

A unit of



## HALOX CHLORINE DIOXIDE

### ■ Addresses Problems

- Legionella pneumophila
- Giardia Cysts
- Coliforms
- Listeria
- Biofilms
- Cryptosporidium
- Salmonella
- Shigella
- Algae
- Amoebae
- Iron and Manganese
- Taste And Odor
- THM/HAA Formation
- Planktonic and Sessile Organisms

### ■ Applications

- Healthcare Facilities
- Food/Beverage Processing
- Cruise Ships
- Cooling Towers
- Water Hygiene
- Potable Water
- Waste Water
- Hotels and Motels
- Apartments/Colleges
- Marinas/Rural Wells
- Commercial/Industrial Facilities

### ■ Features/Benefits

- Safe Production of ClO<sub>2</sub>
- Cost Effective Biocide
- Chlorine-Free ClO<sub>2</sub>
- On-Demand ClO<sub>2</sub>
- Alternative To Bleach, Ozone, Bromine
- Point-Of-Use Generation
- NO Bleach, NO Added Acid; NO Chlorine Gas
- Single Precursor
- Not pH Dependent
- No Pipe Corrosion
- Environmentally Friendly
- Ease Of Operation

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## Generation and Delivery Systems for Chlorine Dioxide (ClO<sub>2</sub>)



**Halox H1000SRE ClO<sub>2</sub> Generator**

ClO<sub>2</sub> Output: Up to 480 g/day (1.1 lb/day)



**Halox ClO<sub>2</sub> Dosing Package with Pallet**

Delivers ClO<sub>2</sub> solutions into pressurized lines



**Halox H2000SRE ClO<sub>2</sub> Generator**

ClO<sub>2</sub> Output: Up to 2.4 Kg/day (5.5 lb/day)

Halox Technologies designs, manufactures and sells generation and delivery systems for chlorine dioxide (ClO<sub>2</sub>), a highly effective biocide. Halox chlorine dioxide systems provide safe disinfection control strategies that minimize the risks associated with dangerous waterborne pathogens. Applications include, but are not limited to, potable water in healthcare facilities, hospitality market as well as commercial and residential buildings, food and beverage processing of all types, and cooling towers.

Most traditional ClO<sub>2</sub> generation methods are unacceptable to small and medium sized users. They produce excessive quantities and concentrations of ClO<sub>2</sub> (up to 5 to 8 thousand ppm ClO<sub>2</sub>). They involve the use of multiple hazardous reactants and are difficult and dangerous to operate. The Halox System uses an electro-chemical method that makes up to five and one-half pounds of ClO<sub>2</sub> per day (540 mg/l solutions<sup>1</sup>). This safe and simple-to-operate system generates a very pure product that is cost-effective.

Halox ClO<sub>2</sub> generators are CE Marked and conform to UL61010A-1 and CSA C22.2 NO. 1010.1 for electrical safety and have many additional safety features built in. They utilize a single precursor that eliminates the need to mix chemicals. The chlorine dioxide solution is produced at very safe, easy to handle concentrations.

ClO<sub>2</sub> is a stable, dissolved gas that is a strong bactericide and virucide at concentrations as low as 0.1 ppm in water. With minimal contact time, it is highly effective against pathogenic organisms such as Legionella, Listeria, Giardia cysts, E. coli, and Cryptosporidium. ClO<sub>2</sub> destroys biofilms and significantly impedes bacterial regrowth. It is a neutral species and does not form weak acids as chlorine and bromine do. It is effective over a wide pH range.

Chlorine dioxide is approved and recommended by the U. S. Environmental Protection Agency (EPA) as an environmentally friendly drinking water additive. ClO<sub>2</sub> replaces chlorine that can damage the environment and create health hazards when it combines with naturally-occurring organic materials such as organic acids from leaves to form trihalomethanes (THMs), which are suspected carcinogens.

Common disinfectants such as chlorine and bromine have low residual "killing power". They exhibit poor biofilm control. They do not retain their biocidal efficiency over wide pH ranges. They are relatively unstable. When chlorine and bromine react with chemicals such as ammonia, nitrogen, and corrosion and scale inhibitors in cooling tower water they form objectionable byproducts while reducing their effectivity.

### **The Halox SRE System of Chlorine Dioxide Generators**

Based on proven Halox technology, SRE generators provide high reliability and efficiency, reduced maintenance and simplified operation including:

- State-of-the-art CPU and power supply designs
- Automatic flow rate control
- Operating voltage range expanded by 80%
- Fewer electronic components for high reliability
- Improved software logic with cassette voltage display
- Feed water temperature range expanded by 50%

The Halox process is available in two configurations, the Halox H1000SRE and the Halox H2000SRE, depending on the amount of chlorine dioxide desired. The heart of the Halox System is a patented electrochemical cassette that directly converts sodium chlorite to chlorine dioxide. The Halox System requires NO acid, NO chlorine, NO bleach. The amount of

ClO<sub>2</sub> produced varies with the number and size of cassettes installed. The capacities are:

Model	1 Cassette	2 Cassettes	3 Cassettes	4 Cassettes
Halox H1000SRE with 5 gram cassettes produces ClO <sub>2</sub> as follows:	Up to 0.26 lb/day (120 g/day)	Up to 0.52 lb/day (240 g/day)	Up to 0.78 lb/day (360 g/day)	Up to 1.1 lb/day (480 g/day)
Halox H2000SRE with 25 gram cassettes produces ClO <sub>2</sub> as follows:	Up to 1.4 lb/day (600 g/day)	Up to 2.8 lb/day (1.2 Kg/day)	Up to 4.2 lb/day (1.8 Kg/day)	Up to 5.5 lb/day (2.4 Kg/day)

New cassettes are normally installed within six months of their purchase. Once installed, the cassettes have an approximate life of 2000 operating hours<sup>2</sup> or 4000 total installed hours, whichever comes first.

Operation is controlled by a menu-driven, keypad-activated microprocessor. The system is self-contained with automatic controls and safety-monitoring devices. It is readily integrated with existing equipment. In addition to an intrinsically safe design, there are built-in safety features. A leak detector within the unit shuts down production and switches on halogen lights to destroy any liberated ClO<sub>2</sub> vapors. It locks the cabinet door until any potential hazard has dissipated. The system monitors for low feed-water pressure, low precursor chemical, and electrical diagnostics.

The unit comes with all controls, pumps and regulators. Additional items needed include plumbing connections, a potable water source, sodium chlorite, and electrical power. Items located outside the enclosure include the sodium chlorite container, the supply power cable, the brine tank and tubing connections.

Outside dimensions of the units are 22 inch D x 24 inch W x 47 inch H (56 cm D x 61 cm W x 119 cm H). Operational weight is 180 pounds (82 kilograms). NOTE: The Halox H2000SRE has an external power supply measuring 13 in D x 24 in W x 30 in H (33 cm D x 61 cm W x 76 cm H) and weighing 150 lb (60 Kilograms). Electrical specs for the Halox H1000SRE are 115/230 VAC, 50/60 Hz, 1 Ø, 20/10 AMP; the units are dual voltage. Power Consumption: 200 to 800W. Power specs for the Halox H2000SRE are 230 VAC, 50/60 Hz, 1 Ø, 30 AMP. Power Consumption: 4.8 KW maximum.

### Halox ClO<sub>2</sub> Dosing Package

The amount of ClO<sub>2</sub> required for water disinfection in a particular application depends on the system demand, make-up rate, and desired residual. In situations where peak demand calls for large amounts of ClO<sub>2</sub> or in high-pressure applications, a Halox ClO<sub>2</sub> Dosing Package should be used. It contains all the necessary components for safely storing and metering ClO<sub>2</sub> solution. Halox ClO<sub>2</sub> Dosing Packages address the following key issues:

- Optimal control of ClO<sub>2</sub> residual in distribution systems.
- Material compatibility with ClO<sub>2</sub>.
- Safety relative to spills and over/under production of ClO<sub>2</sub>
- Ease of operation.
- Easy-to-use interface between ClO<sub>2</sub> generator and final use.
- Mechanical/electrical compatibility with ClO<sub>2</sub> generators

Halox ClO<sub>2</sub> Dosing Packages include a coated tank, high-low level controls and alarms, a leak containment skid and a control box. They require minimal assembly and contain all the necessary components for safely storing and metering ClO<sub>2</sub> solutions. Rugged and dependable pumps sized to match ClO<sub>2</sub> generation rate/system feed rate will supply up to 65 gallons-per-hour of ClO<sub>2</sub> solution into pressurized lines up to 150 psi as follows:

Models 5 and 10 Use With Halox H1000/H1000SRE	Models 21 and 65 Use with Halox H2000/H2000SRE
Tank Size: 30 gallon Output Pressure:100 psi max. Flow Rate: five gallons-per-hour for Model 5, ten gallons-per-hour for Model 10 Pumps: PULSAtron Series E Plus with 4 to 20 mA or Pulse inputs. One pump for Model 5; two pumps for Model 10.	Tank Size: 30 gallon Output Pressure:150 psi max. Flow Rate: 21 gallons-per-hour for Model 21, 65 gallons-per-hour for Model 65. Pump: One PULSAtron Series M with 4 to 20 mA input. For Pulse option please contact your water meter manufacturer for a Pulse to 4 to 20 mA converter. Alternatively, Halox can provide a water meter with a 4 to 20 mA output.

### ClO<sub>2</sub> Dosing System (includes spill containment pallet with leak detection)

Length .....	52 in (132 cm)	Height .....	60 in (152 cm)
Width .....	27 in (69 cm)	Operational weight.....	320 lb (145 kg)

<sup>1</sup> 540 mg/l is the concentration obtained under ideal conditions at the Halox testing facility. This is based on multiple data points from non-consecutive days with all variables and parameters under scrupulous control.

<sup>2</sup> 2000 hours is the estimated lifetime operating under optimum conditions in accordance with recommended Halox specifications. A normal variation of minus 10 to 15% (i.e. 1700 to 1800 operating hours) is to be expected.