

# SEVEN THINGS TO CONSIDER WITH BRINE ELECTROCHLORINATION SYSTEMS

Seven key considerations for owners and operators specifying on-site hypochlorite generation solutions.

On-site hypochlorite generation is a proven, cost-effective, reliable and safe disinfection treatment method. The use of on-site generated sodium hypochlorite offers many advantages:

- Reduced operational cost
- Consistent solution strength
- Production of required volumes as needed
- Non-hazardous chemical handling (feed or product)
- Elimination of US OSHA risk management planning requirements surrounding chlorine gas

Our electrochlorination experts share their seven key considerations for owners and operators specifying on-site hypochlorite generation solutions, and confirm why De Nora Water Technologies (DNWT) ClorTec® is the preferred technology by the water treatment sector.



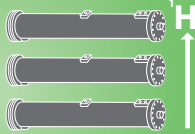
For more information on ClorTec® visit [www.denora.com](http://www.denora.com)





# We Understand

## 1: Safety



SAFETY FEATURES = SAFE OPERATION

Equipment safety is the number one concern for plant owners. ClorTec on-site sodium hypochlorite generators deliver the best possible safety available for our customers.

### DNWT ClorTec Offering:

- Inherently safe hydrogen management system
- Unique hydrogen venting design includes blowers and detectors to ensure safe operation
- Continuous hydrogen purge ensures none is trapped within the system
- Rupture disks offer an additional safety backup
- Independent expert validation of the inherent safety of the horizontal ClorTec cell design compared to vertical cell designs\*
- 0.8% hypochlorite solution is below the hazardous concentration limit of 1.0%


\* Report available on request



ClorTec CT System at Chandler WTP



## 2: Efficiency



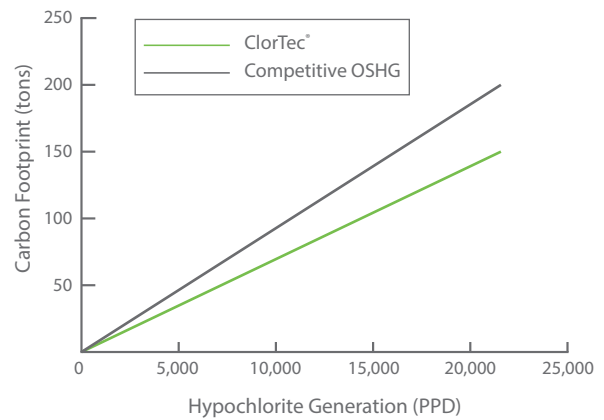
2.8 lb + 2 kWh  
Per lb Cl<sub>2</sub> Generated

ClorTec offers lifelong proven efficiency through its unique features such as split flow technology. Our customers can be sure of the lowest operating cost.


### DNWT ClorTec Offering:

- Highest efficiency system in the industry – 2.8 lb salt/lb Cl<sub>2</sub> and 2 kWh/lb Cl<sub>2</sub> design
- Proprietary anode electrode coating from De Nora Water Technologies electrochlorination experts
- SCR Rectifier
- Heater/chiller ensures operation at optimum temperature to minimize cost and maximize efficiency
- Baffle design prevents brine short circuit
- Split flow design
- Lower carbon footprint due to lower salt deliveries required

### Annual Carbon Footprint ClorTec® vs Competitive OSHG Systems

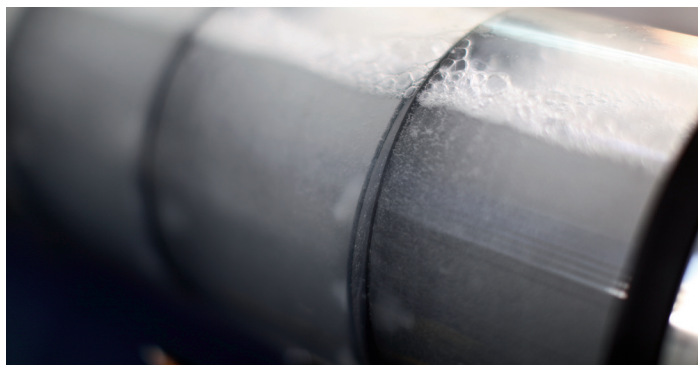


## 3: Maintenance



EXTENDED CELL LIFE  
DUE TO PROPRIETARY COATING

ClorTec was designed with ease of maintenance in mind. The easy-to-operate systems require minimal maintenance to maximize their life without losing efficiency.



ClorTec Clear Acrylic Cells

### DNWT ClorTec Offering:

- Fully integrated rectifier & system control rated for 100 percent continuous duty at 56 degrees C
- Electrode life extended due to proprietary anode precious metal coatings
- Horizontal cell and vertical bipolar electrodes design minimizes scaling due to the rapid hydrogen gas lift
- Clear acrylic cells allow internal visual inspections as an initial step without taking cells offline
- Simple in-place acid cleaning procedure for cell assembly – no need to remove or disassemble any components

## 4: Reliability



LIFELONG RELIABILITY

ClorTec systems offer unparalleled reliability throughout their entire life, which means total peace of mind knowing that your investment won't let you down.

### **DNWT ClorTec Offering:**

- PLC controlled automatic hypochlorite batch production process
- Limited operator intervention
- Robust and durable instrument and components prevent regular system downtime



ClorTec CT Skid Mounted System

## 5: Quality



QUALITY THROUGH CERTIFICATIONS

DNWT develops robust and reliable solutions that are certified in line with standard industry guidelines. You can be sure that your assets are engineered to meet the tightest possible standards.

### DNWT ClorTec Offering:

- Proprietary bipolar titanium electrodes with unmatched robust design and durability
- Bipolar electrode design with proprietary precious metal coating provides consistent product at optimum efficiency
- Our Sugar Land Electrochlorination Center of Excellence is quality certified by ISO, BV, NSF, UL/CUL for product quality and assembly standards
- Rectifiers are certified by national recognized testing laboratories (NRTL)
- Fully tested state-of-the-art system

## 6: Experience



GLOBAL ELECTROCHLORINATION LEADER

With more than 35 years of electrochlorination experience, we understand our customers' requirements, from specification and purchasing to the lifelong operation of electrochlorination systems in order to maximize the life and efficiency of their investment..

### DNWT ClorTec Offering:

- 3000 installed systems world-wide – largest brine electrochlorination installation base
- Largest capacity seawater electrochlorination and brine municipal system in the world
- Global presence and experience over more than 35 years
- Electrochlorination Center of Excellence at DNWT Sugar Land, Texas facility
- A UK FTSE 100 company
- De Nora Water Technologies received the Frost and Sullivan Global Leadership Award for electrochlorination in 2013

### Miami Dade ClorTec

- The largest municipal electrochlorination installation in the world
- Selected on the basis of whole-life cost and DNWT experience
- 7 x 3,000 lb/d ClorTec system
- Installed in 2012 and commissioned in 2013



## 7: Service Support



THREE TIERED PIECE OF MIND OFFERING

ClorTec systems offer unparalleled reliability throughout their entire life, which means total peace of mind knowing that your investment won't let you down.

### DNWT ClorTec Offering:

- Trained and knowledgeable staff understand how to maximize product life and efficiency
- Spare parts availability across all De Nora Water Technologies lines
- Warranty and service plans available
- 24/7 technical support



ClorTec CT High Capacity System

# A Global Leader in Electrochlorination Technology



De Nora Water Technologies has established itself as the undisputed technology leader in the field of electrochlorination disinfection. With more than 35 years of electrochlorination experience, De Nora Water Technologies offers seawater and brine treatment solutions for water and wastewater applications to municipal and industrial operations.

ClorTec® brine on-site sodium hypochlorite generating systems have a strong reputation as the leading global technology provider with a proven track record of more than 3,000 global installations over the past 20 years.

For more information on ClorTec® visit [www.denora.com](http://www.denora.com)

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