BLACKWATER™
PRODUCED WATER TREATMENT UNIT

THE MIOX BLACKWATER TRAILER IS A MOBILE WATER TREATMENT SYSTEM DESIGNED TO MEET HIGH VOLUME DISINFECTION REQUIREMENTS.

This dual-MIOX Mixed Oxidant Solution (MOS) system design can automatically treat fluctuating water quality all within a footprint no larger than 9' by 40'. Safest oxidizing chemistry generated at your site utilizing only brine, water and electricity, when you need it, with ZERO hazardous clean-up or spill procedures. Capable of inexpensive dosing regardless of water quality. When dosed properly, Mixed Oxidant Solution (MOS) chemistry virtually eliminates both sulfate-reducing bacteria (SRB) and acid producing bacteria (APB) which can lower production and foul wellbores.

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RIO

MIOX has developed a highly effective disinfection technology for use in the oil and gas industry which creates Mixed Oxidant Solution (MOS) biocide—on location and on the fly. When applied correctly, MOS can completely eliminate SRBs and all other bacteria. MIOX MOS on-site chemical generators have a small footprint, are modular and mobile, require minimal input, and come with a long history of applications. Depending on the specific application, the technology can be applied as a service, lease, or capital purchase.

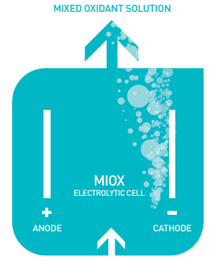
BLACKWATER™ FEATURES

- 5 year cell life warranty
- Simple cam-lock rig-up consisting of 1 brine hose, 1 water hose, dosing hose(s) and power connection.
- Virtually hands-off once rigged-up
- ISO 9001 Certified Manufacturing Facility
- Two (2) RIO on-site generator (OSG) systems include cells with rectifier/power supplies, variable speed brine pumps and controls all mounted in free standing, powder coated corrosion resistant HDPE cabinets.
- Highly efficient electrolytic cell design with low current density for maximum coating life and optimized internal geometry to minimize susceptibility to contaminant clogging.
- Allen Bradley MicroLogix 1200 controls
- Real-time remote monitoring optional
- Integrated controls, pumps and automated dosing
- Self-contained unit with redundancy on all critical path components
- Trainer with controls, wiring, plumbing venting, and anchorage pre-installed by MIOX
- Can be winterized for low temperature operations
- Rugged construction with proven life across multiple industries

RECYCLING, REUSING OR TREATING PRODUCED WATER DOES NOT ALWAYS HAVE TO BE EXPENSIVE. Most oil and gas companies manage more water than they do hydrocarbons. While MIOX is not a 100% solution to all produced water treatment needs, it does do the heavy lifting.

Economic, environmental, and operational demands challenge drilling operators to produce results in a highly regulated and competitive environment. MIOX chemical generators offer an efficient, effective, low cost solution for treating high volumes of water and achieve a superior bacterial kill. And because MIOX technology operates with salt, water and electricity, there are virtually no health, safety, spill, or environmental concerns at the well site or down-hole.

ELECTROLYSIS PROCESS



MIOX vs. PRODUCED WATER 28 DAY GROWTH, COMPOSITE 50/50 BLEND

Location	Stage	Untreated	50 ppm MOS
Fayetteville	SRB Growth (MPN)	11000000 CFU/ml	43 CFU/ml
	APB Growth (MPN)	11000000 CFU/ml	24 CFU/ml
Woodford	SRB Growth (MPN)	460000 CFU/ml	4 CFU/ml
	APB Growth (MPN)	11000000 CFU/ml	93 CFU/ml

MIOX Mixed Oxidant Solution (MOS) technology does the following:

- Kills bacteria (especially H_2S causing bacteria)
- Eliminates existing H_2S
- Treats out ammonia
- Oxidizes iron (Fe^2) and heavy metals
- Minimal user manpower & service required
- Small footprint
- Safest biocide alternative in oil & gas industry
- Treats at high volume high rate capacity
- On-site chemical generation
- Low/No manpower requirement
- Highest Performance vs. Per Barrel Cost
- Outperforms ozone, UV, chlorine dioxide, electrocoagulation and conventional biocides on cost vs. performance
- Helps allow reuse and recycling of produced and flowback water
- Potential to reuse brine/produced water waste streams as feedstock further lowering cost

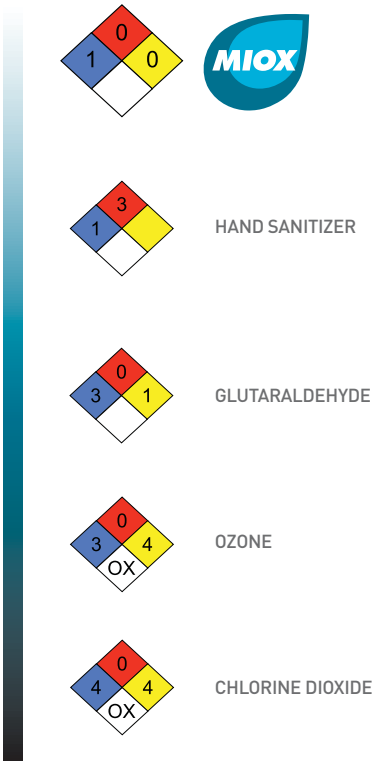
BLACKWATER™ SPECIFICATIONS

lbs/day FAC Capacity **kg/day FAC Capacity**	800 lbs/day 362 kg/day
12.5% Bleach Equivalent	800 gal/day 3,028 L/day
Water Treatment Capacity (at 5ppm FAC)	19.2 MGD 450k barrels/day 72k m^3/ day
Salt Conversion (SCE)*	3.0 lb salt / lb FAC 3.0 kg salt / kg FAC
Energy Conversion (ECE)*	3.5 kW-hr / lb FAC 7.7 kW-hr/ kg FAC
FAC Concentration	4,500 mg/L ± 1,000 mg/L
Electrical Service Requirement (OSG only)	480 VAC, 3 ph, 250A, 60 Hz
Generation rate (± 15%)	1,000 gph 3,786 lph
Air Temp. Required	45° F to 105° F 7° C to 40° C
Allowable Feed Water Temp.	40° F to 100° F 4° C to 38° C
Required Feed Water Temp.	50° F to 80° F 10° C to 27° C
Feed Water Pressure	60 to 100 psi 414 to 689 kpa
Dimensions (WxDxH)	8' 8" x 40' x 9' 2.6 m x 12.2 m x 2.7 m
Shipping Weight	19,000 lbs 8,618 kg

A SAFER OXIDANT

When compared to other chemicals, such as conventional biocides, we dramatically reduce exposure on-site. No special clean-up or spill procedures, or potentially expensive air quality testing needs to be observed with MIOX Mixed Oxidant Solution (MOS) chemistry.

NFPA Health Rating
0-Normal Material
1-Slight Hazardous
2-Hazardous
3-Extreme Danger
4-Deadly



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ON-DEMAND CHEMISTRY