

Innovating Water Treatment

*On-site High-strength
Sodium Hypochlorite Generation*

CECHLO™-MS 200 System

brings reliability, safety and easier operations
while reducing total disinfection cost



Safety, Reliability, Economics and Sustainability.

Are you struggling with how to balance?



Modern water and wastewater disinfection are facing multiple challenges. Although chlorine is the most common and strongest disinfectant for water treatment, there are several major challenges in chlorine-based water disinfection and oxidation, that water systems must think strategically about and overcome:

- How to build an independent, reliable, and sustainable supply chain by removing the safety risk with pressurized cylinders or tanks, and reducing the carbon footprint associated with their transportation?
- How to address the impact of rising chemical commodity prices as well as to seasonal scarcity of crisis situation?
- How to minimize disinfection by-products to meet increasingly strict global water safety compliance?
- How to control disinfectant decay in warehouse storage to maintain reliable disinfection performance?

On-site Chlorine-based Generation is the answer



Three simple and common consumables to generate powerful chlorine-based disinfectant on-site: Salt, Water, and Electricity. CECHLO™-MS 200 system provides a safe, effective, economical, and sustainable solution for any water treatment needs.



De Nora CECHLO-MS-200 on-site generator uses the general world-proven ion exchange membrane electrolysis process to generate high concentration sodium hypochlorite of 12% and/or chlorine gas. At the heart of the CECHLO-MS 200 system is the highly efficient proprietary electrolyser, continuously improved through innovative upgrades.

CECHLO-MS-200 systems are equipped with latest generation De Nora's proprietary DSA® electrodes that ensure maximum efficiency and unsurpassed energy saving.

Many centralized water treatment plants today have been considering to adopt this safe, reliable, innovate and cost-effective solution to solve all their disinfection needs, while meeting increasingly strict country safety regulations.

CECHLO™-MS 200 system addresses your modern-day challenges delivering values



• Improved Safety

- Significant reduction in disinfectant by-products (DBP) while maintaining water compliance and safety
- Elimination of leakages / explosion risks during transportation and storage of bulk liquid chlorine or hypochlorite
- Minimized safety risk for on-site personnel during operations



• Reliable and Simple Operation

- Consistent system performances over extended period
- Increased performance stability due to high quality membrane and special DSA® coatings
- Standardized, skid-mounted system with plug-and-play capability
- Simple installation and operation with reduced maintenance
- Easy integration with existing dosing systems due to same concentration of hypochlorite and/or chlorine gas



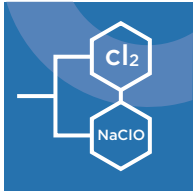
• Minimized Total Operation Cost

- Process optimization with minimal use of salt and energy
- Significant savings in chlorine transportation and storage cost
- Minimal decay of chlorine concentration in the hypochlorite



• Improved Sustainability

- Self-sufficient chlorine supply, unaffected by shortages or price increase due to crisis or speculation
- Reduction in carbon emissions and fuel consumption by eliminating transportation of bulk liquid chlorine or hypochlorite
- No special drums' requirement or container disposal for countries with regulations on dangerous waste



• Maximized Flexibility

- Unique hybrid system enabling production of both chlorine gas and hypochlorite

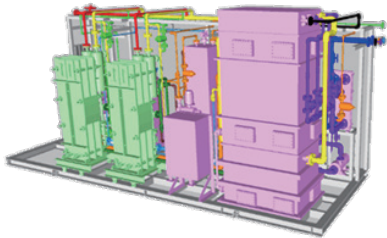
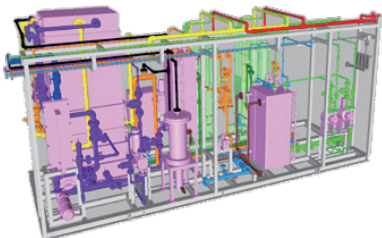
One solution in different markets



In general, CECHLO-MS 200 on-site generator technology can be used whenever there is a need for chlorine either as a gas or a bleach. Among the large number of applications, the following are those where the best results and economics can be achieved:

- Municipal
 - Water Treatment Plant
 - Sewage Treatment Plant
- Desalination plant
- Industrial water treatment
 - Food and beverage
 - Process water disinfection / water reuse
 - Manufacturing plants
 - Bleach / Bulk chemicals production
 - Power plants
 - Oil refineries

Technical Data

Model	MS201	MS202	MS203	MS204	MS206	MS208	MS212
Chlorine capacity	250kg/d	500kg/d	750kg/d	1000kg/d	1500kg/d	2000kg/d	3000kg/d
Electrolyzer skid dimension	2000 x 5500 mm			2000 x 8500 mm		2000 x 14500 mm	
Available chlorine	12% (NaClO = 12.6%)						
3D Model for MS202 system							

Why choose De Nora?

- Nearly 100 years of experience in electrochemistry with product innovation and continuous improvement
- 80% of worldwide chlorine production made with De Nora electrodes and technologies
- Global customer service including installation, start-up, commissioning, training
- * Optional 24/7 remote monitoring and data analysis will be available in the future
- Regional operations' center that optimizes plant conditions through remote monitoring and site visits



Over 400 installations worldwide

Hongkong, China: Upgraded Disinfection for Ten Water Treatment Plants (2021)

- **Design Capacity:** 260-2,250kg/day Cl₂ for 10 water treatment plants
- **Product:** Chlorine gas and sodium hypochlorite
- **System number:** 2x10 units
- **Design Capacity of WTP:** 4,031,000 m³/day
- **Value delivered:** Managing chlorine safety through unique hybrid system producing both chlorine gas and hypochlorite, becoming self-sufficient in water disinfection.

Kaduna, Nigeria: Wattcon Sodium Hypochlorite Chemical Plant (2013)

- **Design Capacity:** 5,000kg/day/unit Cl₂
- **Product:** Sodium hypochlorite
- **System number:** 1
- **Value delivered:** Independent, optimized and cost-effective management of the chlorine supply chain, minimizing safety risk and high, fluctuating logistics cost

Tokyo, Japan: Asaka Water Purification Plant (2005)

- **Design Capacity:** 1200kg/day/unit Cl₂
- **Products:** Sodium hypochlorite
- **System number:** 4 units
- **Design Capacity of WTP:** 1,700,000 m³/day
- **Value delivered:** Becoming self-sufficient in water disinfection and resilient to natural disasters.