



PSI Water Technologies
A UGSI SOLUTIONS COMPANY

MAKING BLEACH MADE EASY



MICROCLOR[®]

On-Site Sodium Hypochlorite Generation

Making Bleach Makes Sense

Microclor® On-Site Hypochlorite Generation (OSHG) is the safe, sound, clean and green disinfection option.



Nashville, TN (3) MC-2400s (7,200 PPD equivalent)



San Diego, CA (2) MC-1000s (2,000 PPD equivalent)



Fairmont, MN MC-400 (400 PPD equivalent)

As concerns mount and regulations change regarding the safety and security of chlorine gas used for water disinfection, many utilities are choosing sodium hypochlorite (bleach) as a safer alternative. Once the decision to convert to a safer alternative has been made, the question remains whether to purchase or produce sodium hypochlorite. Microclor® OSHG systems are the right choice to meet your disinfection requirements. Some of the most significant benefits of upgrading to a Microclor® OSHG system are summarized below. We encourage you to contact the many utilities currently using Microclor® systems to support your decision to purchase a Microclor® OSHG system.

SAFETY

The Microclor® OSHG system's dilute (0.8%) hypochlorite product concentration is below the hazardous material concentration threshold of 1%. This reduces operator hazardous material exposure and eliminates the need to dilute commercial strength hypochlorite to compensate for degradation which can lead to inconsistent solution strength.

FEWER DELIVERIES

The only raw materials required for the OSHG process are salt and water. This reduces vendor deliveries by about 66% compared to commercial bulk hypochlorite. Less truck traffic through the community and at your facility reduces the potential for accidents and reduces the associated carbon footprint, furthering efforts towards Green Facility Management and improving the water security profile of your facility.

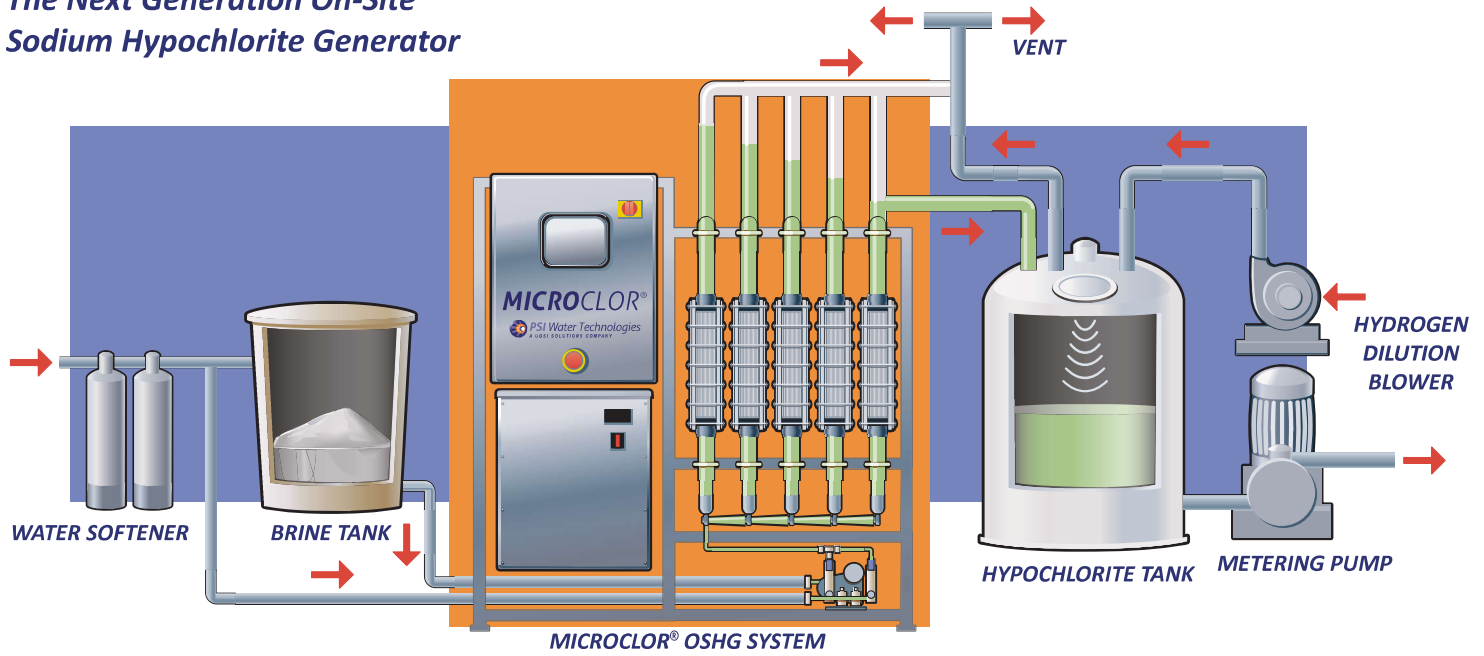
CONTINUITY OF OPERATIONS

Microclor® OSHG enables storage of larger quantities of raw materials (salt) necessary to generate disinfectant, resulting in a more sustainable and resilient treatment facility better able to withstand the demands imposed by a natural disaster or health emergency.

REDUCED OPERATIONAL COSTS

Since all chlorine compounds are derived from salt, on-site electrolytic conversion can result in significant savings. Producing sodium hypochlorite on-site can reduce your costs by as much as 70% as compared to buying it as commercial grade hypochlorite.

The Next Generation On-Site Sodium Hypochlorite Generator



The Microclor[®] OSHG system is modular in design and utilizes standard components that are easily customized to meet a wide range of requirements.

A typical Microclor[®] OSHG system includes:

- Stainless Steel Skid Assembly
- Water Softener
- Brine Tank
- Brine Pump
- Electrolytic Cells
- Skid-mounted PLC Control Panel
- DC Rectifier
- Hypochlorite Storage Tank
- Hypochlorite Metering Pump
- Hydrogen Dilution Blower

Capacities: 10-2400 pounds per day chlorine equivalent

Control: Automatic, regulated by storage tank level

Chlorine Concentration*: 0.8% +/- 0.05% (MC-20 – MC-2400)

Consumables per Pound of Chlorine Produced*: ~ 2.5-3.5 lbs salt, 1.8-2.4 kWh(AC), 14.0-17.0 gallons water

Water Input: Potable water, 50-80 PSI, 55°F-78°F (13°C-25°C)

Salt: 99.7% pure dry weight Morton White Crystal or equivalent

Control Cabinet: 304 stainless steel NEMA 4X

Operator Interface: 6" color touchscreen

Programmable Logic Controller: Allen Bradley[®] MicroLogix[™] 1400

1400

**Actual performance may differ in systems with less than five cells with operating conditions outside the norm.*

Microclor[®] OSHG Product Parameters

| | Capacity | | | | Total Flow | | Brine Flow | | Water Flow | | Incoming Power Ratings (FLA) | | | | | |
|---------|----------|------|--------|-------|------------|------|------------|-----|------------|------|------------------------------|--------------|--------------|---------|---------|---------|
| | PPD | KgPD | FORMAT | CELL | GPM | LPM | GPM | LPM | GPM | LPM | 120V/1Φ | 208V/240V/1Φ | 208V/240V/3Φ | 380V/3Φ | 480V/3Φ | 600V/3Φ |
| MINI | 8 | 5 | 1X10 | 2X6 | 0.1 | 0.4 | 0.01 | 0.0 | 0.09 | 0.3 | 11 | 7/6 | | | | |
| MC-20 | 20 | 9 | 1X20 | 2X12 | 0.2 | 0.8 | 0.02 | 0.1 | 0.18 | 0.7 | | 13/11 | 7/6 | 4 | 3 | 2 |
| MC-40 | 40 | 18 | 2X20 | 2X12 | 0.4 | 1.5 | 0.04 | 0.2 | 0.36 | 1.4 | | 26/22 | 14/12 | 8 | 6 | 5 |
| MC-60 | 60 | 27 | 3X20 | 2X12 | 0.6 | 2.3 | 0.06 | 0.2 | 0.54 | 2.0 | | 39/33 | 21/18 | 12 | 9 | 7 |
| MC-80 | 80 | 36 | 4X20 | 2X12 | 0.8 | 3.0 | 0.08 | 0.3 | 0.72 | 2.7 | | | 28/24 | 15 | 12 | 10 |
| MC-100 | 100 | 45 | 5X20 | 2X12 | 1 | 3.8 | 0.10 | 0.4 | 0.90 | 3.4 | | | 35/30 | 19 | 15 | 12 |
| MC-160 | 160 | 73 | 4X40 | 4X12 | 1.6 | 6.1 | 0.16 | 0.6 | 1.44 | 5.5 | | | 56/49 | 31 | 24 | 19 |
| MC-200 | 200 | 91 | 5X40 | 4X12 | 2 | 7.6 | 0.20 | 0.8 | 1.80 | 6.8 | | | 70/61 | 38 | 30 | 24 |
| MC-300 | 300 | 136 | 5X60 | 6X12 | 3 | 11.4 | 0.30 | 1.1 | 2.70 | 10.2 | | | | 58 | 46 | 37 |
| MC-400 | 400 | 182 | 5X80 | 8X12 | 4 | 15.1 | 0.40 | 1.5 | 3.60 | 13.6 | | | | 77 | 61 | 49 |
| MC-500 | 500 | 227 | 5X100 | 10X12 | 5 | 18.9 | 0.50 | 1.9 | 4.50 | 17.0 | | | | 96 | 76 | 61 |
| MC-600 | 600 | 273 | 5X120 | 12X12 | 6 | 22.7 | 0.60 | 2.3 | 5.40 | 20.4 | | | | 115 | 91 | 73 |
| MC-800 | 800 | 364 | 5X160 | 12X16 | 8 | 30.3 | 0.80 | 3.0 | 7.20 | 27.3 | | | | 154 | 122 | 97 |
| MC-1000 | 1000 | 455 | 5X200 | 12X20 | 10 | 37.9 | 1.00 | 3.8 | 9.00 | 34.1 | | | | 192 | 152 | 122 |
| MC-1200 | 1200 | 545 | 5X240 | 12X24 | 12 | 45.4 | 1.20 | 4.5 | 10.80 | 40.9 | | | | 231 | 183 | 146 |
| MC-1600 | 1600 | 727 | 10X160 | 12X16 | 16 | 60.6 | 1.60 | 6.1 | 14.40 | 54.5 | | | | 307 | 243 | 195 |
| MC-2000 | 2000 | 909 | 10X200 | 12X20 | 20 | 75.7 | 2.00 | 7.6 | 18.00 | 68.1 | | | | 384 | 304 | 243 |
| MC-2400 | 2400 | 1091 | 10X240 | 12X24 | 24 | 90.8 | 2.40 | 9.1 | 21.60 | 81.8 | | | | 461 | 365 | 292 |

Making Bleach Made Easy

The safety and cost effectiveness of on-site hypochlorite generation makes it the best option for producing disinfectant.

Since 1988, on-site hypochlorite generation has been recognized as an effective method for disinfecting water. In the last decade, PSI Water Technologies dramatically improved the technology through the robust and reliable design of its patented (www.psipatents.com) Microclor® OSHG system.

The patented Microclor® OSHG system's design is the result of over twenty-five years of experience in manufacturing, installing and servicing hypochlorite generation equipment. Advancements in system safety and ease of operation make the Microclor® OSHG system the overwhelming choice for water treatment professionals.

The combined benefits of the following unique features make Microclor® OSHG the most resilient and durable system available today:

- Vertical Cell Arrangement
- Multiple Cell Configuration
- Direct Hydrogen Management
- Continuous Process Control
- Full-Wave DC Power
- Compact Cell Design
- High-Velocity Electrolyte Circulation

VERTICAL/MULTI-CELL CONFIGURATION

The Microclor® OSHG system's vertical cell arrangement is the most significant of the many features that distinguish it from earlier generations of equipment.

DIRECT HYDROGEN MANAGEMENT

The electrolytic cells are configured in a vertical array and vented directly to atmosphere. This prevents the chance of overpressurization by releasing virtually all hydrogen directly from each cell. Other systems use the storage tanks as hydrogen separators which can contribute to excessive cell pressure and vibration in the discharge piping.

CONTINUOUS PROCESS CONTROL

The Microclor® OSHG system's integral brine pump is controlled by the PLC to optimize salt conversion efficiency and hypochlorite production. Automating precise brine control reduces operator intervention and improves system effectiveness.

FULL-WAVE DC POWER

Automated brine control allows full-wave rectification which greatly reduces excess heat and the number of components necessary in the rectifier. This reduces facility HVAC loads and improves system reliability.

COMPACT CELL DESIGN

The cell's vertical orientation not only allows better hydrogen separation but is also more compact, resulting in a more space-efficient footprint. The clear acrylic cell body supports the electrode array and eliminates the need for internal baffles and fasteners, reducing maintenance and repair costs over the life of the system.

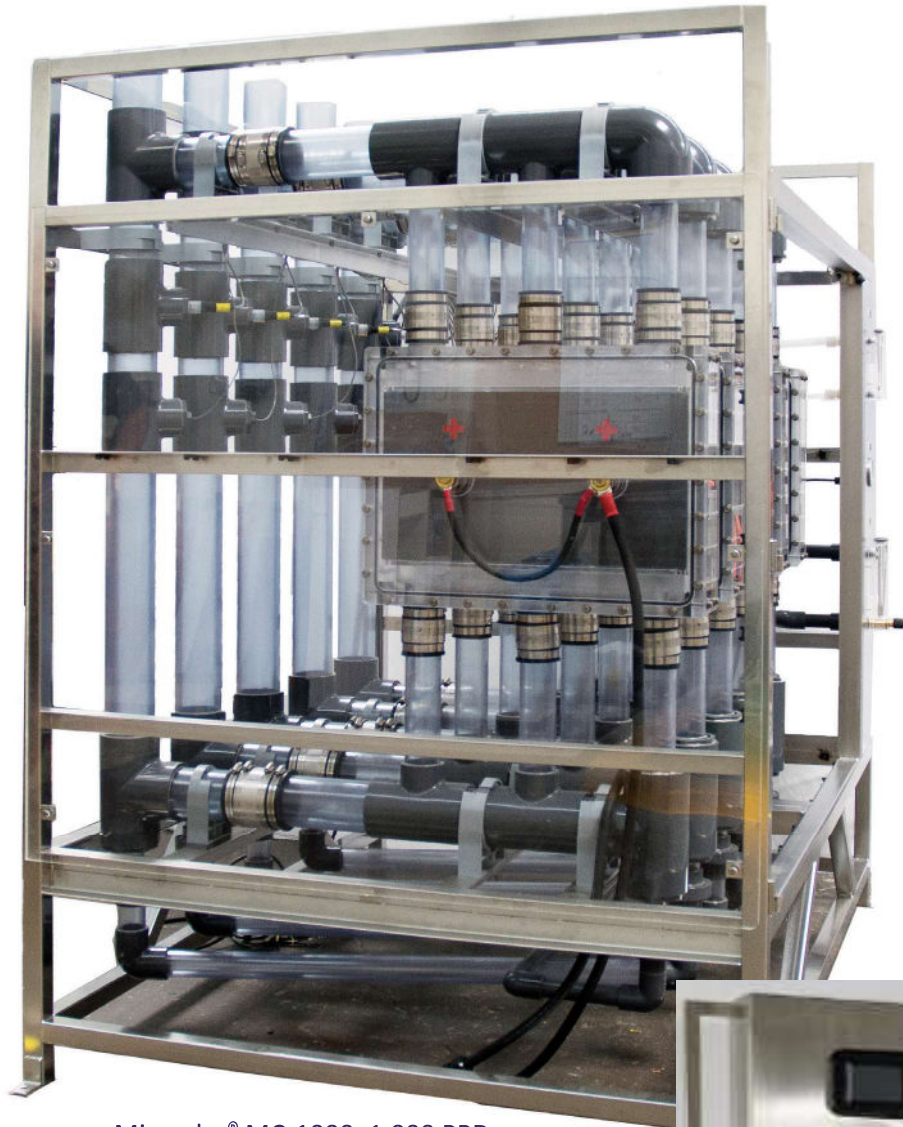
HIGH-VELOCITY ELECTROLYTE CIRCULATION

The hydraulic lift created by the hydrogen separation circulates electrolyte through the cell loop at 3 fps. This reduces the frequency of cell cleaning and minimizes heat accumulation in the cell.



Microclor® MC-1000, 1,000 PPD

Making Bleach Made Easy



Microclor® MC-1000, 1,000 PPD

Advantages:

- Safer OSHG Design
- Low-Cost, High-Quality Hypochlorite
- Vertical Cell Design
- Multi-Cell Configuration
- Immediate/Continuous Hydrogen Removal
- No Hydrogen Containment
- Small Footprint
- Low-Maintenance
- 24-Hour Service



Microclor® MC-100, 100 PPD

Service and Support

PSI Water Technologies provides world-class service and technical support for its Microclor® OSHG products. Spare parts, peripheral components, troubleshooting advice and field service are all elements of PSI Water Technologies' robust customer orientation that ensures our customers are "making water."



LEARN MORE ABOUT Microclor® OSHG
www.4psi.net



Microclor® LC-40S, 40 PPD



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