

Reliable, precise disinfection on demand

Chlorine dioxide systems for many diverse applications



Disinfection solutions from a single source



Chlorine dioxide – all purpose with excellent output

Chlorine dioxide cannot be stored due to its high level of reactivity but has to be produced on demand in special plants where it is to be used.

Chlorine dioxide offers a number of advantages for water disinfection compared with chlorine, the chemical that is more widely used. Its disinfection strength does not decrease as the pH value increases, as is the case with chlorine. Chlorine dioxide remains stable in the pipe system over a long period of time and provides microbiological protection for the water over many hours or days. Ammonia and ammonium, which cause significant chlorine depletion, are not attacked by chlorine dioxide, so that the dosed chlorine dioxide is fully available for bactericidal action.

Chlorophenols, compounds with intense odours, that can be produced during water chlorination are not formed when chlorine dioxide is used. Furthermore trihalogenmethanes (THM) and other carcinogenic, chlorinated hydrocarbons are not produced with chlorine dioxide, unlike with chlorine. Biofilms form in all water-carrying pipes and

provide ideal living conditions for hazardous germs, such as legionella. Unlike chlorine, chlorine dioxide not only kills biofilms but also actively removes them, depriving the legionella of its living conditions and preventing regeneration in the long term.

Benefits of chlorine dioxide disinfection independently of the pH value

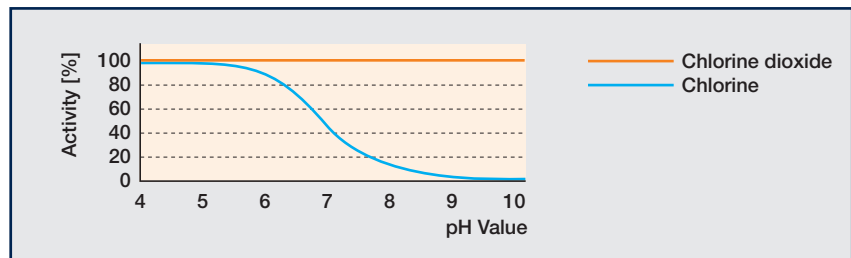
- Excellent sustained-release effect thanks to long-term stability in the pipeline system
- Reduction of the biofilms in pipe-work and tanks, thereby providing reliable protection of the entire water systems against legionella contamination
- No reaction with ammonia or ammonium
- No formation of chlorophenols and other intensely smelling connections
- No formation of trihalogenmethanes (THM) and other chlorinated hydrocarbons (AOX)



The effectiveness and dependency of chlorine dioxide

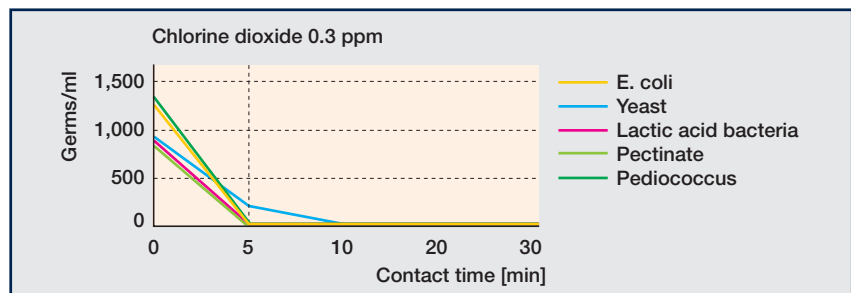
pH dependency

Unlike chlorine, the effectiveness of ClO_2 is not dependent on the pH value in the pH range of 4-10.



Disinfection effects of chlorine dioxide

ClO_2 is an excellent disinfectant even in low concentrations. At a concentration of 0.3 ppm, for instance, it therefore reliably reduces the bacterial count from around 1,000 CFU/ml down to zero within a few minutes.



Complete systems for every requirement

Chlorine dioxide generation and dosing systems

Legio Zon® CDL

The expert in the combating of legionella and other germs supplies up to 10 g/h of chlorine dioxide.

The complete system with an integral metering pump is simple and safe to use thanks to its chlorine dioxide concentration of 2 g/l. The clear and self explanatory menu navigation ensures ease of operation.



Bello Zon® CDVc

The ideal system for medium to large volumes of water – for chlorine dioxide production of from 1 to 2,000 g/h.

Continuous treatment is safe and straightforward thanks to the use of diluted chemicals.



Online measuring stations for chlorine dioxide and chloride

Maximum process safety thanks to the precise online monitoring of chlorine dioxide and its chlorite by-product. With the CDVc and CDKc systems, the measurement of chlorine dioxide, chlorite, pH value and ORP potential is incorporated in the system control, as is a data logger and screen writer.



Chlorine dioxide is finding ever greater acceptance as an all-purpose disinfection agent:

whether for the disinfection of drinking water and process water, for the washing of food or in the treatment of cooling and waste water. Being independent of the pH of the water, its action keeps systems free of biofilms. Powerful disinfection performance with maximum ecological sustainability.

Safe and reliable plant technology in compliance with DVGW Work Sheets W224 and 226. Worldwide availability of knowledge, expertise and service.

Bello Zon® CDKc

This system generates chloride dioxide for large volumes of water – 9 to 7,500 g/h.

Continuous water treatment is especially cost effective thanks to the use of concentrated chemicals.



Capacity overview chlorine dioxide systems

Type	Output [g/h]						Production process	Application			
	1	5	10	100	2,000	10,000		100,000			
Legio Zon® CDL	0-10						Chlorite acid (diluted) 7.5 % NaClO ₂ + 9 % HCl	■	■		
Bello Zon® CDVc		1-2,000					Chlorite acid (diluted) 7.5 % NaClO ₂ + 9 % HCl	■	■		
Bello Zon® CDKc			9-12,500				Chlorite acid (concentrated) 24.5 % NaClO ₂ + 30-33 % HCl	■	■	■	■

Combating legionella	■
Food and beverage industry	■
Municipal drinking water and waste water treatment	■
Industry (cooling towers, waste/process water etc.)	■

Legio Zon[®] CDL

Chlorine dioxide system

Outstanding cost-effective protection.

The chlorine dioxide systems Legio Zon[®] CDL are supplied pre-mounted and ready for connection. A stylish cover design prevents incorrect operation. Legio Zon[®] has an integral metering pump, the capacity of which is coordinated to the system. Generation of 0–10 g/h of chlorine dioxide in batch mode, equally suitable for both continuous and discontinuous operation

- High level of safety in accordance with the DVGW Work Sheets W 225 and W 624 and no hazardous operating modes thanks to lower chlorine dioxide concentration (2 g/l) and diluted initial chemicals
- Excellent stability of the generated chlorine dioxide solution over several days
- Outstanding operational safety due to automatic restart after power failure, automatic monitoring functions and maintenance notification
- Controller with menu-guided operation, flushing and service functions



Legio Zon[®] CDL

Type	Dosing capacity g/h	Max. operating pressure bar	Capacity of metering pump ClO ₂ l/h	Operating temperature °C	Dimensions (approx.) H x W x D mm	Weight (approx.) kg
CDL 5	0–5	10	3.0 (10 bar) 3.4 (5 bar)	10–40	650 x 550 x 310	24
CDL 10	0–10	7	7.1 (7 bar) 8.4 (3.5 bar)	10–40	650 x 550 x 350	28

Inputs

Water meter (contact or frequency)
 External digital input (can be configured for pause, shock dosage, high dosage or manual)
 External fault

Outputs

Operating alarm relay
 Warning relay
 Fault alarm relay

Bello Zon[®] CDVc

Chlorine dioxide system

Simple and reliable continuous treatment.

Ready-wired, complete chlorine dioxide systems Bello Zon[®] CDVc for the production, dosing and monitoring of up to 2,000 g/h of chlorine dioxide from diluted initial chemicals. A completely newly developed reactor concept ensures the innovative production and dosing of chlorine dioxide resulting in improved operating safety and enhanced purity of the chlorine dioxide generated.

- Efficient operation thanks to production, dosing and monitoring of ClO₂ with only one system
- The ultimate in operational safety and purity of the ClO₂ generated due to PVDF reactors
- Excellent operational safety through stroke length-monitoring dosing pumps
- Perfect quality management through integrated storage of all operating parameters and measured values (measuring, documentation and visualisation of ClO₂, chlorite, pH value and ORP potential)
- Automatic monitoring of operating parameters and maintenance dates
- Easy and safe operation thanks to clear menu navigation in plain text
- Control with large colour display, integral data logger and screen writer



Bello Zon[®] CDVc

Type	Chlorine dioxide dosing capacity		Max. operating pressure bar	Operating temperature °C	Dimensions (approx.) H x W x D mm	Weight kg
	min.-max./hour g/h	min./day g/d				
CDVc 20	1–20	6.4	8	10–40	1,344 x 1,002 x 200	26
CDVc 45	2–45	16.0	8	10–40	1,344 x 1,002 x 200	27
CDVc 120	6–120	40.0	8	10–40	1,344 x 1,002 x 200	28
CDVc 240	12–240	80.0	8	10–40	1,342 x 1,000 x 248	45
CDVc 600	30–600	140.0	8	15–40	1,711 x 1,200 x 273	75
CDVc 2000	100–2,000	468.0	5	15–40	1,900 x 1,400 x 370	120

Inputs

Water meter (contact or frequency)
 External digital input pause
 External digital input high output metering
 External digital input sample water monitoring
 External digital input (e.g. for gas detector)
 External digital input leakage monitoring (e.g. for chemical storage tanks)
 2 freely configurable analogue inputs 0/4 – 20 mA configurable for water meters, disturbance, control variables or measures values

Outputs

Switched supply connection for bypass pump
 Operating alarm relay
 Warning relay
 Fault alarm relay
 Standardized signal output (free configurable)

Bello Zon[®] CDKc

Chlorine dioxide system

Doses large volumes cost-effectively.

Ready wired, complete chlorine dioxide systems Bello Zon[®] CDKc for the production, dosing and monitoring of up to 7 500 g/h of chlorine dioxide from concentrated initial chemicals. A completely newly developed reactor concept ensures the innovative generation and dosing of chlorine dioxide leading to enhanced operational safety and improved purity of the chlorine dioxide generated.

- Efficient operation thanks to the production, dosing and monitoring of chlorine dioxide by just one system
- Excellent operational safety and purity of the ClO₂ generated due to PVDF reactors
- The ultimate in operational safety thanks to stroke length-monitored dosing pumps
- Perfect quality management through integrated storage of all operating parameters and measured values (measuring, documentation and visualisation of ClO₂, chlorite, pH value and ORP potential)
- Automatic monitoring of operating parameters and maintenance dates
- Easy and safe operation thanks to clear menu navigation in plain text
- Control with large colour display, integrated data logger and screen writer



Bello Zon[®] CDKc

Type	Chlorine dioxide dosing capacity		Max. operating pressure bar	Operating temperature °C	Dimensions (approx.) H x W x D mm	Weight kg
	min.–max./hour g/h	min./day g/d				
CDKc 170	9–170	56	8	10–40	1,384 x 1,080 x 325	55
CDKc 420	21–420	140	8	10–40	1,700 x 1,100 x 450	80
CDKc 900	45–900	300	8	10–40	2,000 x 1,130 x 510	95
CDKc 2100	105–2,100	700	5	10–40	2,000 x 1,320 x 550	160
CDKc 3000	150–3,000	700	5	15–40	2,000 x 1,320 x 550	160
CDKc 7500	375–7,500	1,750	3	15–40	2,300 x 1,500 x 560	175

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Outputs

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 Operating alarm relay
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Service



Global service locally

We already offer our service to you even if you are not yet our customer.

Our pre-sales services ensure that you get the optimum solution for your individual needs:

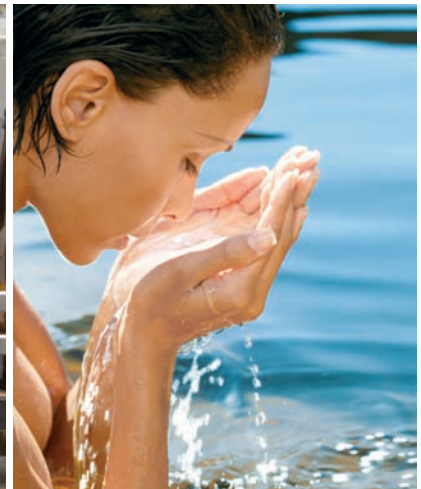
- Advice in choosing the products
- Application and process optimisation
- Project planning

However, our commitment does not end with delivery. We offer you a comprehensive after-sales service, which lasts for the entire service life of your equipment. That maximises your productivity and minimises your operating costs:

- Assembly/installation
- Commissioning
- Maintenance
- Spare parts service
- Repair
- Troubleshooting

Thanks to our worldwide presence in over 100 countries, our service is available wherever you need it.

Applications & Industries



Applications of chlorine dioxide

For every new project, our engineers can draw on the experience that we have accumulated since 1976 from the following applications:

Food and beverage industry

- Disinfection of product and industrial water, bottle cleaning, rinsers and pasteurisers
- Cold sterile bottling
- Disinfectants in CIP systems
- Condensate water treatment in the milk industry
- Washing water disinfection with fruit, vegetables, seafood, fish, and poultry

Industry

- Cooling water treatment
- Combating legionella in cooling water circuits
- Disinfection of process water
- Removal of odorous substances in air scrubbers
- Combating slime in the paper industry

Municipal drinking water and waste water plants

- Disinfection of drinking water
- Disinfection of waste water

Hotels, hospitals, care homes, sports facilities etc.

- Combating legionella in cold and hot water systems
- Water disinfection in air conditioning system cooling towers

Horticulture

- Disinfection of irrigation water in plant cultivation

Chlorine dioxide protects our lives and work spaces



The best drinking water quality right through to the tap

The Koerich Water Works near Luxemburg city is one of the most important water works in the Grand Duchy. An elevated tank with 15,000 m³ and an additional 2,000 m³ has been built as storage.

ProMaqua's task was to plan and build a system would provide simple and reliable sterilisation of drinking water 365 days a year, 24 hours a day.

ProMaqua supplied a dosing and supply scheme with chemical storage tanks, a chlorine dioxide production plant, a storage module for the temporary storage of the stock solutions and volume-proportional dosing with Sigma pumps for the efficient sterilisation of drinking water without impairing the odour or taste of the water. Tom Levy, Technical Director of the Koerich Water Works commented on his experiences in an interview.

Mr. Levy, how would you assess this solution from ProMaqua?

Tom Levy: "This technically proven sterilisation system was professionally designed and implemented."

Which advantages does the system offer for you?

Tom Levy: "It guarantees reliable water sterilisation and an ongoing quality of water that is neutral in odour and taste thanks to the sustained-release effect of chlorine dioxide. Dosing stations with diaphragm valves and the complete monitoring of the entire system with PLC guarantee maximum safety and reliability. The continuous automatic operation of the system also reduces costs."

What quality of water is available to your consumers?

Tom Levy: "The inhabitants of the region want their drinking water to be neutral in taste and be able to enjoy it without the fear of pathogens. The ultimate quality of drinking water is ensured to our consumers' taps."

Worldwide contact



Experts in Chem-Feed and Water Treatment

ProMaqua is at home in more than 100 countries of the world. This guarantees worldwide availability of the products and short distances to the customer. We offer you the same high quality

standard in products and services worldwide. For you at your location: experience and knowhow in water treatment and chemical fluid handling are available worldwide.

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