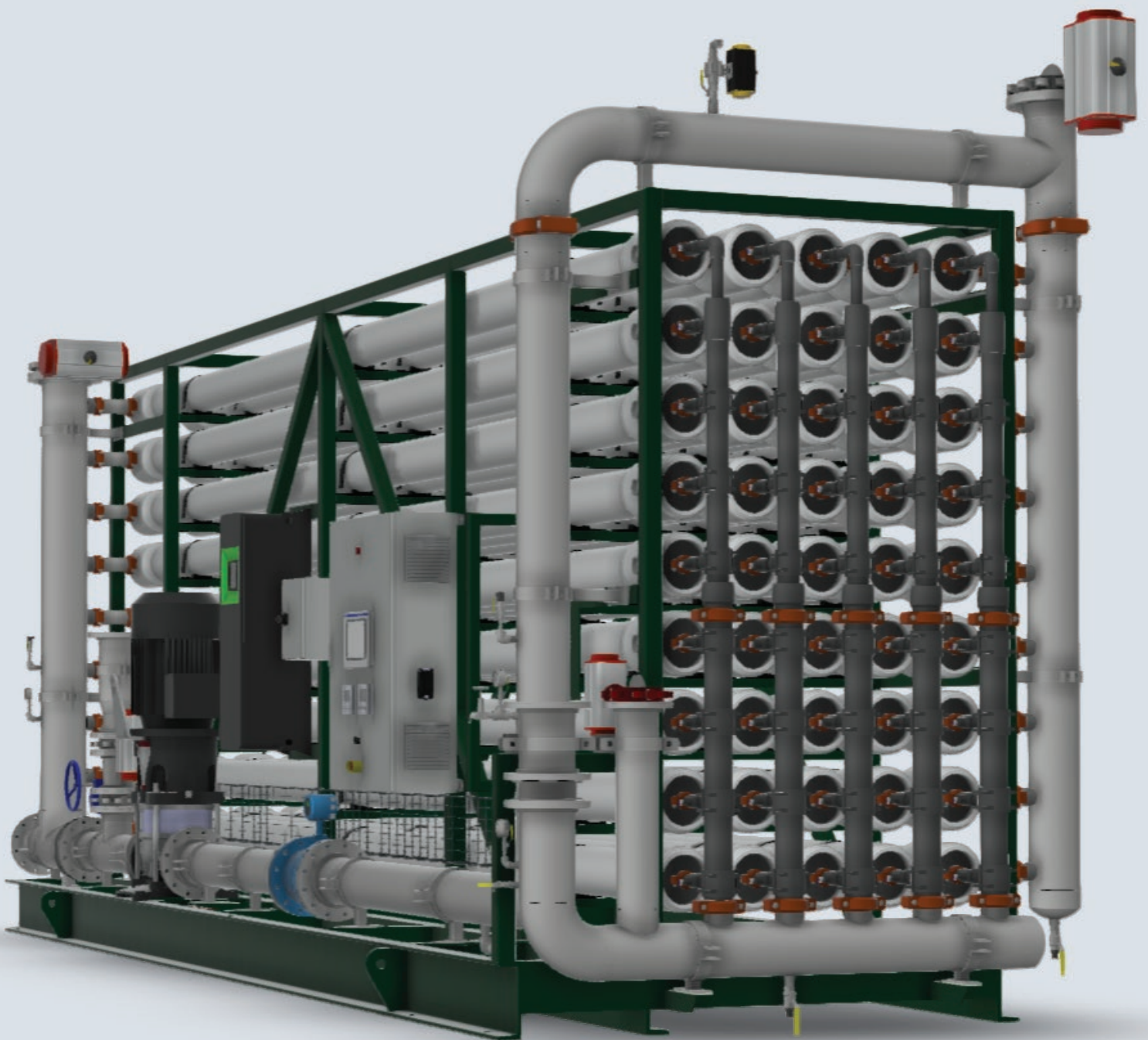


# DesaliTec™ Closed Circuit Reverse Osmosis Systems

High Water Recovery, Small Reject Volumes, Dynamic Operations



# Top Reasons To Choose CCRO



VS



CLOSED CIRCUIT REVERSE OSMOSIS (CCRO)	MULTI STAGE REVERSE OSMOSIS (MSRO)
<p>Dynamic process interrupts the nucleation of sparingly soluble salts, facilitating higher recoveries.</p>	<p><b>Process Design</b></p> <p>Steady-state operation that limits ultimate recovery based on the sparingly-soluble salt concentration in the tail element.</p>
<p>Proven 98% recovery sustained on multiple installations. Typically reduces concentrate volume vs. MSRO by 50-80%.</p>	<p><b>Recovery</b></p> <p>Typically limited to 50% per stage (i.e. 2 stage = 75% recovery, 3 stage = 87%) and more than 2-3 stages.</p>
<p>Can self-adjust in seconds to meet user-defined targets, including conductivity, recovery, differential pressure, or a combination thereof.</p>	<p><b>Responsiveness</b></p> <p>Poor ability to accommodate variations in feedwater quality outside the design basis, requiring physical modification to valving by a trained operator.</p>
<p>Salinity and pressure cycling helps inhibit biological growth and reduces deposition of sparingly soluble salts on the surface of membranes.</p>	<p><b>Scaling/Biofouling</b></p> <p>Poor flux distribution leads to scaling of the high concentration / low flux tail elements, while overfluxed lead elements succumb to biofouling.</p>
<p>Cleaning frequency is decreased by up to 83%. Single-stage design decreases cleaning time and downtime by up to 67%.</p>	<p><b>Cleaning Frequency</b></p> <p>Static conditions in MSRO lead to frequent cleans, as the tail elements in the final stage always see the highest salt concentration and lowest crossflow rate, exacerbated by varying feedwater conditions.</p>
<p>Membrane life may be double that of an MSRO system, given CIP frequency can be as little as 1/6th that of MSRO.</p>	<p><b>Membrane Life</b></p> <p>Poor flux distribution and frequent CIP lead to a reduced life for membrane elements in a MSRO system.</p>
<p>Need to change recovery, crossflow, permeate conductivity or another particular set point? All it takes is a quick few taps on the Human Machine Interface (HMI). Not near the system? Change set points via your cell phone or laptop.</p>	<p><b>Easy to Use</b></p> <p>Limited to the water quality the system was designed around. Should the feed water characteristics or permeate quality requirements change, physical changes to the system are required.</p>
<p>High water recovery means the volume of the reject stream is minimal, reducing the amount of waste to dispose or treat.</p>	<p><b>Reduced Waste Volumes</b></p> <p>MSROs typically have lower recovery and therefore generate larger waste volumes that require disposal or treatment.</p>
<p>Crossflow is controlled by the circulation pump, independently of the HPP. A few quick taps on the HMI or app and crossflow velocity can be dialed into a "sweet spot". Ability to set flux, crossflow rate, and volumetric recovery independently to optimize performance.</p>	<p><b>Flexibility</b></p> <p>Flux, crossflow, and recovery are all related in an MSRO process, limiting its flexibility. Changing any of these results in changes to the others, resulting in performance tradeoffs.</p>

# Applications for CCRO

## Potable Water

Reverse osmosis is often used for potable water production where a responsive, reliable system with high water recovery is essential. If municipal water is coming from a source such as a river, lake, reservoir or even a well – the water can change seasonally and Desalitech™ CCRO units can automatically adapt to those changes.

## Water Reuse

Recycling and reusing water is the ultimate test in sustainability for any municipality dealing with water shortages and stressed water supplies. Push the boundaries with award-winning CCRO for efficient water-reuse for irrigation, direct potable reuse, and general purpose reuse.

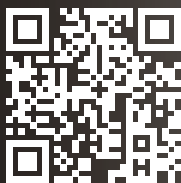
## Micropollutant Removal

Municipal water treatment operators face challenges in removing trace contaminants, such as 1,4-dioxane, PFAS, and microplastics. CCRO can be used to remove multiple types of contaminants in one step, helping municipalities address contaminant concerns today and into the future as regulations evolve.

## Global Presence

Making every drop count – We help communities thrive in a world of stressed water supplies by collaborating to create clean, healthy water for everyday life using worldclass technologies to satisfy unique local needs across the world.

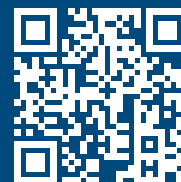
With a global network of knowledgeable water experts and a market-leading portfolio of purification and separation technologies, we help enable the water supply that supports communities' health and economic vitality.



Have a question? Contact us at:  
[dupont.com/water/contact-us](https://www.dupont.com/water/contact-us)

# DuPont Water Solutions – Global Presence

## Drinking Water & Desalination



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