



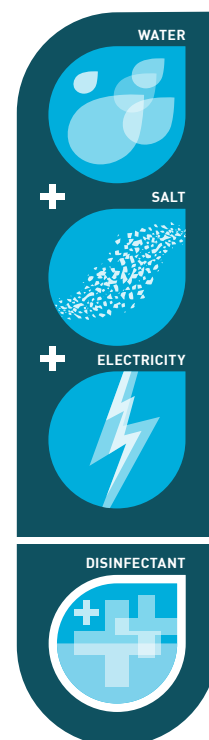
The MIOX RIO Zuni is a compact, easy to install and operate on-site chemical generator designed for minimal maintenance and ultimate simplicity. Similar to the thousands of larger MIOX installations around the world, this small-scale chemical generator can be retrofitted into existing infrastructures. Just load with salt and let the RIO Zuni do the dirty work for you!

APPLICATIONS

- COOLING WATER
- DRINKING WATER
- WASTEWATER
- PROCESS WATER
- CLEAN-IN-PLACE (CIP)
- POOLS & SPAS

INDUSTRIES SERVED

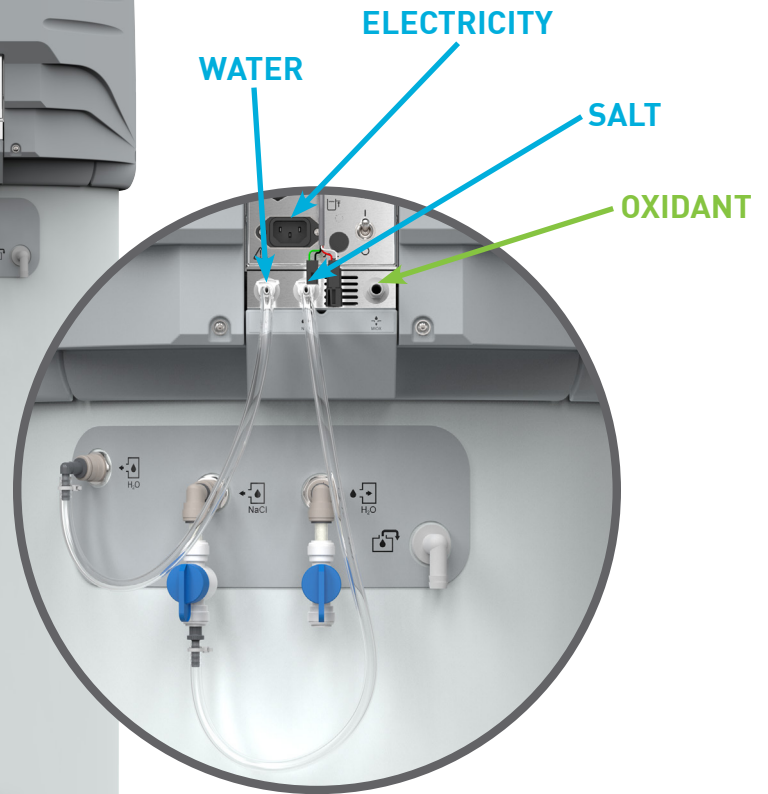
- WATER UTILITIES
- COMMERCIAL & INSTITUTIONAL
- HEAVY INDUSTRIAL
- FOOD & BEVERAGE
- OIL & GAS



ELECTROLYSIS PROCESS

The electrolytic cell of a MIOX on-site generator uses common salt combined with water and electricity to generate high performance disinfection chemistries, eliminating the need to transport and store hazardous chemicals.





ON-SITE CHEMICAL GENERATION

The MIOX RIO Zuni produces Mixed Oxidant Solution (MOS) on-site, on-demand using only salt, water and electricity. This process offers customers safe, effective, maintenance-free water treatment.

CONSUMABLES



WATER

The first feedstock required to operate a MIOX on-site generator is water. The MIOX RIO Zuni can operate on water hardness up to 17 mg/L.



SALT

Salt is the second feedstock required. MIOX recommends granulated food grade salt which is commonly sold in 50 to 100 lb sacks or delivered in bulk to your site.



ELECTRICITY

Electricity is the third feedstock required and is sold by kW-Hr.

SPECIFICATIONS

	RIO Zuni 1 PPD	RIO Zuni 2 PPD
Rated FAC Capacity	1.0 lb/ day 0.45 kg/ day	2.0 lb/ day 0.9 kg/ day
Water Treatment Capacity (at 1 ppm FAC)	120,000 gal/ day 454 m ³ / day	240,000 gal/ day 908 m ³ / day
Flow Rate (± 15%)	1.3 gph 4.9 lph	2.7 gph 10.2 lph
Self-Cleaning	YES	
FAC Concentration	4,000 ± 1,000 mg/L	
Water Hardness	0 - 17 mg/L	
Electrical Service Requirement (OSG Only)	110 VAC to 240 VAC, 1 ph, 4A rating 50/60Hz	
Salt Conversion (SCE)	3.0 - 3.5 lb/kg salt per lb/kg FAC	
Energy Conversion (ECE)	3.5 kW-hr per lb FAC 7.7 kW-hr per kg FAC	
Salt Quality Req.	99.5% NaCl or better [^]	
Hydrogen Venting	REQUIRED	
Air Temperature Req.	40°F to 120°F 4°C to 49°C	
Recommended Feed Water Temperature	55°F to 80°F 12°C to 27°C	
Allowable Feed Water Temperature Range	40°F to 95°F 4°C to 35°C	
Feed Water Pressure	1-75 psi 6.8 - 517 kPa	
Dimensions (WxDxH)	21" x 16" x 14" 53 cm x 41 cm x 36 cm	
Approx. Weight	25 lbs	

LABOR

Labor is needed to load salt into the optional brine tank and to provide periodic preventive maintenance.





Salt loading will be required when the system is running low on brine. However, this task will be infrequent. For example, a 40 gallon brine tank can hold up to six (6) 50 lb bags of salt, which provides enough brine for the RIO Zuni 2 PPD system to run continuously (24/7) for 6-8 weeks. Alternatively, the same amount of brine allows the RIO Zuni 1 PPD system to run continuously for 12-16 weeks.

The table below gives the recommended preventive maintenance activities, the interval on which they should be performed, and the number of minutes required to perform each task.

Preventive Maintenance	Weekly	Monthly	Annual
Check for Leaks (Hoses, Tank, Cell, etc.)	1 min		
Check for Loose Connections and Corrosion	1 min		
Check Salt Level (Fill to top of tank)	5 min		
Check Chemical Production	7 min		
Check Cell Connections		6 min	
Toggle Day Tank Level Switch (Both floats up - goes to standby)		1 min	
Clean Brine Tank and Solution Tank			60 min
Total Annual Labor Requirement (hours)		15 hr/yr	

OPERATIONAL COST

The amount of salt and power consumed in generating a quantity of Free Available Chlorine (FAC) is determined by FAC production and the conversion efficiencies of the system. Consumption and cost estimates are provided below. Please note that in most cases the water used for generation will be fed to the process water stream, resulting in no loss of water or additional water usage cost.

	Cost/lb 100% FAC
 WATER	\$0
 SALT	\$0.24 (3lbs at \$0.08/lb)
 ELECTRICITY	\$0.18 (2.5kW-Hr at \$0.07/kW-Hr)
 DISINFECTANT	\$0.42/lb

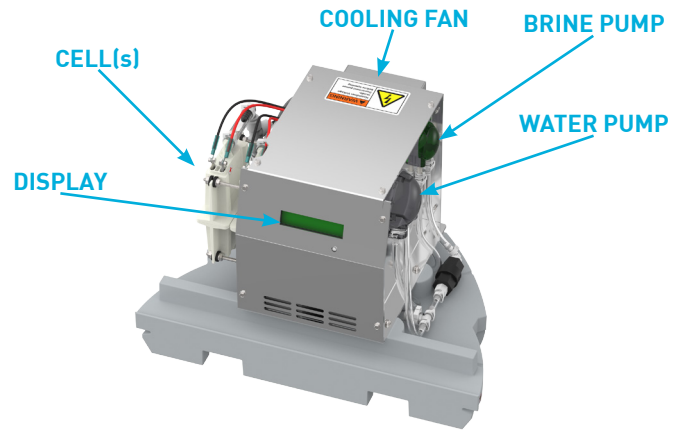
Sample costs for model: Salt at \$0.08 / lb and Electricity at \$0.07/kW-Hr

PARTS

Parts may include a new electrolytic cell every 5 years which will cost a small fraction of the price for a new system. However, additional cells should not be necessary if the system is properly operated and maintained.

Part ⁽¹⁾	RIO Zuni 1 PPD	RIO Zuni 2 PPD
Valves and Fittings	\$ 25/yr	\$ 25/yr
Water Pump	\$ 150 every 5 yrs	\$ 150 every 5 yrs
Brine Pump	\$ 140 every 5 yrs	\$ 140 every 5 yrs
System Power	\$ 220 every 5 yrs	\$ 440 every 5 yrs
New Cell(s) ⁽²⁾	\$ 1,100 every 5 yrs	\$ 2,200 every 5 yrs

(1) Based on 2014 MIOX prices and subject to change. Please call MIOX for current quote.
(2) Additional cells should not be necessary if properly operated and maintained.



COST COMPARISON PRICE PER LB OF 100% ACTIVE FAC

When compared to bulk Hypochlorite at 12.5% concentration, the equivalent concentration needs to be considered. Hypothetically, the price per 12.5% concentration Hypo would be:

MIOX	\$0.42
DELIVERED BULK HYPO	\$0.85 ~ \$2.50
PROPRIETARY BIOCIDES	\$1.50 ~ \$5.00

MIXED OXIDANT SOLUTION (MOS)

As a leader in OSG innovation, MIOX learned early on that the electrolytic cell inputs and operational parameters could be calibrated to produce aqueous chlorine solutions with substantially different oxidation and disinfection properties. These observations, coupled with extensive engineering and microbiological research, allowed MIOX to develop a unique, patented OSG product line capable of reliably producing MOS.

MOS electrolytic cells are engineered for maximum disinfection efficacy through proprietary cell design, control of power and cell geometry.

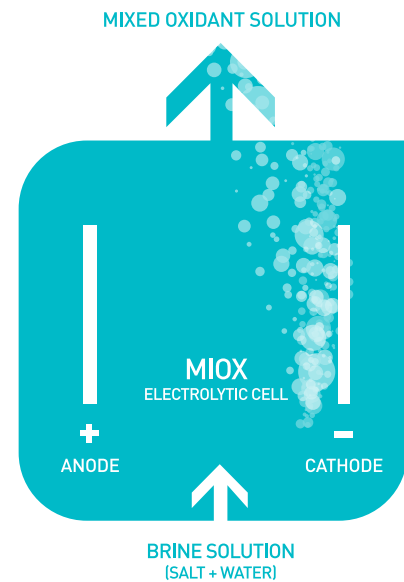
MOS BENEFITS

- Better control of Legionella through more effective removal of Pseudomonas
- More rapid and thorough inactivation of a wide range of microbial contaminants
- Increases biofilm removal over other biocides even at a high pH
- Reduces disinfection byproduct formation
- Eliminates delivery of hazardous biocides
- Reduces costs for chemicals, transportation and labor

MOS HYPO + PEROXIDE

Mixed Oxidant Solution (MOS) is a high performing yet environmentally benign disinfectant. Revolutionary efficacy is derived from the 2nd oxidant present in the solution – Hydrogen Peroxide, which co-exists for 24-48 hours after electrolysis.

1. Water and food grade salt are introduced (or injected) into the electrolytic cell
2. Electrolysis occurs inside the cell producing Mixed Oxidant Solution (MOS) chemistry
3. MOS is ready for use



ABOUT MIOX

MIOX invests deeply in technology and intellectual property, and regularly partners with new industries to develop solutions for their needs. Increased performance, safety, and a fast return on investment for our customers remain a principal focus. With twenty years of experience in the water disinfection market and thousands of MIOX installations in over 50 countries, MIOX chemistries are cleaning over 7 billion gallons of water per day.



Johnson Matthey

