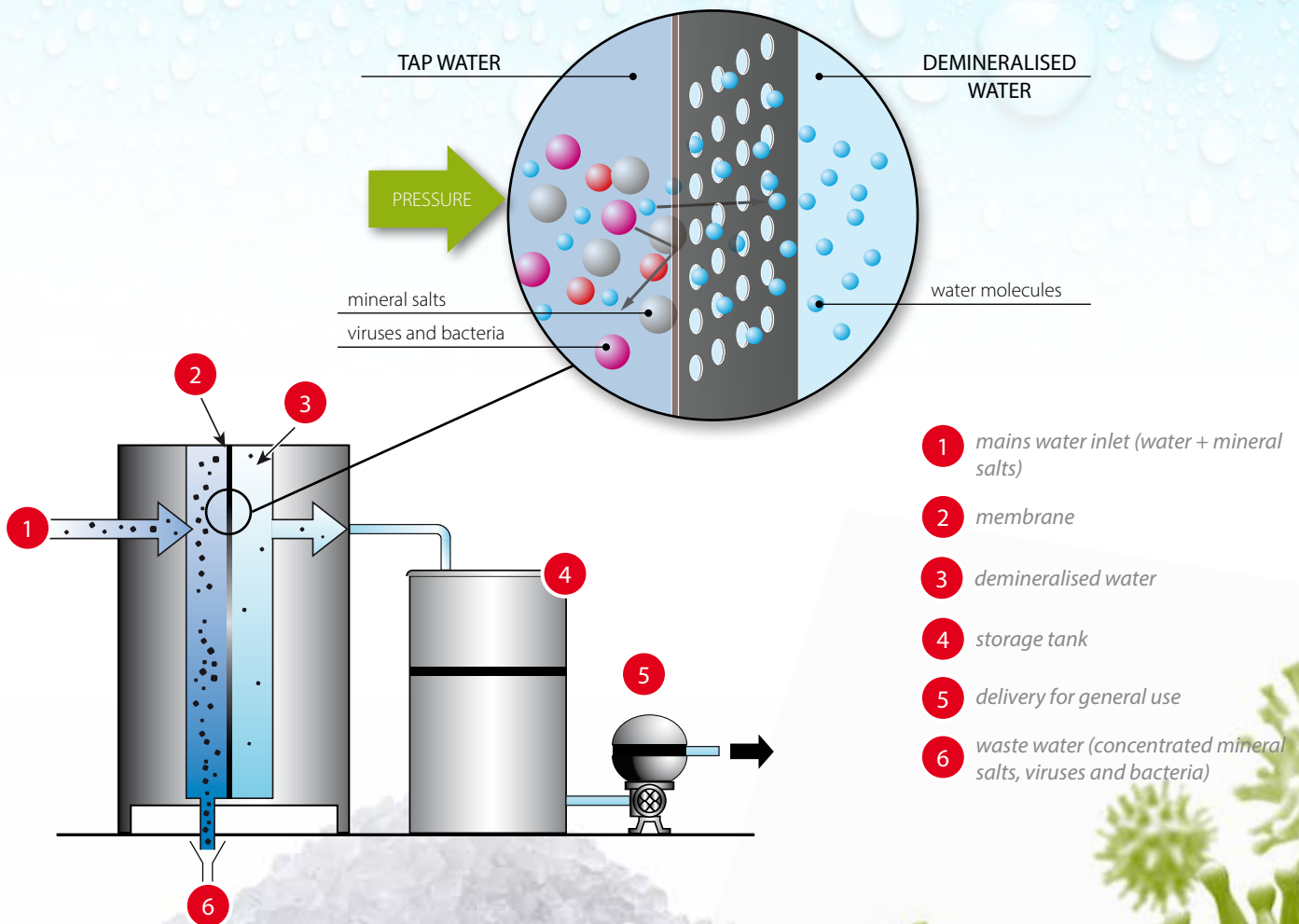
Reverse osmosis is a treatment that produces pure water, while water softening is a completely different procedure that substitutes fouling salts, such as calcium and magnesium, with sodium.

Reverse osmosis is therefore the best solution for almost any type of application.

Furthermore, the use of softened water in isothermal humidifiers causes foam to be generated - and therefore water is entrained with the droplets - as well as accelerating corrosion of the heating elements, thus increasing maintenance costs.

It is therefore not recommended in these applications.

## System example



# Models designed for your needs

The CAREL offering includes the reverse osmosis system in the ROC 25-140 l/h versions for wall mounting, and ROL 160-1 200 l/h for floor-standing installation. Factory-calibrated recirculation in the ROC unit water circuit responds to the growing demand to save water, while maintaining the high quality of the demineralised water produced.

## WTS compact

ROC

Compact version of the new CAREL reverse osmosis system has been developed for treating water intended for use with humiSonic and heaterSteam humidifiers and small atomisers.

### Its main strengths are:

- easy commissioning. No adjustments need to be made;
- water saving. Recirculation of a portion of the concentrate makes it possible to use 30% less mains water compared to the previous generation WTS compact;
- simple maintenance. The only routine maintenance is the simple replacement of filters and flow reducers.

### System components

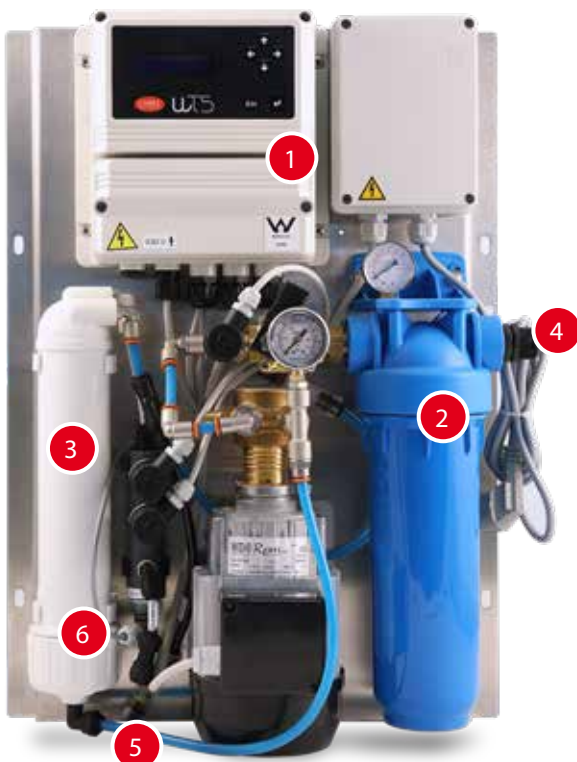
- Safety micrometre-grade pre-filtration (removes impurities from the water);
- activated carbon dechlorination (protects the membranes)
- electric control panel and rotary vane pump;
- TFC reverse osmosis membranes;
- UV disinfection system (optional)

### Sizes

WTS compact is available in four sizes, from 25 to 140 l/h.

### Accessories

- **Expansion vessel** to keep the demineralised water at a pressure of 2-4 bars.
- **UV lamp disinfection system** to guarantee the highest level of hygiene. The lamp, installed downstream of the expansion vessel, shines UV light on the demineralised water flow entering the humidifier, helping to eliminate any biological contaminants such as bacteria, viruses, moulds, spores and yeasts.
- **Blending kit** for mixing the permeate with mains water to allow operation of immersed electrode steam humidifiers in places with particularly hard water.



- 1 *electronic controller*
- 2 *activated carbon filter*
- 3 *reverse-osmosis membrane*

- 4 *untreated water connection*
- 5 *concentrate connection*
- 6 *permeate connection*

**CAREL WTS has been specially developed for use with humidifiers:**

- maximum hygiene guaranteed, also thanks to the UV disinfecting lamp.



## WTS large

ROL

CAREL also offers a Large version of the system. WTS large is suitable for higher-capacity steam humidifiers, such as gaSteam, and for the entire range of adiabatic devices.

WTS large was designed and developed based on feedback from the market and users:

- design No bulky cabinets for easy access;
- recirculation setting. Keeping a high recovery value avoids costly excess water consumption;
- descaler available in the EN 15040 compliant or NSF certified versions, in both cases for water intended for safe human consumption;
- specific membranes for steel pumps and brass pumps: compliance with the conductivity limits without dilution with mains water, avoiding contamination of the permeate.

### Sizes

WTS large is available in six sizes, from 160 to 1,200 l/h.

### Accessories

- **Expansion vessel** to keep the demineralised water at a pressure of 2-4 bars. Simple and effective.
- **Storage tank** with booster pump, able to pressurise water to heights of up to 20 metres. Ideal for applications with large differences in height.

- **UV disinfection system** to guarantee the highest level of hygiene. The lamp, installed downstream of the expansion vessel, shines UV light on the demineralised water flow entering the humidifier, helping to eliminate any biological contaminants such as bacteria, viruses, moulds, spores and yeasts.



1 *electronic controller*

2 *micrometre & activated carbon filter*

3 *reverse-osmosis membrane*

4 *permeate connection*

5 *concentrate connection*

6 *descaling solution dosing pump*

7 *tank with descaling solution*

- compact and easy to install, available in sizes from 25 to 1200 l/h

## Accessories - maximum flexibility in completing the offering according to the application

Hygiene-sensitive applications, complex installation layouts due to the location of the humidifiers at different levels, and availability of particularly hard drinking water are all problems that can be easily by using the right accessory.

### Expansion vessel for WTS compact

Keeps water at a pressure of 2-4 bars. Wall mounting using the bracket supplied.



### Storage tank with booster pump

Capable of pressurising water up to 20 m in height. Ideal for applications with complex layouts.



### UV lamp disinfection system

guarantees the highest level of hygiene. The lamp shines UV light on the feedwater flow, helping to eliminate any biological contaminants such as bacteria, viruses, moulds, spores and yeasts..



### Expansion vessel for WTS large

Keeps water at a pressure of 2-4 bars. Floor-standing installation.



### Blending kit

Allows operation of immersed electrode steam humidifiers in places with particularly hard feedwater, as it reduces the frequency of cylinder replacement.






### Descaling solution

Pack of 10 or 25 kg to prevent calcium and magnesium build-up on the membranes. Available in two versions: EN 15040 compliant or NSF certified, in both cases for water intended for safe human consumption.



## Which WTS model best suits our humidifiers?

		Mandatory	Recommended
<b>Steam humidifiers</b>			
	heaterSteam		ROC
	gaSteam		ROC/ROL
	humiSteam (with hard water > 25°FH)		ROC + blending kit
<b>Pressurised water humidifiers and evaporative cooling</b>			
	humiFog	ROL	
	optiMist		ROC/ROL
	chillBooster		ROC/ROL
<b>Ultrasonic humidifier</b>			
	humiSonic	ROC	

# Technical specifications

## WTS compact

Model	ROC0255002	ROC0405002	ROC0805002	ROC1405002
Feedwater pressure	2 to 5 bars	2 to 5 bars	2 to 5 bars	2 to 5 bars
Water temperature	5 to 30°C	5 to 30°C	5 to 30°C	5 to 30°C
Nominal demineralised water production	25 l/h	40 l/h	80 l/h	140 l/h
Nominal discharge	30 l/h	50 l/h	80 l/h	140 l/h
Installed power	275 W	275 W	550 W	575 W
<b>Connections</b>				
Power supply	230 V, 50 Hz single phase			
Feedwater	G ¾" M	G ¾" M	G ¾" M	G ¾" M
Treated water outlet	Ø 10 mm	Ø 10 mm	Ø 10 mm	Ø 10 mm
Concentrate drain	Ø 8 mm	Ø 8 mm	Ø 8 mm	Ø 12 mm

## WTS large

Model	ROL160x00v	ROL320x00x	ROL460x00v	ROL600x00v	ROL1K0x00v	ROL1K2x00v
Feedwater pressure	2 to 5 bars	2 to 5 bars	2 to 5 bars	2 to 5 bars	2 to 5 bars	2 to 5 bars
Water temperature	5 to 30°C	5 to 30°C	5 to 30°C	5 to 30°C	5 to 30°C	5 to 30°C
Nominal demineralised water production	160 l/h	320 l/h	460 l/h	600 l/h	1000 l/h	1200 l/h
Nominal drain	160 l/h	150 l/h	460 l/h	600 l/h	470 l/h	570 l/h
Installed power	960 W	960 W	1650 W	1650 W	1650 W	1650 W
<b>Connections</b>						
Power supply	230 V, 50 Hz single phase or 230V, 60 Hz single phase					
Feedwater	G ¾" M	G ¾" M	G ¾" M	G ¾" M	G ¾" M	G ¾" M
Treated water outlet	G ¾" M	G ¾" M	G ¾" M	G ¾" M	G ¾" M	G ¾" M
Concentrate drain	G ¾" M	G ¾" M	G ¾" M	G ¾" M	G ¾" M	G ¾" M

(x) Digits for power supply frequency

(v) Digits for filter grade

## Part number

### Compact version

**R O C**    **5 0 0 2**

Capacity:  
025= 25 l/h  
040= 40 l/h  
080= 80 l/h  
140= 140 l/h

### Large version

**R O L**     **0 0**

Capacity:  
160= 160 l/h  
320= 320 l/h  
460= 460 l/h  
600= 600 l/h  
1K0= 1000 l/h  
1K2= 1200 l/h

Power supply:  
5= 50 Hz  
6= 60 Hz

Filtering:  
0= very high filtration  
B= high filtration

## Headquarters

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