RIO-S™
ON-SITE CHEMICAL GENERATOR

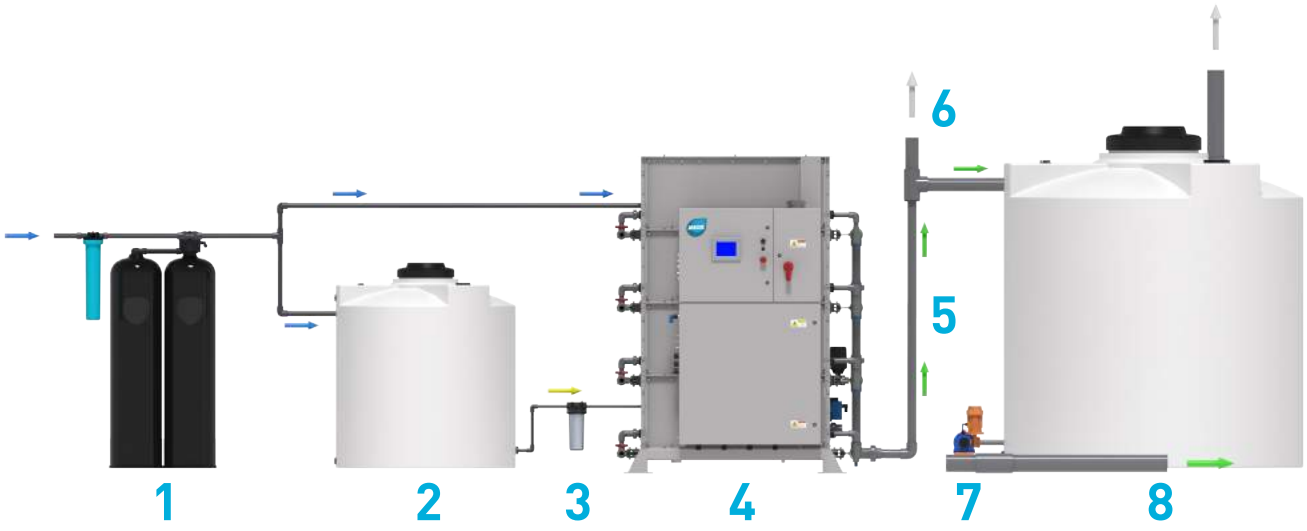
NEW, REVOLUTIONARY LARGE SERIES OSG

RIO-S OVERVIEW

MOS	HYPO + PEROXIDE	300 - 1200 lbs/day FAC
HYPO	HYPOCHLORITE	500 - 2000 lbs/day FAC

Technological enhancements integrated into design:

- Transformerless design.
- Up to 25% cost reduction.
- Up to 40% weight reduction
- Up to 45% footprint reduction.
- Up to 15% gain in electrical efficiency.
- Steel frame and enclosure fabrication with epoxy coat for corrosion resistance.
- Self-cleaning feature for Mixed Oxidant Solution (MOS) systems.
- Remote monitoring and communication options available.
- Cell design and flow control features for simplified maintenance and operation.



RIO-S PROCESS FLOW

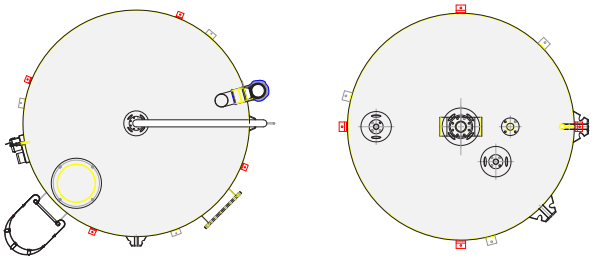
1. Softened water to Electrolytic Cell and Brine Tank.
2. Salt and water mix in the Brine Tank to form saturated brine.
3. Saturated brine enters the Electrolytic Cell.
4. Electrical current is passed through the Electrolytic Cell producing oxidant
5. Oxidant solution leaves the Electrolytic Cell and is stored in the Oxidant Tank.
6. Hydrogen gas produced during the Electrolysis Process is vented outside.
7. Oxidant solution is dosed into the Treatment Process by a metering pump.
8. MIOquipment turns ON/OFF from a level switch signal located inside the Oxidant Tank.

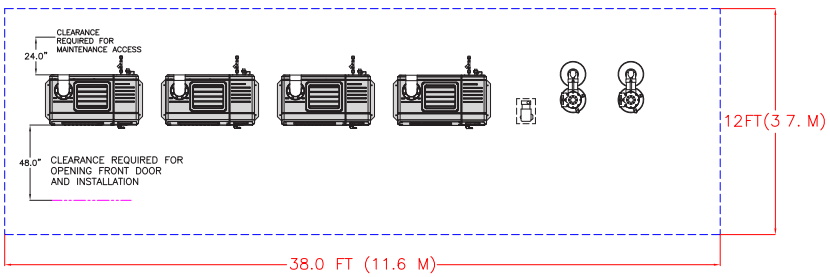
CERTIFICATIONS

- CE Certified
- NSF 61 for drinking water treatment (expected 2017)
- Intended to meet category 2 safety-related control system

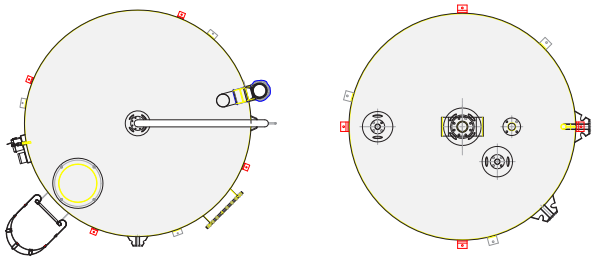
45% FOOTPRINT REDUCTION

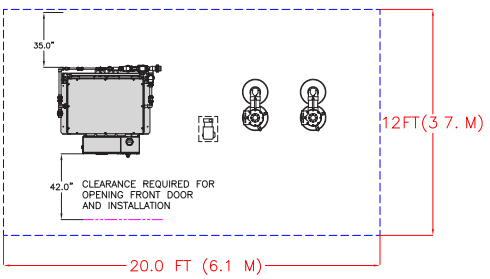
FOUR RIO SYSTEMS





ONE RIO-S SYSTEM
SAME PRODUCTION CAPACITY





MODULAR SYSTEM FROM 1 TO 4 CELL BANKS

- Optimized cell design for improved efficiency and increased capacity.
- Ability to isolate single cell bank for troubleshooting while continuing to run the system.
- Simplified maintenance and cell change-out with all components easy to access and maintain.
- Modular system design allows for independent cell-bank operation.
- Scalable from 1 to 4 cell banks.
- Discrete cells are configured electrically in series and parallel in plumbing enabling transformerless design, easy cell change out, and longer cell life compared to the competition.

AUTOMATED FLOW CONTROL

- Automated flow control that adjusts for unexpected changes in water pressure, ensuring consistent product quality, and reducing operator intervention.

AVAILABLE IN 400VAC & 480VAC

TRANSFORMERLESS DESIGN

- Eliminated the second most costly component of the system.
- Uses 480VAC or 400VAC to apply rectified VDC directly to cell.
- Cell design tailored for optimal electrode voltage, closely mimics the proven and reliable Vault cell design.
- Smaller footprint, lower weight.
- Improved voltage conversion and electical efficiency.

REMOTE MONITORING

- Modem connection and Red Lion control comes standard.
- Allen Bradley Micrologix 1400.
- Remotely view system operating parameters and data.

SPECIFICATIONS

HYPO	RIO-S H500	RIO-S H1000	RIO-S H1500	RIO-S H2000	RIO-S H400	RIO-S H800	RIO-S H1200	RIO-S H1600
Rated FAC Capacity	500 lbs/day 227 kg/day	1000 lbs/day 454 kg/day	1500 lbs/day 680 kg/day	2000 lbs/day 907 kg/day	400 lbs/day 136 kg/day	800 lbs/day 363 kg/day	1200 lbs/day 544.5 kg/day	1600 lbs/day 726 kg/day
Salt Conversion (SCE)*	3.0 lb salt/lb FAC 3.0 kg salt/kg FAC							
Energy Conversion (ECE)*	1.9 kW-hr/lb FAC 4.2 kW-hr/kg FAC							
FAC Concentration*	8,000 mg/L (+/- 1,000)							
Flow Rate**	380 gph 1438 lph	760 gph 2877 lph	1140 gph 4315 lph	1520 gph 5754 lph	304 gph 1150 lph	608 gph 2300 lph	912 gph 3450 lph	1216 gph 4600 lph
Nominal Energy to Unit	65 A, 54 KVA	130 A, 108 KVA	195 A, 162 KVA	260 A, 216 KVA	65 A, 45 KVA	130 A, 90 KVA	195 A, 135 KVA	260 A, 180 KVA
Electrical Service Req. (OSG only)	480VAC, 3 ph 100A, 50/60 Hz	480VAC, 3 ph 200A, 50/60 Hz	480VAC, 3 ph 300A, 50/60 Hz	480VAC, 3 ph 400A, 50/60 Hz	400VAC, 3 ph 100A, 50/60 Hz	400VAC, 3 ph 200A, 50/60 Hz	400VAC, 3 ph 300A, 50/60 Hz	400VAC, 3 ph 400A, 50/60 Hz

MOS	RIO-S M300	RIO-S M600	RIO-S M900	RIO-S M1200	RIO-S M250	RIO-S M500	RIO-S M750	RIO-S M1000
Rated FAC Capacity	300 lbs/day 136 kg/day	600 lbs/day 272 kg/day	900 lbs/day 408 kg/day	1200 lbs/day 544 kg/day	250 lbs/day 113.5 kg/day	500 lbs/day 227 kg/day	750 lbs/day 340.5 kg/day	340.5 kg/day 454 kg/day
Salt Conversion (SCE)*	3.0 lb salt/lb FAC 3.0 kg salt/kg FAC							
Energy Conversion (ECE)*	3.0 kW-hr/lb FAC 6.6 kW-hr/kg FAC							
FAC Concentration*	4,500 mg/L (+/- 1,000)							
Flow Rate**	380 gph 1438 lph	760 gph 2877 lph	1140 gph 4315 lph	1520 gph 5754 lph	304 gph 1150 lph	608 gph 2300 lph	912 gph 3450 lph	1216 gph 4600 lph
Nominal Energy to Unit	61 A, 51 KVA	122 A, 101 KVA	183 A, 151 KVA	244 A, 202 KVA	61 A, 42 KVA	122 A, 84.5 KVA	183 A, 127 KVA	244 A, 170 KVA
Electrical Service Req. (OSG only)	480VAC, 3 ph 100A, 50/60 Hz	480VAC, 3 ph 200A, 50/60 Hz	480VAC, 3 ph 300A, 50/60 Hz	480VAC, 3 ph 400A, 50/60 Hz	400VAC, 3 ph 100A, 50/60 Hz	400VAC, 3 ph 200A, 50/60 Hz	400VAC, 3 ph 300A, 50/60 Hz	400VAC, 3 ph 400A, 50/60 Hz

Additional operating parameters for All System Models								
Air Temp. Required	45° to 110° F 7° to 43° C							
Recommended Feed Water Temp	55° to 80° F 12° to 27° C							
Allowable Feed Water Temp	40° to 95° F 5° to 35° C							
Feed Water Presssure	35 to 100 psi 241 to 689 kPa							
Maximum Silica Limit	20 mg/L							
Energy Add for Internal Vent	0.5 kW	1 kW	1.5 kW	2 kW	0.5 kW	1 kW	1.5 kW	2 kW
Approx. Dimensions (WxDxH)	66 x 57 x 81 inches (168 x 145 x 206 cm)							

*Performance variation with respect to salt and water quality, water temperature and voltage.
**Flow Rate varies by +/- 15%.

Johnson Matthey
Inspiring science, enhancing life

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ON-DEMAND CHEMISTRY