

# Making the most of cooling water

Efficient and environmentally sound solutions



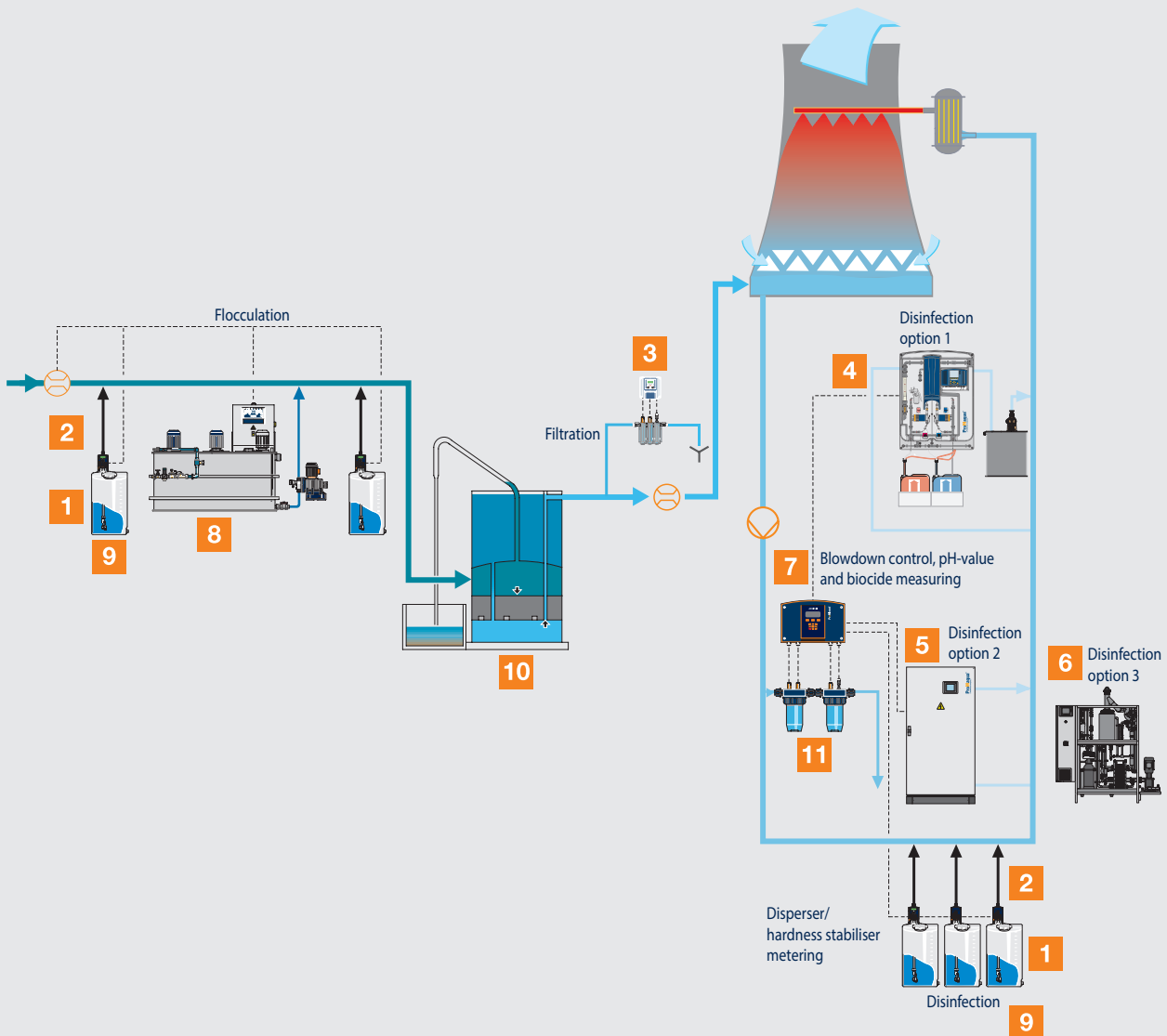
# Everything from one source

## Optimum treatment of cooling water

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| <p><b>1</b> Metering stations and pumps, metering systems<br/><b>DULCODOS® eco, panel</b></p> <p><b>2</b> Flow meter<br/><b>DulcoFlow®</b></p> <p><b>3</b> Panel-mounted measurement and control technology<br/><b>DULCOTROL®</b></p> <p><b>4</b> Chlorine dioxide systems<br/><b>Bello Zon®</b></p> | <p><b>5</b> Ozone systems<br/><b>OZONFILT®</b></p> <p><b>6</b> Electrolysis systems<br/><b>CHLORINSITU®</b></p> <p><b>7</b> Cooling Tower and Boiler Controllers<br/><b>AEGIS II</b></p> <p><b>8</b> Polymer preparation and metering stations<br/><b>Ultromat® ULFa</b></p> | <p><b>9</b> Chemical storage vessels/<br/><b>Chemical tanks</b></p> <p><b>10</b> Gravity filters<br/><b>INTERFILT® SK</b></p> <p><b>11</b> „R“esistant sensors<br/><b>DULCOTEST®</b> sensors<br/>CBR 1, BCR 1, CDR 1, PER 1/2</p> |
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### Make-up water treatment

### Circulation water treatment



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## The right solution for all processes

Many global industries use cooling water in their processes, generally using wet cooling towers. When efficiently operating the cooling tower with circuit cooling, the focus is, on the one hand, on reducing the consumption of cooling water and, on the other hand, on protecting the complete system from corrosion, deposits and microbiological growth.

The challenge is that these two demands oppose each other: The amount of fresh water needed by the cooling tower can be reduced by increasing the level of thickening in the circulation water with the help of blowdown control. This, in turn, increases the volume of substances in the water so that the individual components of the cooling tower, heat exchanger and pipework are increasingly attacked.

The cooling water is therefore treated by means of metering stabilisers and inhibitors and by the use of filters to guarantee the reliable protection of the cooling tower system.

ProMinent offers metering systems for the metering of corrosion inhibitors, hardness stabilisers and chemicals that act as dispersants; specially adapted and precisely coordinated measuring and control technology for blowdown control and pH adjustment; gravity filters for filtering the cooling water in open cooling circuits and extremely efficient disinfection systems.

The disinfection of cooling water plays a major role in cooling towers, as the critical component in the circuit is the heat exchanger. Owing to their thermal insulating properties, biofilms deteriorate the efficiency of the heat exchanger. In addition, corrosive acting metabolic products lead to greater material wear. Thus, the use of biocides is essential for disinfection.

The following systems are generally used: metering stations for liquid biocides, chlorine dioxide, ozone or electrolysis systems.

The process most suited to each individual case depends on a number of factors. Due to their many years of experience in cooling water treatment, ProMinent experts advise each customer individually in order to select the optimum process and corresponding systems and products.

### Broad-based product range

#### Disinfection

- Metering systems for the metering of liquid biocides
- Ozone systems
- Chlorine dioxide systems
- Electrolysis systems
- Measuring and control technology for value-dependant metering of biocides

#### Dispersion

- Metering systems for the metering of dispersant chemicals

#### Corrosion protection and stabilisation

- Metering systems for the metering of corrosion inhibitors and hardness stabilisers

#### Blowdown control

- Specially adapted measuring and control technology for the control of bleeding
- pH adjustment by means of coordinated measuring and control technology

#### Filtration and flocculation

- Gravity filters for filtration in open cooling circuits
- Systems for the batching and metering of flocculation aids

# Years of experience

## Comprehensive product range

### Cooling water treatment with coordinated systems

#### Metering stations and pumps DULCODOS® eco

It almost goes without saying: ProMinent metering stations and pumps are used wherever precise quantities have to be metered – whether with disinfectants, pH adjustment or in many other applications. ProMinent® metering pumps are standard in cooling water treatment.



#### Metering systems DULCODOS® panel

Panel-mounted standard metering systems have been designed to meet the specific requirements of cooling water treatment. The ready mounted systems are based on components that have been perfectly matched to each other to ensure problem-free operation. You will receive a complete system as a plug-and-play module, which you can install and commission quickly and easily.



#### Durchflussmessgerät DulcoFlow®

The flow meter DulcoFlow® enables expensive additives to be recorded and controlled. It is intended for precise volume flow measurements in metering processes within a measuring range of 0.1 to 50 litres per hour. It records the flow rate of pulsating flows and the flow volume using ultrasound. The DulcoFlow® is installed in a compact universal housing for wall mounting directly in the pipe of the medium to be measured. Since all wetted parts are made from chemical-resistant PVDF/PTFE, aggressive media can also be measured with ease. Interfering influences, such as air bubbles, are identified by the DulcoFlow® and forwarded to the analysis unit as an error message.



#### Panel-mounted measuring and control stations DULCOTROL®

Online measuring and control units have been tailored and optimised to meet the requirements of cooling water treatment applications. All the components required for measurement, control and monitoring of the different types of water are coordinated to each other and assembled on a PE plate wired ready for connection. The complete measuring point is available as standard for pH, ORP, chlorine, bromine, chlorine dioxide, ozone, hydrogen peroxide and conductivity, or even combinations of these parameters.



## Chlorine dioxide systems

### Bello Zon® CDKc

Ready-wired, complete systems for the production, metering and monitoring of up to 12,000 g/h chlorine dioxide with concentrated basic chemicals. A completely new reactor concept ensures the innovative production and metering of chlorine dioxide. This results in higher operating safety and improved purity of the chlorine dioxide generated. Clearly arranged plain text user navigation leads to simple and safe operation of the systems.



## Ozone systems

### OZONFILT® OZMa

The OZMa range of systems guarantee maintenance-free ozone generation of up to 735 g/h, which is both ecological and economical. The innovative reactor is particularly efficient with its virtually unlimited service life. Users can achieve further savings by the automatic control of the operating gas depending on the ozone output. On-demand and self-optimised air drying is possible, delivering up to 30% energy savings.



## Electrolysis system

### CHLORINSITU® V

Electrolysis systems of the type CHLORINSITU® V generate ultra-pure active chlorine in a vacuum process. Electrolysis systems of the type Chlorinsitu® V can thus be compared with pure chlorine gas when assessing their oxidation strength, chloride and chlorate content in the process water. The salt-dissolving water comes from a softener integrated in the system, thereby preventing the formation of lime deposits and ensuring the long service life of the diaphragm cell. The efficiency of electrolysis is constantly monitored by various flow meters, the addition of water depending on the sodium hydroxide production and the base pH correction. System control is reliably provided by remote diagnostics by Remote Control Engineer.



## Controller

### AEGIS II

The controller AEGIS II controls the cooling water in open cooling circuits and the circulation water of steam generators. It continuously measures and regulates the conductivity, controls the biocide concentration, thereby keeping pipework and heat exchangers clean. AEGIS II detects all necessary measuring parameters for the treatment of cooling water and steam generation water. It controls functions necessary for seamless operation, such as electrolytic conductivity, pH value, biocides and measures corrosion.



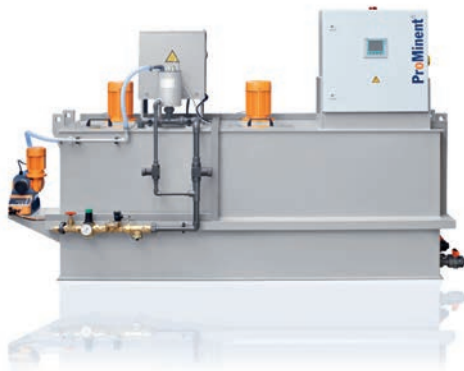
# Years of experience

## Comprehensive product range

### Cooling water treatment with coordinated systems

#### Polymer batching and metering stations **Ultramat® ULFa**

These systems have been specially developed for the batching of liquid and/or powdered polymers. Polyelectrolytes are used as flocculants in a broad range of applications where colloidal solids and liquids have to be separated in an economical manner. We offer a range of different system concepts for different applications.



#### Chemical storage tanks/ **Chemical tanks**

ProMinent storage tanks and tanks guarantee the highest level of reliability in the storage and handling of chemicals and raw materials. Coordinated with the metering equipment, designed and built as standard for each individual use, they store alkaline solutions, acids and other additives reliably and safely. Alongside standard storage tanks, ProMinent naturally also supplies storage tanks and collecting pans tailored to customers' specific needs.



#### Gravity filters **INTERFILT® SK**

Economical water treatment with gravity filters: Open sand filter plants with differential pressure-controlled backwash and integral backwash water reservoirs work automatically without the need for service and maintenance. These filter systems enable the water to be treated extremely economically, as they require neither energy nor consumables.



#### "R"esistant sensors **DULCOTEST® sensors CBR 1, BCR 1, CDR 1, PER 1/2**

Oxidative disinfectants are used for the disinfection of cooling water. ProMinent developed special sensors – the "R"esistant online sensors – to measure these disinfectants. Reliable measurements can be taken using this range of sensors even in polluted water, like cooling water, which reduces maintenance and increases durability.



# Service



## Global service locally

You can benefit from our services even if you are not yet our customer.

Our pre-sales service will ensure that you obtain the optimum solution to meet your individual needs.

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

- Advice on product selection
- Application and process optimisation
- Project planning

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

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

## Contact worldwide

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### Experts in Chemical Feed and Water Treatment

ProMinent is at home in over 100 countries across the globe. This guarantees the worldwide availability of our products and short distances to our customers. We offer the same high

quality standards of products and services worldwide. ProMinent is where you need it: delivering experience and expertise in water treatment and metering technology the world over.

**ProMinent Group**

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