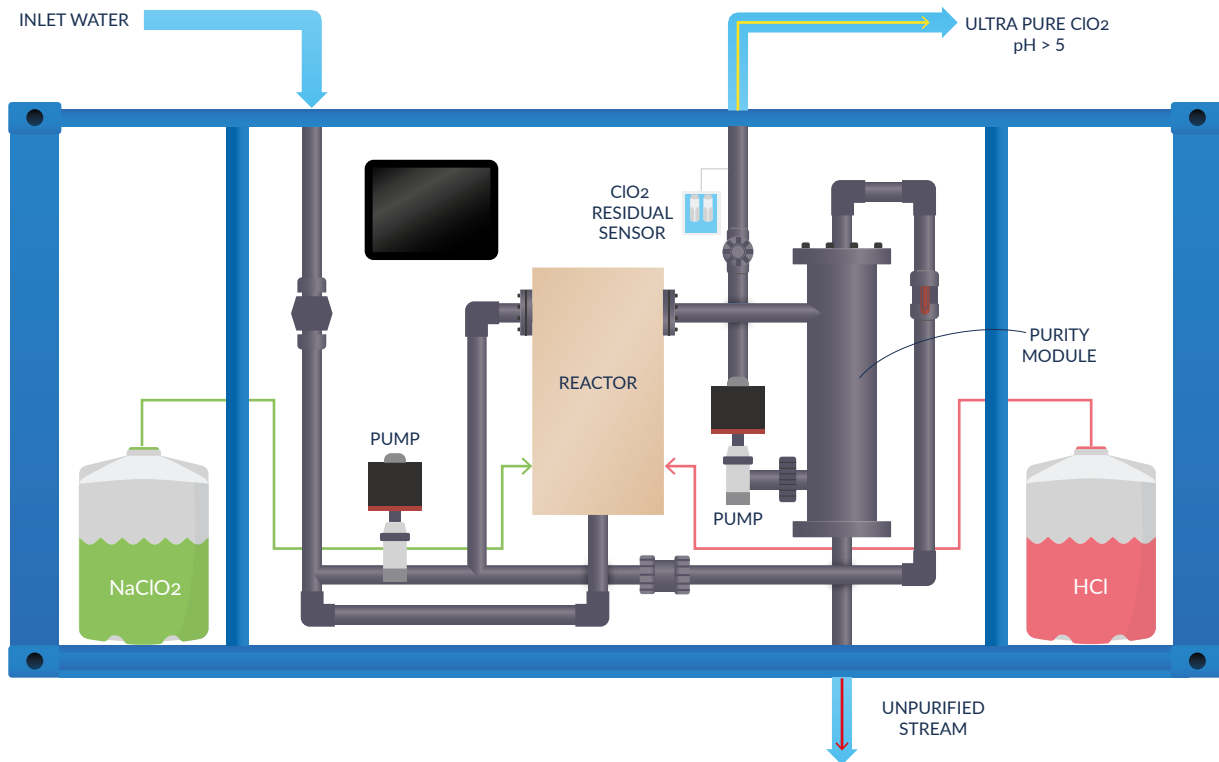


# Ultra Pure



The Scotmas Bravo Ultra Pure Generation and Dosing System is a technology patented, WIMES (Water Industry Mechanical and Electrical Specifications) compliant system which introduces a stream of ultrapure Chlorine Dioxide solution (100%  $\text{ClO}_2$ ) into the treated water stream, without any other generation byproducts (GBP) from the reactor.

Chlorine Dioxide is produced in small volumes as required by the demand from the water being treated - no storage of Chlorine Dioxide solution is required or performed.

For SWRO, Scotmas Bravo Ultra Pure separation technologies remove and recycle excess acids and reaction by-products from the Chlorine Dioxide stream, provide the opportunity to maintain desalination membrane osmotic pressure at design levels, keep energy consumption constant, increase membrane longevity and significantly reduce CIP cleaning.

- Generation capacity up to 80 kg  $\text{ClO}_2$ /hr / up to 160,000 m<sup>3</sup>/hr @ 0.5mg/l  $\text{ClO}_2$ .
- All Chlorine Dioxide production is undertaken in our unique Submerged Reactor system. The precursor chemicals are mixed within the Submerged Reactor's inner chamber, located inside the flooded outer chamber.
- Scotmas Bravo Ultra Pure produces a 100% pure stream of Chlorine Dioxide solution, free from any generation byproducts or unreacted reagents. It contains more than 99% of the volume of High-Purity Chlorine Dioxide generated in the Bravo Reactor and only this is absorbed into the dilution water to create the Ultra Pure Chlorine Dioxide stream.
- Any residual Chlorine Dioxide remains in the origin Chlorine Dioxide stream and can be reused for other purposes or neutralised to waste.

- The Bravo Ultra Pure Control Panels utilise industrial system cabinets, fitted with Siemens S7-1500 PLC and HMI, allowing operators to control the entire production process from the system Control Panel.

- Scotmas Chlorine Dioxide systems can be equipped to dose to multiple locations, via an automatic Dosing System Manifold. Dosing concentrations can be independently selected, this will control precursor dosing into the Chlorine Dioxide reactor in response to flow or other monitoring instrumentation signals for each dosing location.

- For RO systems requiring multiple dosing locations, Scotmas can provide dosing system manifolds with up to ten injection points, all managed by the Scotmas Ultra Pure Package Plant.

- Operators are protected by multiple safety devices including integral Chlorine Dioxide gas alarms which will safely warn operators of a leak event and automatically shut down the system if a leak is above the prescribed limit.

- Scotmas Bravo Ultra Pure Generation and Dosing Systems can be supplied skid mounted or containerised to suit the individual application.



## About Scotmas

Scotmas are internationally renowned, specialist manufacturers of Chlorine Dioxide generation systems with more than 25 years' experience in the field. Employing over 50 staff worldwide, Scotmas are solely dedicated to Chlorine Dioxide technology and can provide all required chemical / process engineering, chemistry, microbiology, and application-specific technical support needed for successful project execution, in conjunction with strong local civil engineering and service delivery partners.