



C³ Series™ UV Wastewater Disinfection Systems



UV Technologies Division

Making Water and Air Safer and Cleaner

C³ Series™ A new standard

C³ Series™ - A New Standard in UV Wastewater Disinfection

Already a proven leader in UV disinfection for drinking water and advanced oxidation for groundwater, Calgon Carbon's UV Technologies Division is now introducing a new standard in UV wastewater disinfection.

A safer, more cost-effective alternative to chlorination/dechlorination, ozonation, and membrane filtration, Calgon Carbon's new C³ Series™ wastewater disinfection systems are designed to disinfect wastewater and prevent the spread of waterborne pathogens to lakes, streams, rivers, and coastal waters. The C³ Series™ wastewater disinfection systems use ultraviolet (UV) light energy to damage the DNA of bacteria, viruses, and protozoan cysts. The damaged DNA is unable to replicate as a result of the exposure to UV light, rendering these pathogens harmless.

Recently, there has been growing public concern associated with chlorination because of the potential production of harmful disinfection by-products and increased aquatic toxicity in wastewater plant effluent. There are also increased risks and costs associated with chlorine handling at the plant level. Because of these issues associated with chlorine, many regulatory agencies encourage the use of alternative disinfection methods such as UV disinfection.

Calgon Carbon's UV Technologies Division recognizes the growing need for an advanced, cost-effective solution for wastewater disinfection. The C³ Series™ wastewater disinfection systems employ energy-efficient UV lamp technology to effectively disinfect wastewater plant effluent without the harmful by-products or residuals of chlorination. The rugged, modular design can be quickly installed in an open channel parallel to the flow of wastewater. The C³ Series™ is designed for easy installation, simple operation, and trouble-free maintenance.



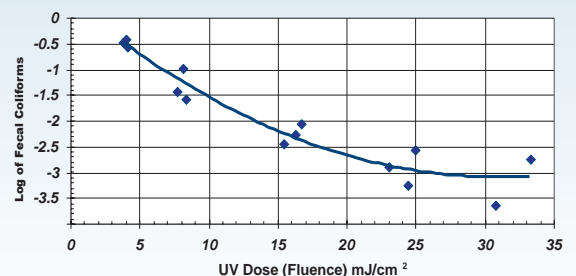
Advantages of the C³ Series™ UV Wastewater Disinfection System

- Reliable and compact modular design
- High performance, energy-efficient low-pressure, high-output lamp design
- Energy-efficient variable output electronic ballast design
- Non-chemical, mechanical cleaning system that is electrically driven
- Innovative control system with Real-Time Dose Pacing and built-in self-diagnostics
- Easy to maintain and operate
- Cost-effective solution for a wide range of effluent qualities
- A reliable wastewater disinfection system from Calgon Carbon - a proven name in water treatment for over 60 years

UV Disinfection vs. Chlorination

- More cost effective than chlorination/dechlorination
- Cleaner and safer than chlorination
- Highly efficient (99.9% reduction in fecal coliform is easily attained)
- No formation of disinfection by-products; e.g., THMs
- No residual chlorine discharges

Fecal Coliform Reduction



C³ Series™ Design Features

Modular Design

- Modular components are preassembled with quick-connect cables for simple installation and system start-up
- Components are designed to comply with NEMA 4X (IP65) ratings

Lamp Technology

- Energy-efficient, low-pressure, high-output lamp technology
- Rapid-start continuous heat configuration for improved lamp life
- Cost-effective design

Ballast Technology

- Energy-efficient, high frequency electronic ballast
- Variable output
- Ballast and lamp are matched for improved performance and lifetime
- Robust, modular design that can be easily serviced

Automatic Cleaning System

- Mechanical, non-chemical cleaning
- Automatic or manual initiation

Innovative Control System

- Real-Time Dose Pacing or Flow Pacing
- Built-in self-diagnostics
- Local and remote indications
- Optional Advanced Control System that optimizes disinfection performance and lowers operating costs

UV Intensity Sensor

- Monitors the average intensity within the lamp bank array
- User adjustable setpoints for low and low-low UV intensity alarms

Level Control Devices

- Stainless steel weir
- Counterbalanced stainless steel level control gate

Power

- Input Options:
 - 208/120 VAC, 3 Phase, 60 Hz
 - 380/220 VAC, 3 Phase, 50/60 Hz
 - 415/240 VAC, 3 Phase, 50 Hz
 - 480/277 VAC, 3 Phase, 60 Hz
- System Power Factor is 0.98 minimum
- Current Total Harmonic Distortion (THD_i) complies with IEEE519-1992 guidelines

Operating Conditions

- 14°-104°F (-10°- 40°C)
- 5-95% relative humidity (non-condensing)



“Calgon Carbon continues to lead the marketplace with innovative UV technologies”

Calgon Carbon's UV Technologies Division Leadership and Experience

Calgon Carbon Corporation's UV Technologies Division has installed hundreds of systems for treating a broad spectrum of contaminated groundwater, wastewater, process water, and drinking water. The Sentinel® drinking water system has a large base of installations treating flows from one to one hundred million gallons per day. The Rayox® advanced oxidation systems have been treating contaminated groundwater, industrial wastewater, and process water for over ten years and remain as one of the leading technologies to treat emerging contaminants such as MTBE, NDMA and 1,4-Dioxane.

In addition to being a leading UV equipment manufacturer and supplier, Calgon Carbon is also

the innovator of UV disinfection for drinking water. In 1998, Calgon Carbon's researchers invented a process that could be used to inactivate *Cryptosporidium* and other similar pathogens in surface water, rendering them harmless to humans. This inventive process, which led to the first U.S. patent for using a low dose of UV light to control *Cryptosporidium* in drinking water, placed Calgon Carbon on the leading edge of UV disinfection technology.

With the introduction of the C³ Series™ UV wastewater disinfection systems, Calgon Carbon continues to lead the marketplace with innovative UV technologies.

C³ Series™
Leadership and experience

Technical and Customer Services / Spare Parts

Customers at thousands of installations across the globe trust Calgon Carbon's extensive network of skilled service technicians to provide the support they need every day. If there is a service need related to any Calgon Carbon system, technology, or piece of equipment, it will be addressed promptly and handed to your satisfaction every time.

In addition, Calgon Carbon's dedicated Spare Parts Department can assist each customer in ordering replacement parts for all UV equipment, providing the assurance that the correct parts will be shipped in a timely manner. As the designers and manufacturers of the equipment, Calgon Carbon can easily determine the parts required to keep each system operating properly.

All Calgon Carbon products, systems, and technologies are available on a laboratory, pilot plant, or full-scale production basis. Each customer is provided with a customized process engineering design to ensure that the manufacturing process meets their specific requirements. Full analytical laboratory support is also available including computer modeling to demonstrate product performance and quality.



Calgon Carbon Corporation Company Overview

Calgon Carbon Corporation (NYSE: CCC) is a global leader in services and solutions for making water and air safer and cleaner and for purifying food, beverage, and industrial process streams. Headquartered in Pittsburgh, Pennsylvania, Calgon Carbon employs approximately 1,200 people at 18 carbon manufacturing, reactivation, and equipment fabrication facilities, and 27 sales and service centers. Calgon Carbon is known as Chemviron Carbon in Europe, the Middle East, and Africa.

Calgon Carbon's expertise spans many fields, including UV technology, continuous ion exchange and chromatography, and activated carbon. For any application, from drinking water purification to pharmaceutical manufacturing, Calgon Carbon technologies are designed to enhance production efficiencies, minimize waste and remove pollutants – in short, making the world a cleaner, safer place.

Calgon Carbon serves more than 4,000 customers around the world. In 2003, the company's sales totaled \$278 million.

Your local representative



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