



# Reducing the operating cost of data center cooling water

**MIOX**®

**Save money, while improving your facility's  
performance and safety**



# The advantage of MIOX<sup>®</sup>

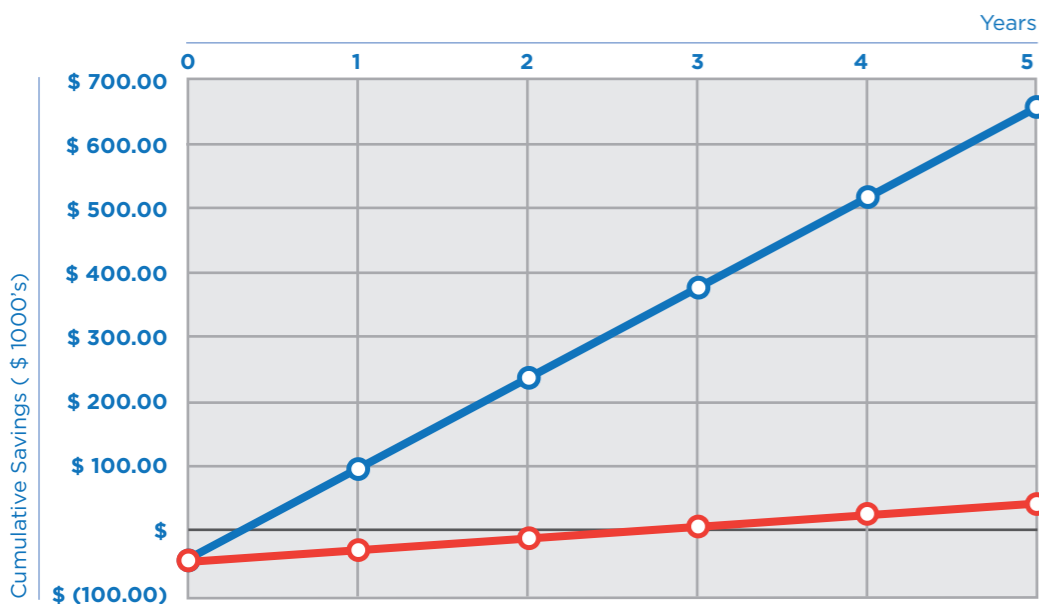


The cooling of data centers is the second largest power consumer after servers. Cooling energy varies from 10%-45% of the total energy consumption.

Controlling biofilm is key to maintaining maximum heat transfer efficiency, thereby lowering water required and pumping cost. In addition, the growth of organisms such as *Legionella* can harm the health of employees.

As a result, biocides are typically used to keep the systems clean. Most commonly, sodium hypochlorite or hypochlorite/bromine blends are used. These can be costly and may not be as effective as possible.

	Performance							
	Microbial Control (i.e. <i>Legionella</i> )	Energy / cooling efficiency	Anti-scalant use	Cost	Safety	Liability	Sustainability	Logistics
Bulk hypo	Red	Red	Red	Red	Red	Red	Red	Red
Multi-biocide	Orange	Orange	Orange	Orange	Orange	Orange	Orange	Orange
MIOX MOS	Green	Green	Green	Green	Green	Green	Green	Green



The Return on Investment (ROI) with MIOX could be less than a year when compared with a multi-biocide program. This compares to less than three years versus conventional bulk hypochlorite.

—●— Stabilized Bromine  
—●— Bulk Hypochlorite

# Three Key Cooling Water Challenges Addressed by MIOX Systems



## Microbial/Biofilm Control *Legionella*, Biofilm, Algae

Minimize health risks (i.e. *Legionella*).  
Improves energy efficiency.  
Reduce or eliminate pitting corrosion, improving cooling water system useful life.

## Mineral Scale Control (Calcium, Magnesium, etc.)

Reduce acid or antiscalant usage by eliminating caustic added with bulk hypochlorite or stabilized bromine.

## Corrosion of Materials

Reduces corrosion due to pitting.  
De Nora MIOX enhances and improves the control of microbial contamination when incorporated into an overall chemical program.

# De Nora solutions

Heat Exchanger Before MIOX

Heat Exchanger After MIOX

**MIOX<sup>®</sup> 2**  
To 2lb/d  
= 0.9kg/d

**MIOX<sup>®</sup> 4-8**  
4-8lb/d  
= 1.8-3.6kg/d

**MIOX<sup>®</sup> 15-60**  
15-60lb/d  
= 6.8-27kg/d

**MIOX<sup>®</sup> 60-300**  
60-300lb/d  
= 27-136kg/d

# Experience and performance you can trust

De Nora MIOX systems are used by leading data companies at over 40 installations in Data Center market space and more than 1,000 installations in other cooling water applications.



## Experience - Data Center Installations

Company	# of Systems	Location
Subsidiary of Fortune 5 Company	Twenty (20)	Various sites across USA
Subsidiary of Fortune 15 Company	Sixteen (16)	Various sites across USA
Fortune 50 Company	Two (2)	USA

**Economics** – The Return on Investment is between 6-24 months versus typical multi-biocide program.

**Performance** – Proven improved microbial control with over 1,000 installations globally.

**Ease of Use** – Minimum human intervention required – add salt every month or so.

**Reliability** – 15-25 hours per annum for overall maintenance (including salt loading).

**Operational Safety** – Salt is the only consumable. Mixed Oxidant has an NPRA rating of 1,0,0 – safer than hand sanitizer.



## About De Nora

Backed by 100 years of experience, you can be confident in the reliability and safety of MIOX®. De Nora is the partner-of-choice for communities and companies around the globe. In fact, more than 500 million people around the world drink water treated by De Nora products every single day.

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