WATER PROCESS SOLUTIONS

WPS Microclor On-Site Hypochlorite Generation

Solutions That Work

The safety and cost effectiveness of On-Site Hypochlorite Generation makes it the best option for disinfecting water.

Since 1988 On-Site Hypochlorite Generation (OSHG) has been recognized as an effective method for disinfection of water. WPS has dramatically improved the technology into the robust and reliable design of the patented Microclor® OSHG system.

The patented Microclor® OSHG design is the result of over twenty-five years of experience in the manufacturing, installation and servicing of hypochlorite generation equipment. Advancements in system safety and ease of operation make Microclor® OSHG 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 vertical cell arrangement is the most significant of the many features that distinguish it from the 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 over pressurization 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

Microclor's® OSHG 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 requirement for cell cleaning and minimizes heat accumulation in the cell.

Microclor® MC-1000
454 kgs Per Day

> "The simplicity of the Microclor® OSHG system never ceases to impress me. Based on my prior experience with on-site hypochlorite generation, I never knew a system could be so easy to operate and maintain. Love it."
>
> *Leo Williams, Mountain Regional Water SSD Operations Superintendent, Park City, Utah*

Making Bleach Made Easy

Microclor® On-Site Hypochlorite Generation. The safe, clean and green disinfection option.

As concerns mount and regulations change regarding the safety and security of using chlorine gas for water disinfection, many utilities are choosing sodium hypochlorite (bleach) as a safer disinfection 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 is the right choice to meet your disinfection requirements. The items listed below are the most significant of the many benefits realized by upgrading to Microclor® OSHG. We encourage you to contact the many utilities currently using Microclor® OSHG for further evidence supporting the decision to purchase a Microclor® OSHG.

Safety

Microclor's hypochlorite solution is below most hazardous material concentration thresholds - 0.8% versus 1%. This reduces operator HAZMAT exposure and eliminates the need for diluting commercial hypochlorite to compensate for degradation which results in inconsistent solution strength.

Fewer Deliveries

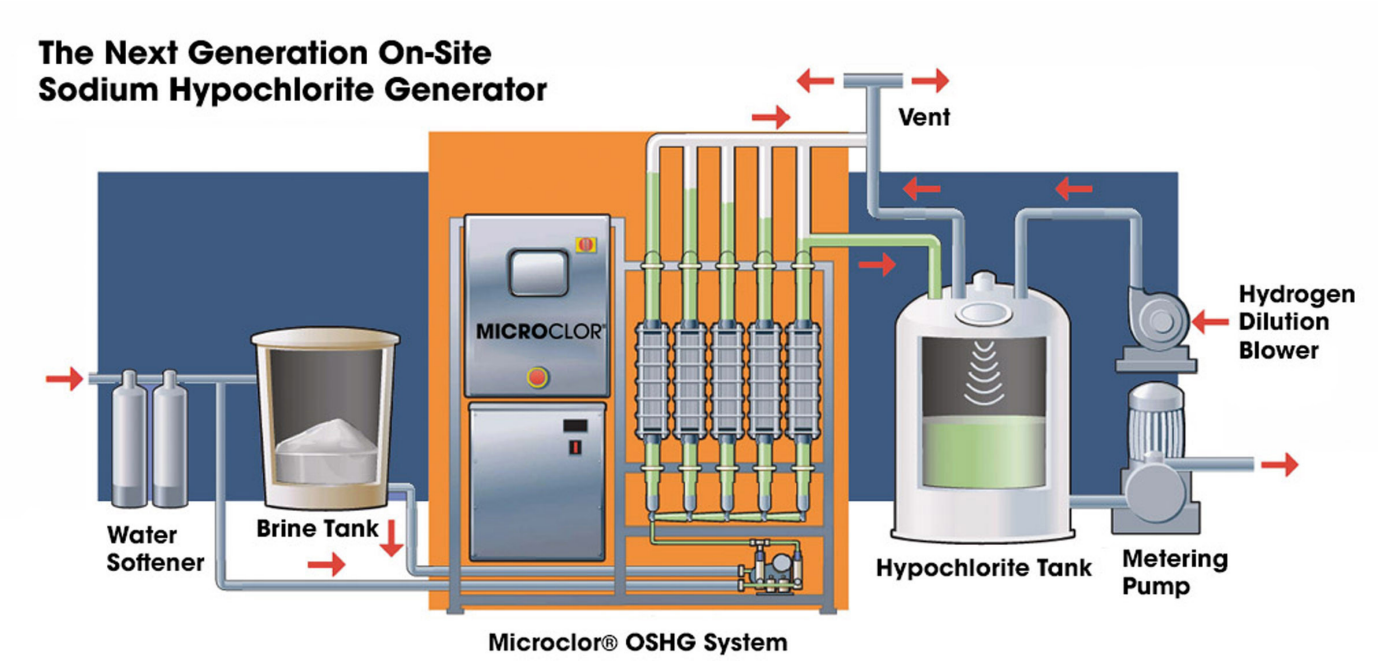
The only raw materials required for the OSHG process are salt and water. This will reduce vendor deliveries by about 66% compared to commercial bulk hypochlorite. Less truck traffic through the community and at the facility will reduce the potential for accidents and eliminate the associated carbon footprint,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

Continuity of Operations

Microclor® OSHG will enable storage of larger quantities of raw materials (salt) necessary for your disinfection process. This will result in a more sustainable and robust 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 to the owner. Typically, it costs 50-70% less to produce sodium hypochlorite as compared to buying it as commercial grade hypochlorite.



Microclor® OSHG is modular in design and utilizes standard components which 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
9-1090 kgs per day chlorine equivalent

Control
Automatic, regulated by storage tank level

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

Consumables per Pound of Chlorine Produced
~ 1.14-1.59 kgs salt, 1.8-2.4 kWH(AC), 64-77 Liters 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® MicroLogixTM1400

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

Microclor® MC-1000
454 kgs Per Day

Advantages:

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

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	208V/1O	240V/1O	208V/3O	380V/3O	480V/3O	600V/3O
MC-20	20	9	1X20	2X12	0.2	0.8	0.02	0.1	0.18	0.7	13	11	7	4	3	2
MC-40	40	18	2X20	2X12	0.4	1.5	0.04	0.2	0.36	1.4	26	22	14	8	6	5
MC-60	60	27	3X20	2X12	0.6	2.3	0.06	0.2	0.54	2.0	39	33	21	12	9	7
MC-80	80	36	4X20	2X12	0.8	3.0	0.08	0.3	0.72	2.7			28	15	12	10
MC-100	100	45	5X20	2X12	1	3.8	0.10	0.4	0.90	3.4				19	15	12
MC-160	160	73	4X40	4X12	1.6	6.1	0.16	0.6	1.44	5.5				31	24	19
MC-200	200	91	5X40	4X12	2	7.6	0.20	0.8	1.80	6.8				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

Service & Support

WPS provides world class service and technical support for its line of Microclor® OSHG products. We offer spare parts, peripheral components, troubleshooting advice and field service to ensure that our customers are “making water.”

Single Cell

Multi Cell

> "The Microclor® OSHG systems are a safer, costeffective and easier to maintain alternative to our previous OSHG systems. OSHG continues to be an excellent technology for our multiple and dispersed well-sites."
>
> *Juan Ramirez, Water Services Production Supervisor City of Santa Ana, California*

WATER PROCESS SOLUTIONS

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