

Systems for on-site disinfectant production

On the one hand, biocides with the active substance hypochlorite are quite popular and widely used due to simple handling and attractive pricing. However, the effectiveness of the disinfectant hypochlorite strongly depends on the pH. Increasing pH significantly reduces its biocidal properties. Consequently, for cooling water circuits with $\text{pH} > 7.5$ the usage of hypochlorite is not recommended as under these conditions the biocidal effectiveness of the disinfectant is not sufficient anymore. Alternatively, oxidizing bromine compounds act reasonably as disinfectant over a broader pH range (up to $\text{pH} 8.5$). Yet, these bromine compounds as well as chlorine compounds generate toxic by-products (AOX-compounds). On the other hand, the biocides chlorine dioxide and ozone show effective disinfection strength independent of pH and have the additional advantage of not forming toxic AOX-compounds. Furthermore, because of their gaseous state these disinfectants fight microbiological films most efficiently. Due to the high reactivity of these gases, chlorine dioxide and ozone must be produced on-site in special systems and cannot be stored or transported as ready to use biocides. ProMinent developed, explicitly for the treatment of cooling water, reliable and secure complete systems for on-site, on demand production of these disinfectants.

DISINFECTION SYSTEMS

Chlorine dioxide system Bello Zon® CDLb

- pH independent disinfection strength
- High stability leads to significant depot effect
- Breakdown of existing biofilms
- No formation of THM- and AOX-compounds

Compared to the well-established and widely used biocides with active chlorine or bromine compounds, chlorine dioxide has several advantages. Firstly, its biocidal effectiveness is pH independent (pH range 4 – 10). Secondly, because of its considerable depot effect chlorine dioxide exists in the cooling water circuit for a longer time and with that fights micro-organisms more efficiently. Thirdly, its gaseous state allows intensive penetration of microbiological films and for that reason, this disinfectant also destroys already existing biofilms. However, the high reactivity of chlorine dioxide requires its production on-site and on demand in special systems.



Ozone system OZONFILT® OZVb

- Environmentally friendly disinfectant (no chemicals, operating gas air or oxygen)
- On-site production as demanded conserves resources
- Prevention of biological growth (biofilm) and thus also minimizing microbiological corrosion
- Highly effective disinfection without any by-products (e.g. AOX-compounds)

Ozone shows an excellent disinfection behavior, fighting bacteria, viruses, fungi, as well as parasites extremely efficiently. Due to its high reactivity, ozone is produced from oxygen in appropriate generators on-site, and the desired amount of disinfectant is fed directly in the cooling water circuit as demanded and without temporary storage. As a highly reactive gas with a half-life of only a few minutes, ozone decomposes again into oxygen in water. Therefore, all components of the whole system must match perfectly in order to achieve an optimal relation between generation and effectiveness of ozone.

