

Precise pH for safe processes – with ProMinent

Reliable pH control in process technology and water treatment

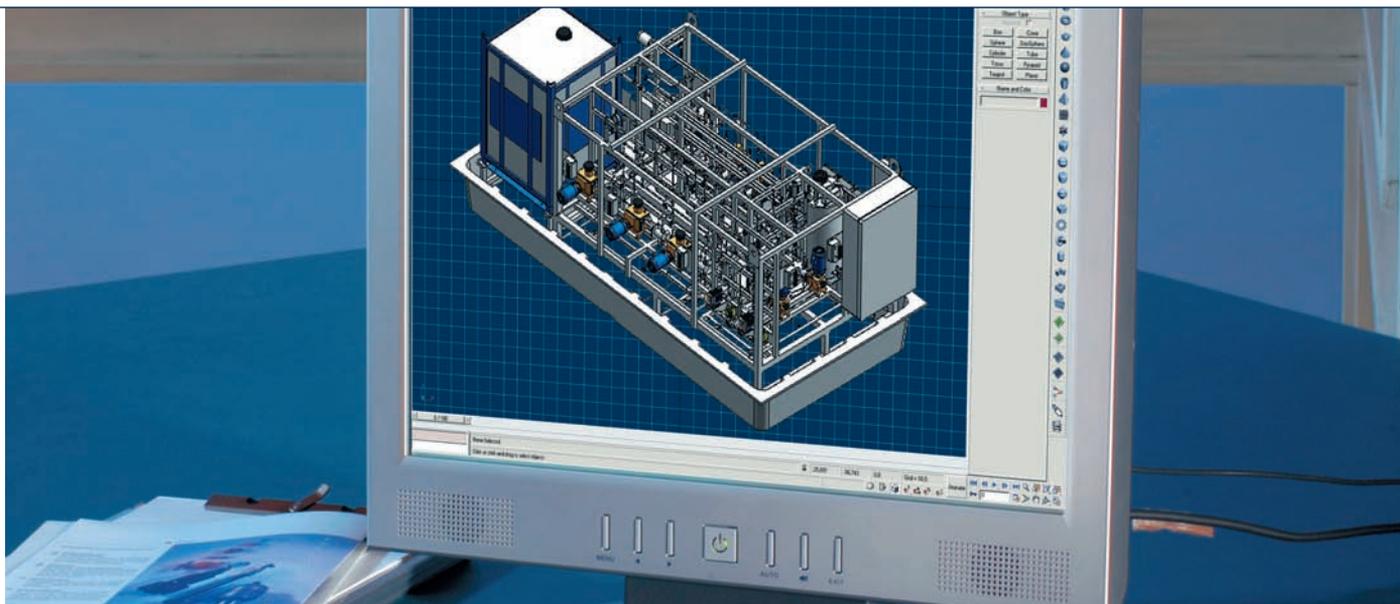
ProMinent®

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Your partner for chemical fluid handling



ProMinent offers total solutions for the journey a chemical takes through a company – from its arrival right through to the treatment of wastewater. Our complete solutions are ready for use with no installation required – Plug & Play.

The wide product range including our own measuring and control technology provides an individual and tailor-made configuration of the control loop. Complex high tech is used alongside straightforward, robust solutions – according to what is needed. Our strength lies in decades of experience, individual consultation and a full range of products and services.

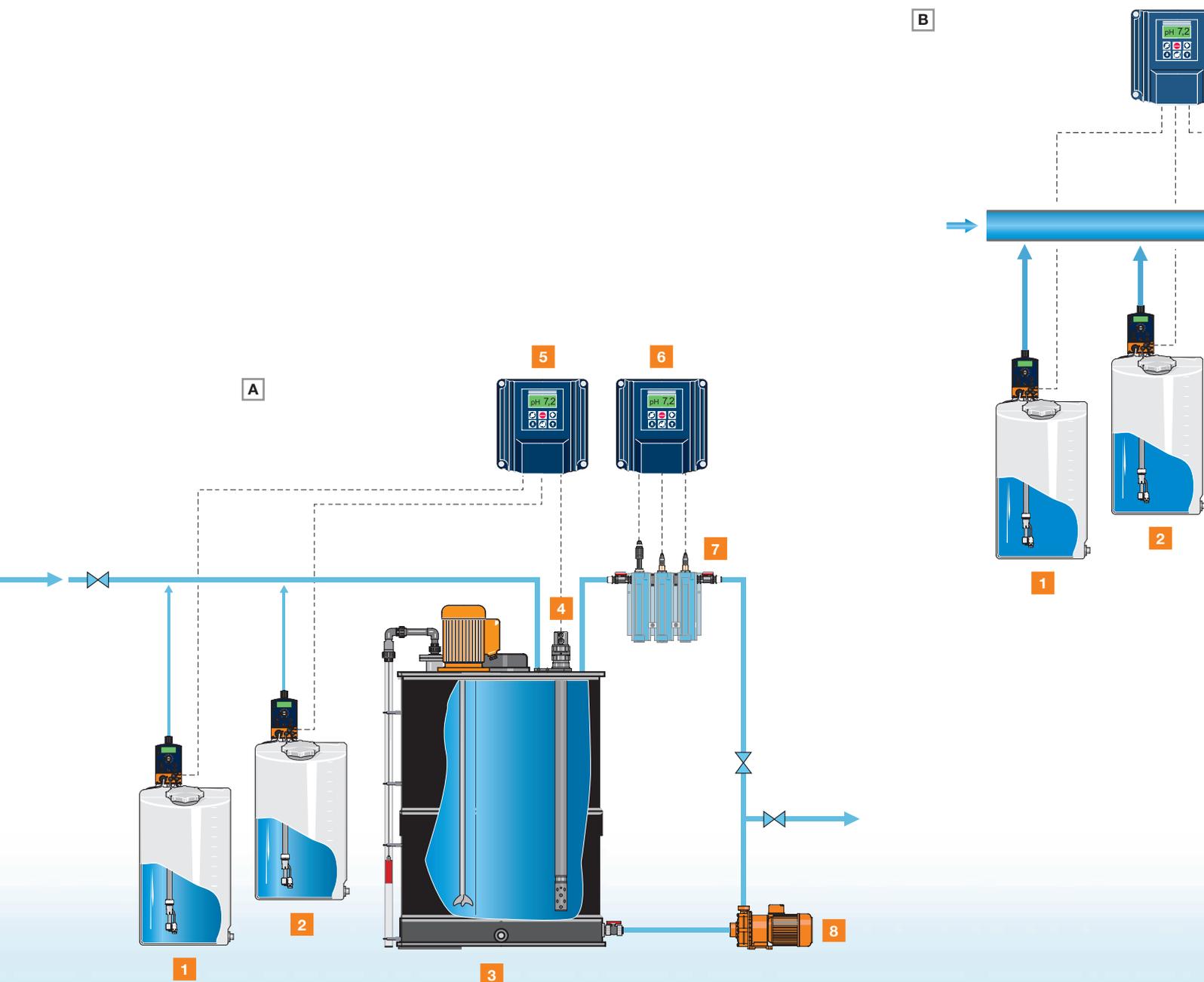
- **Comprehensive solutions for all performance ranges and for all chemicals**
- **Complete spectrum of pumps and metering systems**
- **Perfectly interacting sensors and controllers**
- **Comprehensive range of accessories with tanks from own production and transfer pumps**
- **Advice, solution and implementation from a single source**



Further information:
www.prominent.com/dosing

A pH control loop – batch operating mode

B pH control loop – inline operating mode



1 ProMinent® dosing station for acid

2 ProMinent® dosing station for alkali

3 Batch tank

4 pH electrode DULCOTEST® in immersion housing

5 Controller for pH control DULCOMETER® D1C

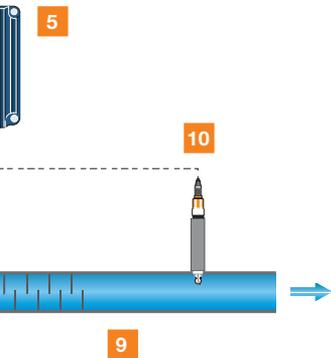
7 pH electrode and temperature sensor DULCOTEST® in by-pass housing

8 Circulation pump von Taine®

9 ProMinent® static mixer

10 pH sensor DULCOTEST®

Process optimisation through integrated solutions



The pH value is one of the most important chemical values. Determination and control of pH is standard in many industrial applications, in water treatment and in quality control of liquids. The desired pH value can be precisely adjusted by the addition of acid or alkali. An absolute must, particularly in neutralisation processes with stringent requirements for reliability and accuracy. ProMinent offers the right solutions for this – whether as an inline or batch process, as a stand-alone dosing station, or linked to a central control system via PROFIBUS®.

Complete solutions from storage of acids and alkalis, through dosing equipment, to matched measurement and control equipment.

- Dosing stations for acids and alkalis
- Dosing pumps suitable for all media and dosing capacities
- pH electrodes for fitting in by-pass, exchangeable and immersion housings, or direct in pipelines for flexible process connection
- Controllers with extensive functions, optimally matched to sensor technology and dosing equipment, or simple transmitters, with PROFIBUS® interface too, for tailor-made control loop setup
- For standard configurations: measuring and dosing stations available as Plug & Play modules
- Complete neutralisation plants supplied pre-assembled and ready for operation

6 Controller for final monitoring of pH/temperature
DULCOMETER®
D1C



Further information:
www.prominent.com/ph_control

Complete dosing systems

Standard systems

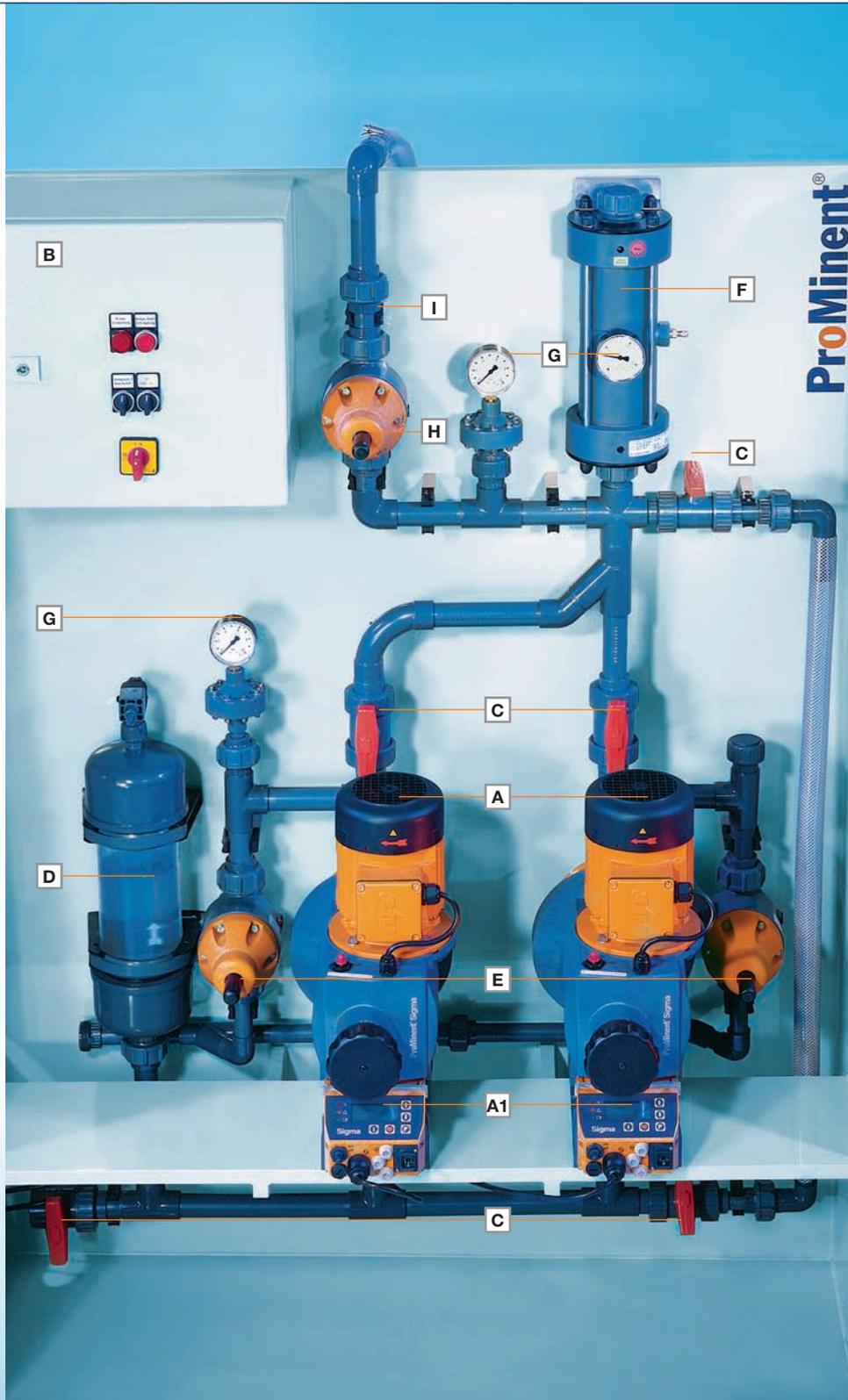
Two hydraulic connection points enable simple installation of the dosing system. The pre-mounted systems include optimally interacting components to ensure problem-free operation. You will thus receive a complete system.

The dosing systems can be individually configured when ordered. The simple selection system makes ordering easy and guarantees the greatest purchasing efficiency.

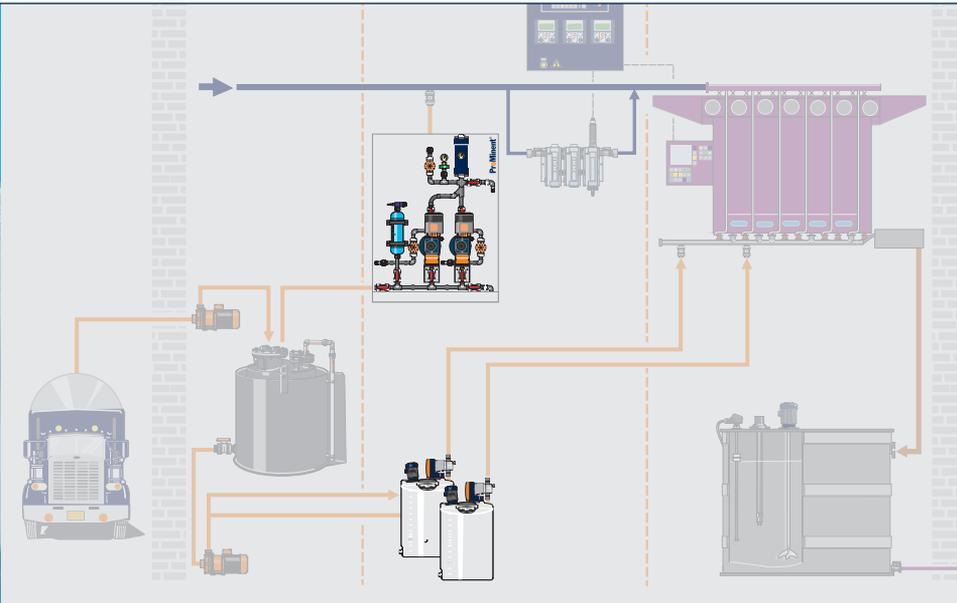
- A** Metering pump
- A1** Actuation and control option
- B** Control cabinet
- C** Stop-valve
- D** Suction air accumulator
- E** Relief valve
- F** Pulsation dampener
- G** Pressure gauge
- H** Back pressure valve
- I** Non-return valve

Application-specific dosing systems

We offer pre-mounted dosing systems for different applications which are conceived and designed to perform precisely in accordance with the requirements of each specific application. For example, for hydrazine or liquid enzyme metering. Or for metering-tasks in swimming pools.



Plug & Play with pre-mounted systems



Metering is getting even easier. The pre-mounted complete solutions from ProMinent for the most important applications are available immediately and ready for use. The sensors, controller and metering pump along with the necessary tanks form a unit which is ready to run with no installation required.

Customer-specific systems

These systems are individually planned, built and delivered according to each customer's specifications. Once again, the customer has no installation to carry out. On request, we will commission the systems on site.



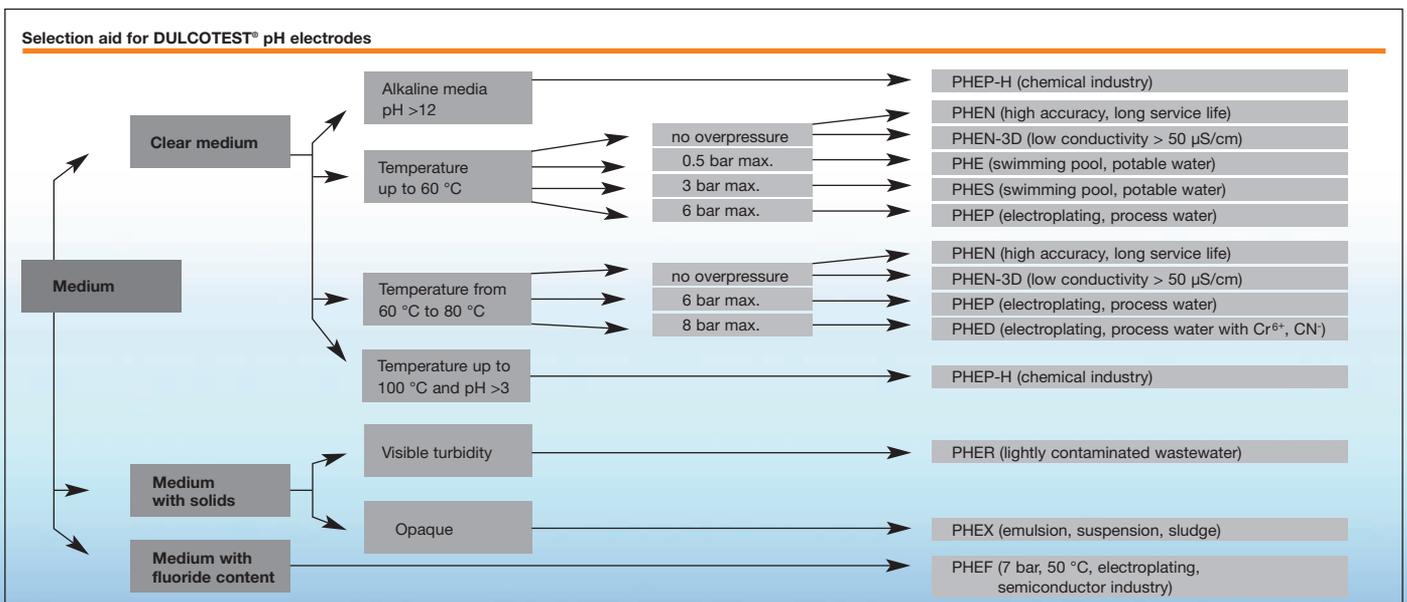
Further information:
www.prominent.com/dosing_systems

Reliable pH sensor technology



The DULCOTEST® range of pH electrodes provides a broad programme of electrodes to solve all measurement problems. Applications range from simple water treatment applications to industrial process applications with more exacting requirements with regard to temperature, pressure, contamination compatibility and chemical resistance.

- Long service life achieved through use of the finest quality glass and an optimal combination of automated and manual manufacture
- Highly accurate and reliable measurement for efficient processes and a high level of process safety
- Tailor-made process connections possible through special versions with individual installation lengths, cable lengths and connectors
- Optimal utilisation of service life of the electrodes through short delivery and storage periods



Further information:
www.prominent.com/ph_sensors

The brain of the control loop



The DULCOMETER® D1C/D2C controllers make up the core of the extensive range of controllers and transmitters available from ProMinent. They are reliable, universally usable and can control a wide range of parameters.

DULCOMETER® D1C

- Universally usable for 14 different measured variables
- Optimised process sequences through special functions such as disturbance signal activation, pH compensation for chlorine, base load dosing and numerous limit value functions

- Special “Cool control” version, tailored to the special requirements of cooling tower conditioning

DULCOMETER® D2C

- The efficient solution for simultaneous control/ measurement of: pH/redox, pH/chlorine, pH/pH, chlorine/chlorine and pH/chlorine dioxide
- Optimised process sequences through special functions such as base load dosing and numerous limit value functions

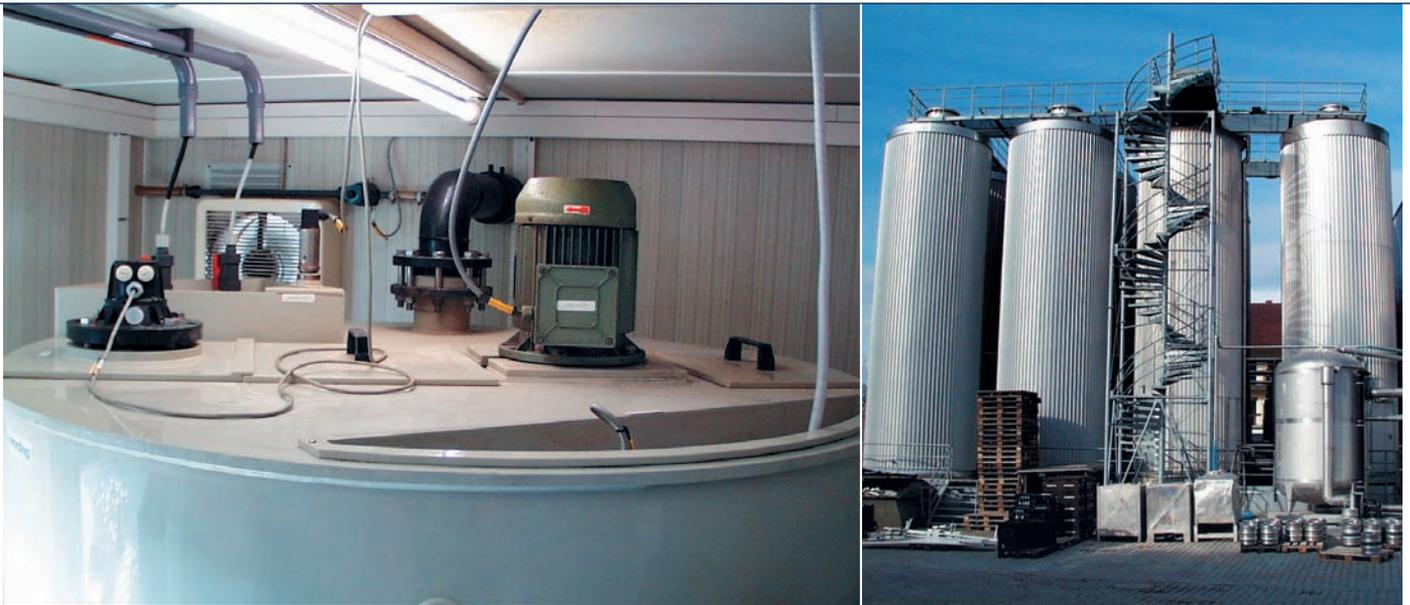
DULCOMETER® D1C	
Measured Variable	Measurement and control range
pH	0 - 14
Redox/ORP	-1,000 mV ... 1,000 mV
Chlorine	in 7 graduated measuring ranges between 0.00 and 100.0 ppm
Bromine	in 2 graduated ranges between 0.02 and 10.0 ppm
Conductive conductivity	in 4 graduated ranges between 0 µS/cm and 200 mS/cm
Inductive conductivity	in 4 graduated ranges between 0 µS/cm and 2,000 mS/cm
Chlorine dioxide	in 4 graduated ranges between 0.00 and 20.0 ppm
Chlorite	in 2 graduated ranges between 0.02 and 2.00 ppm
Ozone	0.00 - 2.00 ppm
Fluoride	0.05 - 10 mg/l

Measured Variable	Measurement and control range
Hydrogen peroxide	in 4 graduated ranges between 1 - 20,000 ppm
Peracetic acid	in 3 graduated ranges between 1 and 2,000 ppm
Dissolved oxygen	in 2 graduated ranges between 0.1 and 20 ppm
Temperature	0 - 100 °C
Analogue signal	0/4 ... 20 mA
DULCOMETER® D2C	
Measured Variable	Measurement and control range
pH	0 - 14
(Measured variable 1,2)	
Redox/ORP	0 - 1,000 mV
(Measured variable 2)	
Chlorine	in 7 graduated ranges between 0.00 and 100.0 ppm
(Measured variable 1,2)	
Chlorine dioxide	in 4 graduated ranges between 0.00 and 20.0 ppm
(Measured variable 2)	



Reference: Heidelberger Brauerei GmbH (Heidelberg Brewery Co.)

Trouble-free neutralisation



“During the rebuilding of our plant, we introduced a neutralisation plant from ProMinent Dosiertchnik and Herding Abwassertechnik. The system is optimally matched to our requirements and makes compliance with regulations much easier”

Dipl.-Braumeister (Master Brewer) Thomas Eichhorn, Engineering Manager,
Heidelberger Brauerei GmbH, Heidelberg/Germany

In breweries, the wastewater from production and CIP (Cleaning in Place) has widely varying pH values, which must be brought to a value between 6.5 and 9.5 before the wastewater is discharged into the municipal system. To this end, ProMinent and Herding Abwassertechnik (Herding Wastewater Technology) installed a fully-automatic, modern neutralisation plant.

Challenge

- Neutralisation of brewery wastewater with pH values and water quantities which varied widely over time (pH between 2 and 12)
- Fully-automatic plant operation linked to the central control room of the brewery

Solution

- Complete solution from a single source, with components matched to one another: a pH control station, a pH measurement station for final monitoring – each with DULCOMETER® D1C measurement/control instruments and DULCOTEST® PHEX sensors, suitable for use in wastewater, fitted in the by-pass

- Preliminary neutralisation in a stainless steel tank, overflow into the actual neutralisation tank, controlled dosing of nitric acid or caustic soda, pH final monitoring
- Transmission of all measurement signals and operational statuses to the central control room of the brewery

Customer benefits

- Safe compliance with statutory requirements
- Cost savings on wastewater discharge levies
- Trouble-free and virtually maintenance-free operation through optimally matched components
- High efficiency of the plant through preliminary neutralisation



Further information:
www.prominent.com/references

Reference: Geyer

pH measurement in metal cleaning



“With a ProMinent pH measurement system, even the most difficult problems were mastered.”

Mr. Valentin, Plant foreman, Geyer company, Nuremberg/Germany

The plant is used for surface treatment of metal parts as preparation for their painting and is divided into a degreasing, phosphating and passivation zone. Throughput is in excess of 1000 parts per day.

Challenge

- Automatic control and monitoring of pH in various zones of the plant
- Documentation of data for quality assurance purposes
- Plant design for highest level of operational safety and minimum expenditure on maintenance

Solution

Complete measurement/control/dosing cabinet

- Two temperature-compensated measurement stations for pH and conductivity each
- Each with DULCOMETER® D1C controller, DULCOTEST® sensors, suitable for process use and by-pass housing
- Two Beta range solenoid-operated dosing pumps complete with accessories and multi-channel recorder

Customer benefits

- Cleaning chemicals savings through pH-dependent dosing instead of manual dosing
- Operating staff savings thanks to fully-automatic measurement, control and dosing
- Improved occupational safety, as operating staff have no contact with aggressive chemicals
- Increased process safety through redundant measurement system
- Proof of quality through documentation of the parameters
- Low operating costs through simple operation of the plant and long service life of the pH sensors
- Little environmental burden through reduced emission of cleaning solutions



Further information:
www.prominent.com/references

World-wide contact



ProMinent is at home in more than 100 countries of the world. This guarantees world-wide availability of the products and short distances to the customer. All over the world, ProMinent offers identical quality standards for products and services. ProMinent is where you need it: experience and know-how in water treatment and chemical fluid handling are available world-wide.

For detailed information, please visit our website www.prominent.com

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