



RIO Zuni

Compact On-Site Mixed Oxidant Solution Generator

Chlorine + Hydrogen Peroxide

Disinfectant Applications

- » Wastewater treatment and reuse
- » Cooling tower water treatment
- » Food and beverage disinfection
- » Drinking water treatment
- » Aquatics treatment
- » Surface disinfection



888-416-8626



info@legcs.com



calculate needs

request a quote

About MIOX

MIOX designs and manufactures a full range of on-site disinfectant generators to cost-effectively produce on-demand chemistry for a variety of applications. MIOX's patented on-site generation technology reduces carbon emissions by up to 80% and replaces the need to transport dangerous chemicals while typically realizing returns on capital equipment in 1 to 2 years.

With more than 2,000 MIOX installations in sites ranging from industrial cooling towers and municipal water utilities to resorts and clean-in-place providers, MIOX systems safely provide on-demand chemistry to millions of people worldwide.





On-Demand Chemistry Your High Performance Solution

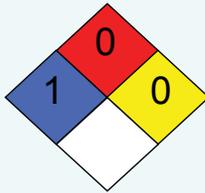
LEADER IN ON-DEMAND CHEMISTRY

MIOX's unique intellectual property was serendipitously discovered at Los Alamos labs and then developed for U.S. Military in 1994. Now with more than 2,000 MIOX installations in hundreds of U.S. communities and over 30 countries, MIOX systems are treating more than 7 billion gallons of water per day, serving millions of people worldwide.

Reduce Carbon Footprint
by 80%



Safe Chemistry



US NFPA Rating
0.4% - 0.8% Concentration



ON-DEMAND CHEMISTRIES

- 1) Hypochlorite
- 2) Mixed Oxidant Solution

In development:

- Non-Oxidizing Biocides
- Advanced Oxidation Process

MIXED OXIDANT SOLUTION: SUPERIOR DISINFECTION

- Unique biofilm removal
- Replace proprietary biocides
- Superior disinfection power
- Disinfection by-product reduction
- Eliminate hazardous chemicals
- Improve efficiency
- Reduce operating costs
- Save money

WIDE RANGE PRODUCT LINE

1 to 2000 lbs./day per generator



Pen



RIO Zuni



AE Series



VAULT



RIO



RIO Grande



Mobile Trailer

AWARD-WINNING TECHNOLOGY

MIOX has 18 filed and 25 pending patents. MIOX received the prestigious President's "E" Award for Excellence in Exporting, the Popular Science Best of What's New Grand Award for Innovation, is a GoingGreen Top 100 company, and consistently selected by The Artemis Project as a Top 50 Water Company.

MIOX Electrolytic Cells



HYPOCHLORITE GENERATORS: RELIABLE & MAINTENANCE FREE

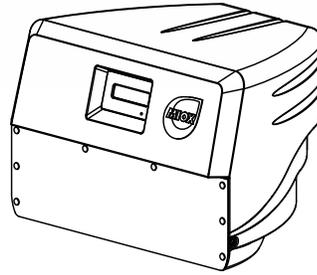
MIOX offers best-in-class self-cleaning, maintenance free and safe on-site hypochlorite generators with superior salt and energy efficiencies.



For more information, contact Legionella Control Systems
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RIO Zuni Overview

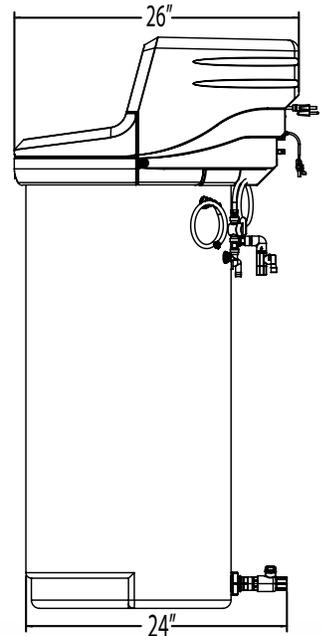
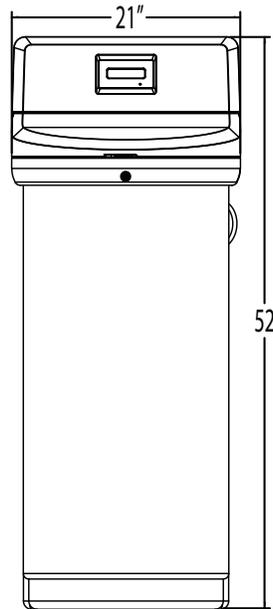
The innovative RIO Zuni on-site generator delivers 1.0 - 2.0 pounds per day of chlorine equivalent. Compact and easy to install, the robust RIO Zuni is a plug-and-play system designed for minimal maintenance and ultimate simplicity.



Standard Tabletop Unit

RIO Zuni Benefits

- » Less than 3 maintenance hours in 6 months
- » Produces biocidal mixed oxidant solution
- » Requires minimal water conditioning
- » Compact size with small footprint
- » Optional integrated brine tank
- » Remote monitoring capable



Unit with Optional Integrated Brine Tank



Using algaecide, bromide and hypochlorite



Using MIOX Mixed Oxidant Solution Chemistry

Benefits of MIOX Mixed Oxidants

Combining chemistries means greater efficacy and safer operation with less operator intervention and minimal operating costs. MIOX generators prevent handling and storing hazardous materials by converting salt into oxidant on-location and on-demand. Plus, MIOX mixed oxidant solutions are designed with short half-lives so they won't harm the environment even if used improperly.

MIOX On-Site Generators

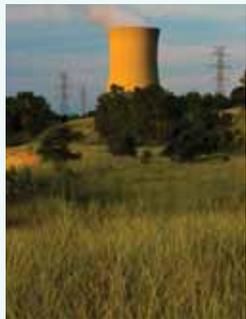
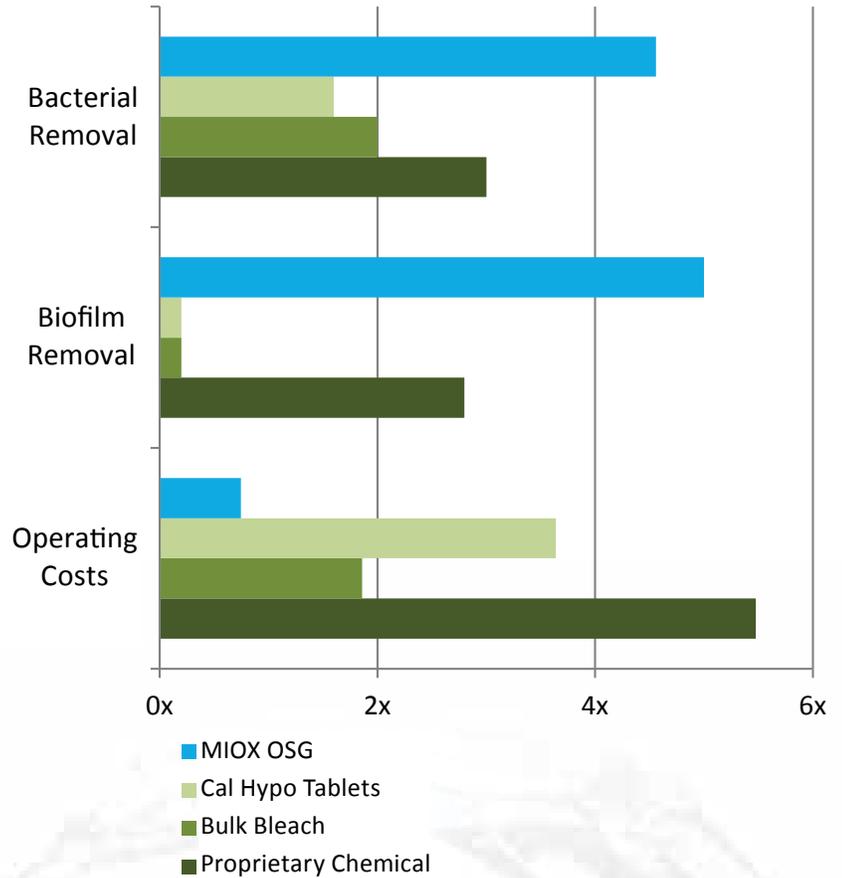
MIOX OSG systems minimize operating costs and maintenance times by creating advanced disinfectants out of salt, water, and electricity. By varying operating parameters and salt blends in the generator, MIOX OSGs can create a chemistry specific to almost any disinfection application.



Financial Overview

With typical payback periods of less than 24 months and ROIs over 150%, small scale MIOX OSGs are cost-effective solutions for most environments. Their user friendly design simplifies operation and maintenance over their 20-year lifetime.

Disinfectant Comparison Chart



MIOX Replaces Cocktail of Chemicals in NIPSCO Cooling Tower

The Northern Indiana Public Service Company (NIPSCO) was using a tri-cocktail of sodium hypochlorite, sodium bromide, and an algacide to treat water supplying four power plant cooling towers. Two quarters after upgrading to a MIOX mixed oxidant system, NIPSCO's senior Chemist said "the U15 condenser was cleaner than we'd ever seen it before, and there isn't any other change in the system to explain these results, other than the conversion to this new biocide system."

Hyatt Regency Tamaya Gets Safer Water with MIOX

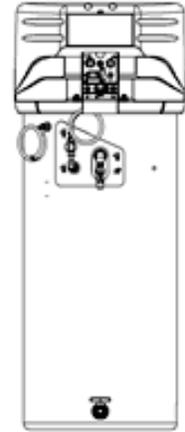
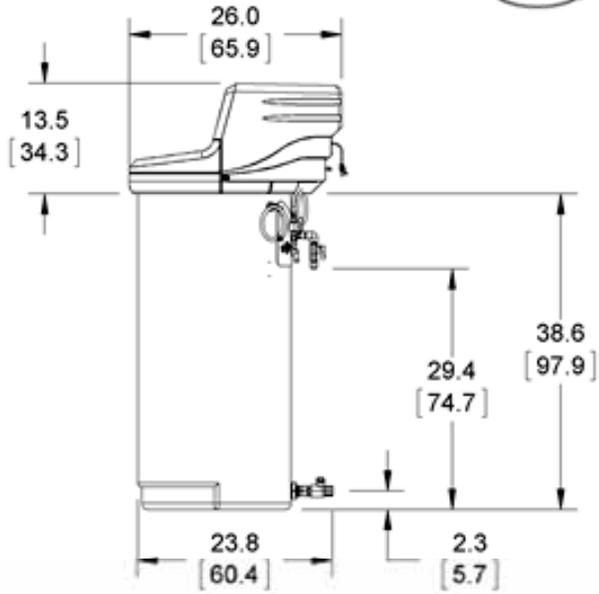
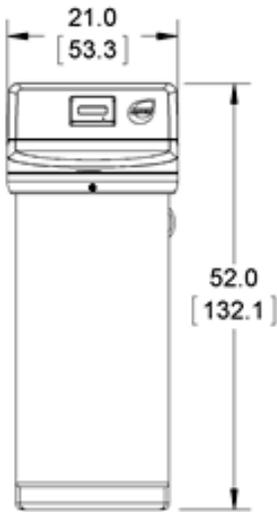
The Tamaya Resort's Director of Engineering explained "Safety issues were our biggest motivator. We eliminated the need to manually transfer 55-gal barrels of chemicals (liquid bleach) each day, which creates a safer environment all around – it's a win-win-win. We've heard from our guests that the pool water is crystal clear and better than ever. As a matter of fact, our pool technicians now have more to worry about... if a speck of dirt blows into the pool, you can see it. The clarity was an unexpected benefit, but one that is very pleasing to our guests."



MIOX RIO Zuni™ Specifications

MIOX Corporation's RIO Zuni™ is the latest addition to the MIOX product line and delivers 1.0 to 2.0 lb/day 100% Free-available Chlorine equivalent Mixed Oxidant Solution (MOS). This compact, easy to install and operate on-site chemical generator is designed for minimal maintenance and ultimate simplicity. The RIO Zuni™ features less than 3 maintenance hours in 6 months, a small footprint, can handle 170 mg/L water hardness with minimal water conditioning requirements, and has an optional integrated brine tank and remote monitoring capabilities. Similar to the larger MIOX installations currently in operation, the RIO Zuni can be retrofitted into existing infrastructure allowing MOS to be fed directly into existing equipment.

RIO Zuni Technical Specs	1 ppd	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 – 170 mg/L	
Electrical Service Requirement (OSG Only)	110 VAC to 240 VAC 1 ph 50/60Hz	
Number of Dedicated Circuits Required	One (1)	
Approximate Salt Ratio*	3.0 - 3.5 lb/kg salt per lb/kg FAC	
Air Temp. Required	42° F to 120° F 6° C to 49° C	
Feed Water Temp. Required	50° F to 80° F 10° C to 27° C	
Feed Water Pressure	1-75 psi 6.8 – 517 kPa	
Dimensions (WxDxH)	32" x 28" x 60" 81.3 cm x 71.1 cm x 152.4 cm	
Shipping Weight (Approx. with pallet)	110 lbs 50 kg	



MIOX RIO Zuni™ Drawing
with optional brine tank



MIOX RIO Zuni™

Operations and Maintenance Cost Guide 2012

MIOX equipment owners may use this guide to calculate estimated costs of operations and maintenance of their MIOX equipment. The guide is designed to familiarize the user with the components and parameters used to determine cost of operation. The user must factor in the actual local costs of salt, power, labor, and consumables for their specific installation and application. This guide assumes equipment is properly operated and maintained.



Salt is one of the feedstocks required to make electrolytically generated disinfectant. MIOX recommends granulated food grade salt which is sold in 50 or 100lb sacks as well as bulk delivery.



Electrical energy is the other feedstock required to make electrolytically generated disinfectant and is sold by kW-Hr.



Water is another feedstock required to deliver the disinfectant.



Labor is required for loading salt and for periodic preventive maintenance.



Replacement parts may include a new water pump, brine pump and electrolytic cell. The water and brine pumps are expected to last 5 years. Properly operated and maintained cells should last 5 years.



Operational Cost

The amount of salt and power consumed in generating a quantity of Free Available Chlorine (FAC) is determined by FAC production and by 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.

Sample Salt Cost	Sample Electricity Cost
\$0.10/lb	\$0.07/kW-Hr

X

Salt Conversion Efficiency	Electrical Conversion Efficiency
3.5	3.5

=

Salt Cost/lb FAC	Electrical Cost/lb FAC	Total Operational Cost/lb 100% FAC
\$0.35	\$0.25	\$0.60

Operational Cost to Make 1lbs of 100% Active FAC

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

$$\$0.60 \times 0.10 = \$0.06/\text{lb as bulk solution}$$

or

$$\$0.60 \times 1.0 = \$0.60/\text{gal of bulk solution}$$

Labor

Labor is needed to load salt into the optional brine tank and to provide periodic preventive maintenance. The table below gives a listing of the recommended preventive maintenance activities, the interval on which they should be performed, and the number of minutes required to

Preventive Maintenance RIO Zuni Series	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 Chlorine 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
Labor Requirements by Interval (min)	14 min/wk	7 min/mo	60 min/yr
Annual Labor Requirements by Interval (hours)	12 hr/yr	2 hr/yr	1 hr/yr
Total Annual Labor Requirement (hours)	15 hr/yr		

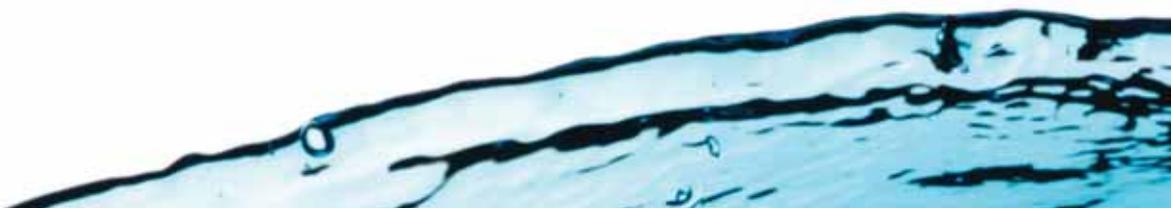
(1) Assume salt quality, water conditioning, and operation of equipment per MIOX recommendations.

Consumables and Parts

Parts may include a new electrolytic cell every 5 years. Additional cells should not be necessary if properly operated and maintained.

Consumable/Part ⁽²⁾	Zuni 1 PPD	Zuni 2 PPD
Valves and Fittings (\$/yr)	25	25
Water Pump (5 years)	150	150
Brine Pump (5 years)	140	140
System power supply(s) (5 years)	220	440
New cell(s) (5 years)	900	1800

(2) Based on 2012 MIOX prices and subject to change. Please call MIOX for current quote.



Mixed Oxidant Solution Chemistry Vital Disinfectant *for Cooling Towers*



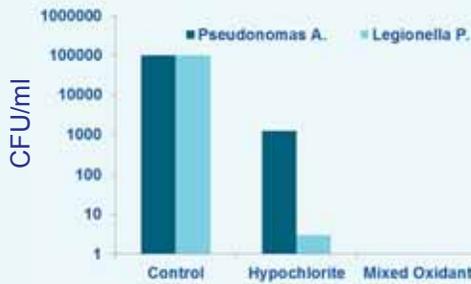
Superior Disinfection

Mixed Oxidant Solution

- ▶ Hypochlorite with Hydrogen Peroxide
- ▶ More powerful disinfectant than Hypochlorite
- ▶ Replaces proprietary biocides even at higher pH

After 10 Minutes Contact Time:

No Legionella detected at
2.0 mg/L Mixed Oxidant Solution at 8.0 pH



Larry Barton, PhD, University of New Mexico
"Disinfection of Simulated Cooling Tower Water" - 3/4/96

Biofilm Removal Guarantee

MIOX's Mixed Oxidant Solution has a remarkable track record of eliminating biofilm and we are standing behind that performance with a money-back guarantee. If you don't see an improvement in the biofilm contamination of your application within 90 days, contact us to review your installation. If we cannot help you meet your expectations, we will take our unit back and fully refund your purchase.

Exceptional Biofilm Removal

Before MIOX



After MIOX

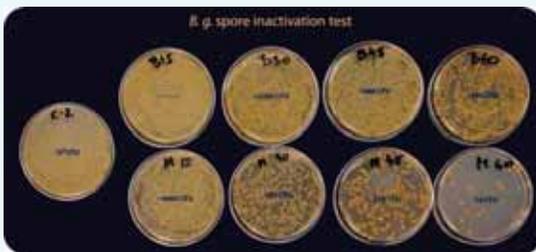


- Extensive biofilm
- Legionella CFU >5
- Dose: 1.5 mg/L Hypo
- Residual: 0.2 mg/L
- Biofilm eliminated
- No bacterial hits
- Dose: 0.6 mg/L Hypo
- Residual: 0.4 mg/L

Spa in Japan

A Japanese spa experienced positive Legionella counts using Bulk Hypochlorite. After switching to treatment using Mixed Oxidant Solution, Legionella counts are eliminated

Inactivates Bacillus globigii (B.g.)



Hypo

Mixed Oxidant Solution

15 min 30 min 45 min 60 min

Bajszar, 2009; Validated in 3rd party studies at the Centers for Disease Control and Prevention

...at a comparable price to bulk Hypochlorite

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Before MIOX



After MIOX



Condenser Tube Sheet

Before MIOX



After MIOX



Bio-control Boosts Power Plant Production by 7%

In 2010, a cooling crisis at a Puerto Rico Electric Power Authority (PREPA) facility prompted operators to seek a greener solution to cooling tower biofouling via MIOX's Mixed Oxidant Solution. Two years later, the MIOX on-site disinfectant generators have helped significantly improve water and energy efficiency. The efficiencies gained at the Palo Seco Power Plant alone resulted in roughly \$34 million a year.

MIOX Replaces Bulk Hypochlorite Chemicals in Hospital to Eliminate Legionella

The discovery of positive Legionella counts in the hospital's 7,000 ton cooling tower system required immediate intervention. MIOX replaced bulk bleach with Mixed Oxidant Solution generated on-site, on-demand. No positive Legionella counts since the installation of a MIOX system in July 2011.

Before MIOX



After MIOX



Cooling Tower Hot Deck

About MIOX

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Call us today

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