



# Capital Controls® UV/AOP

## Featuring Rayox® and Sentinel® Reactors

### UV Advanced Oxidation Processes

**Effective, proven and validated UV/AOP  
systems for advanced treatment applications.**

# The advantage of Capital Controls® UV/ AOP systems.



## UV/AOP treatment backed by decades of experience.

De Nora recognizes the vital role of efficient, effective water treatment and management. Since introducing one of the first UV advanced oxidation processes to remediate contaminated groundwater three decades ago, we continue to uphold our commitment to safe, clean and sustainable water supply. More than 400 Capital Controls system installations using Rayox® and Sentinel® reactors span five continents and treat over 6 billion gallons per day.

De Nora's UV Advanced Oxidation Processes (AOP) provide a proven treatment option to various contaminants in groundwater as well as industrial process and waste streams. The UV/AOP process uses an oxidizing agent (hydrogen peroxide or hypochlorite) in combination with UV to produce hydroxyl radicals ( $\bullet\text{OH}$ ) to remove a variety of difficult to treat contaminants that are not easily removed by conventional technologies. It can also be combined with other technologies to increase overall treatment efficiency and reduce operating costs.



Applications:  
Various water borne pathogens can be found in groundwater and industrial wastewater.

- 1,4-Dioxane
- Chlorinated alkenes (DCE, TCE, PCE)
- Vinyl Chloride
- NDMA

# CAPITAL CONTROLS UV/AOP SYSTEMS



## EFFICIENCY AND PERFORMANCE

Medium pressure lamps offer superior disinfection efficiency with fewer lamps.



## SIMPLE OPERATION, MAINTENANCE AND INSTALLATION

Minimal operator intervention - automatic UV Dose control based on online flow, UV intensity and UV Transmittance measurement



## TESTING SERVICES

Develop a customized dose sensitivity for each application to help optimize oxidant and UV dosing, keeping operating costs low.

Bench scale testing of representative effluent from the site can be performed at our R&D laboratory to determine the size of a full-scale system and provide a process guarantee.



## EXPERTISE IN UV DISINFECTION AND AOP

- UV disinfection of wastewater, reuse and drinking water with hundreds of installations.
- UV/peroxide and UV/Chlorine advanced oxidation for the destruction of chemical contaminants including contaminants of emerging concern.
- Validation and CFD modeling of UV systems.
- Regulatory approval of UV systems.

Capital Controls UV/AOP systems with Rayox reactors have been treating highly contaminated waters for decades. When pioneering the use of UV light for disinfection, the same tried-and-true technology was applied to our Sentinel drinking water reactors, providing them with enough power to achieve the high UV doses required for UV/AOP treatment.



## APPLICATION-SPECIFIC PRODUCTS

	Rayox	Sentinel
Applications	Industrial and Remediation Highly contaminated waters	Municipal Low-Level Contamination and Taste & Odor events Validated per UVDGM requirements and can be dual-purposed to obtain disinfection credit
System Configuration	Control/Power Panel integrally mounted with UV reactors on a single skid.	Control/Power Panel can be installed up to 500 feet from reactors.
Flow Rate	5 to 300 gpm	1 to 52 MGD
Flange Sizes	1-1/2- to 4-inch	12- to 48-inch
Lamp Power	Up to 27.5 kW per lamp	4-20 kW per lamp
Lamps Per Reactor/Skid	Up to 4 lamps per skid	Up to 18 lamps per reactor
Design Pressure	25 psi 50 psi (optional)	50-150 psi

## SYSTEM FEATURES

Lamps	High-intensity medium-pressure lamps
Ballasts	Robust long-life electromagnetic ballasts with superb voltage tolerance
Materials	316 SS Reactor Vessel
Power Input	480V / 3PH / 60 Hz
Cleaning System	Automatic Quickswipe Stainless Steel cleaning system
System Controls	Automated operation and PLC-based controls
Safety system	Safe automatic emergency shutdown

## About De Nora

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

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