

**Safe.  
Economical.  
Effective.**



De Nora ClorTec<sup>®</sup> and MIOX<sup>®</sup> On-site Chemical Generators



# De Nora makes on-site brine electrochlorination easy.

The on-site generation of chlorine-based chemistries provides a safe, economical and effective solution for the treatment of water. For a variety of applications from drinking water treatment to microbiological control in cooling towers, on site generation lets you generate what you need, when you need it.

Ensure the safety of your personnel and the surrounding community using three common and safe consumables - water, salt and electricity - to generate a powerful, effective oxidant without the transportation of hazardous chemicals. Innovative technologies deliver low levels of chlorate by-product formation at the highest efficiency available.

## Innovation at our core

With the benefit of more than 95 years of electrochemistry expertise, De Nora on-site generation systems feature market innovations including small footprint, efficiency, remote monitoring, self-cleaning and simple installation and maintenance. At the heart of every De Nora electrochlorination system is the DSA® electrode technology pioneered by De Nora.

The latest innovation from De Nora is the ClorTec® Gen III on-site sodium hypochlorite generator. The high efficiency system uses an optimized electrochlorination process that reduces salt (2.5-2.8 lb/lb FAC) and power consumption (2.0 kWhr/lb FAC) and product concentration (8,000 ppm) to deliver a 15 percent operating cost saving over the previous system. The ClorTec® Gen III system includes the same market-led features of the previous model, including simple operation, easier maintenance, and up to 50% footprint reduction. Smart Monitoring technology allows users to remotely monitor and control the operation of their system and provide performance data remotely back at the operator's location.

## Not all water treatment needs are the same

De Nora offers two types of on-site chlorine-based generation systems in a range of sizes to meet the diverse needs of water, wastewater and industrial treatment customers. For reliable, effective generation of a guaranteed 0.8% solution of sodium hypochlorite, De Nora ClorTec® on-site hypochlorite generators are designed for high efficiency, low lifecycle cost, durability and reliability.

For more advanced treatment needs, De Nora MIOX® on-site mixed oxidant generators are optimized for challenging applications. This chlorine-based solution has all the oxidant power of hypochlorite with additional treatment benefits including biofilm removal, improved water odor and clarity. With mixed oxidant solution, customers maintain more consistent control and residuals with lower dosage.

### Why De Nora?

Electrochlorination expertise

Innovation including new ClorTec® Gen III

Highest efficiency

Low DBP formation

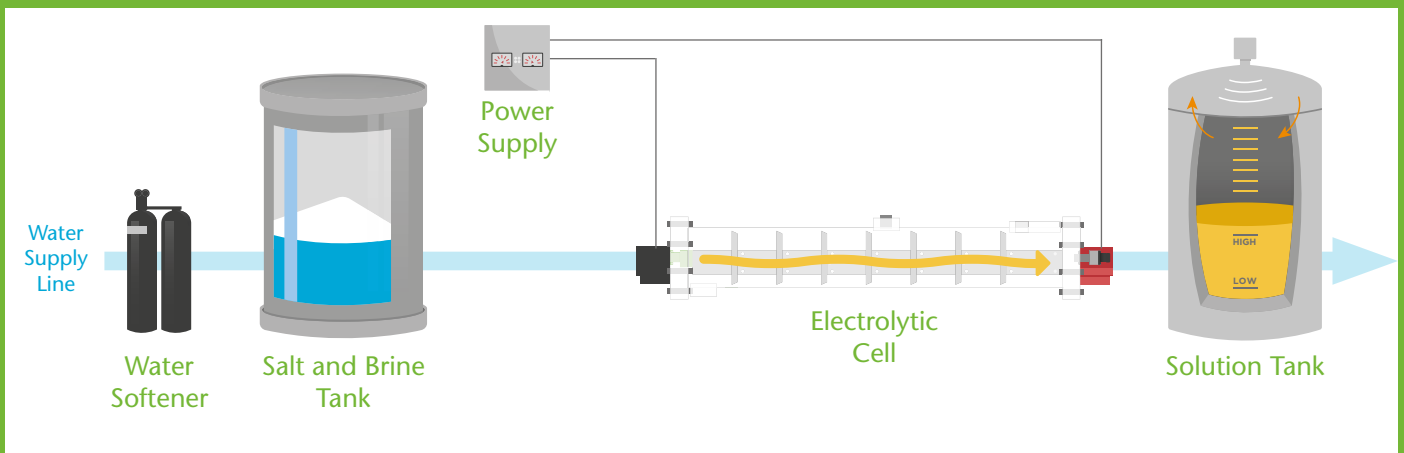
Operator benefits

Low lifecycle costs



# How it works

ClorTec® and MIOX® systems use three common consumables: water, salt and power. On-site generators produce chlorine-based disinfectants when a solution of sodium chloride (salt + water) is passed through an electrolytic cell. This process converts the chloride ions present in the solution to either sodium hypochlorite or mixed oxidant solution.



## Why on-site generation?

### Safety

- Eliminates transportation and storage of hazardous substances
- No hazardous precursors
- No Hazmat PPE or reporting required

### Performance

- Eliminates chlorine degradation and associated costs
- Minimizes disinfection by-product production

### Economics

- Consistent product quality
- Reduces or eliminates reboosting of chlorine

### Sustainability

- 1 truckload of salt replaces 4 trucks of bulk bleach
- Carbon emissions and fuel consumption reduced
- Eliminates the need for non-reusable hazardous chemical containers

# ClorTec® Sodium Hypochlorite Generators

Chlorine-based chemistry for effective water treatment.

## ClorTec® 25-100

Generates 25-100 lbs/day Sodium Hypochlorite

- Smallest footprint on the market and modular electrolytic cells offer increased capacity as needed without additional space
- Pre-assembled vertical or free-standing, wall or skid-mounted cabinet packaged for easy installation
- Optional self-cleaning, virtually eliminates acid washing
- Remote monitoring and control capability ensures optimal operation and reduces on-site time requirements
- Designed for high efficiency, low lifecycle cost, durability and reliability.
- Easy interface with flow control, air-cooled power supply, corrosion-resistant cabinet and touch-screen display



## ClorTec® 100-3000

Generates 100-3000 lbs/day Sodium Hypochlorite

- New ClorTec Gen III solution optimizes production to deliver 15 percent operating cost savings, all with the same operating advantages as previous designs
- Unique proprietary flow control backboard design for easy and flexible placement
- Duty and standby systems on the same frame reduces footprint by up to 50%
- 100% access to every component
- Acid wash assist feature provides cell cleaning notifications
- Patented split flow design reduces DBP formation and improves efficiency
- Water and brine flow control ensures consistent hypochlorite production



# MIOX<sup>®</sup> Mixed Oxidant Generators

Chlorine-based chemistry for advanced applications.

## MIOX<sup>®</sup> 2

Generates 2 lbs/day Mixed Oxidant Solution .....

- Small footprint, easy to install and operate
- Minimal maintenance: less than 6 maintenance hours per year
- Optional integrated brine tank and remote monitoring capabilities



## MIOX<sup>®</sup> 4-8

Generates 4-8 lbs/day Mixed Oxidant Solution .....

- Automatic operation after connection to your water and power source
- Routine operator service only requires acid washing and ensuring salt availability



## MIOX<sup>®</sup> 15-60

Generates 15-60 lbs/day Mixed Oxidant Solution .....

- Smallest footprint on the market and modular electrolytic cells offer increased capacity as needed without additional space
- Pre-assembled vertical, wall- or skid-mounted cabinet packaged for easy installation
- Self-cleaning, virtually maintenance-free with minimal operator intervention
- Remote monitoring and control capability ensures optimal operation and reduces on-site time requirements
- Designed for high efficiency, durability and reliability.
- Easy interface with flow control, air-cooled power supply, corrosion-resistant cabinet and touch-screen display



## MIOX<sup>®</sup> 60-300

Generates 60-300 lbs/day Mixed Oxidant Solution .....

- Systematically optimized for ease of use, reliability, and performance
- Modular electrolytic cells for up to 5x expanded capacity without additional space
- Pre-engineered and factory tested unit reduces installation costs and footprint
- Self-cleaning, virtually maintenance free design



## MIOX<sup>®</sup> 300-1200

Generates 300-1200 lbs/day Mixed Oxidant Solution .....

- Systematically optimized for ease of use, reliability, and performance
- Modular electrolytic cells for up to 4x expanded capacity without additional space
- Transformer-less design operates with Allen Bradley MicroLogix 1400 controls, self-cleaning and self-adjusting flow control for a virtually maintenance-free system
- Smallest footprint available – ideal for retrofits and tight spaces





# Applications & Markets

Our customers have a diverse range of needs across markets.

**Biofouling Control**

**Chloramination**

**Cooling Towers** .....

**Fe/Mn Removal**

**Frac Water Disinfection**

**Odor Control**

**Produced Water Recycling**

**Potable Water Disinfection**

**Slime and Algae Control**

**Swimming Pool Sanitation**

**Zebra Mussel Control**

**Drinking Water** .....

**Food And Beverage**

**Pulp and Paper**

**Poultry And Meat Processing**

**Rubber Processing**

**Wastewater/reuse** .....

Sodium hypochlorite or mixed oxidant solution for industrial cooling water treatment improves safety and thermal efficiency, lowers general corrosion rates, increases performance, and saves money. The unique qualities of MIOX<sup>®</sup> mixed oxidant solution help lower oxidant levels introduced into the cooling tower which lowers corrosion rates by up to 80% in copper and 50% in steel, resulting in a reduction of downtime and maintenance.

De Nora on-site sodium hypochlorite generation systems are used in surface and groundwater treatment plants in both pre-treatment and final disinfection applications. Communities rely on De Nora proven chemistry for improving the quality and safety of drinking water. Decades of experience providing clean, safe drinking water ranges from small rural communities to cities like the city of Bogota, Colombia, with more than 10 million people.

As one of the world's most precious natural resources, the reuse of water has never been more important. On-site generation is both a cost-effective solution and a preferred technology for treatment of wastewater for reuse or reintroduction into the environment.





# Putting customers first.

Experience the De Nora difference with local service and aftersales care that understands our customers, supporting you well beyond an equipment sale.

## Technical support, field service, remote service, and operator training

Factory-trained technicians support your equipment with installation supervision, commissioning, warranty, and field service, and remote monitoring support is available for your convenience and peace of mind.

We'll train your operators to manage equipment optimally, and train your maintenance teams to ensure proactive, site-based maintenance for long equipment life and exceptional performance. With our 24/7 contact center, you can feel confident that we'll be here for you if you need us.

## Spare parts and consumables

Never worry about inferior replacement parts. Our spare parts are supplied directly from De Nora and guaranteed to be produced to the original specifications and tolerances for exact form, fit and function.

## Upgrades & retrofits

We'll guide you through the process of bringing your equipment to current specifications and the latest product enhancements. Our automation option delivers closed-loop monitoring and operation of your equipment and peripherals. We can also provide retrofit and refurbishment of your aging non-De Nora assets to maximize their useful life.

## Asset management and solutions

De Nora can assess the performance of your water treatment system to align with your current and future capacity, quality, and technology goals.

## Financing flexibility

Upgrade to better and safer technologies with flexible options including financing, leasing, renting, or pay-per-use. Service contracts allow you to customize options that fit your needs as you manage operational risks proactively with planned service support.

Ask about financing flexibility to drive timely decisions and deliver the lowest total cost of ownership.

