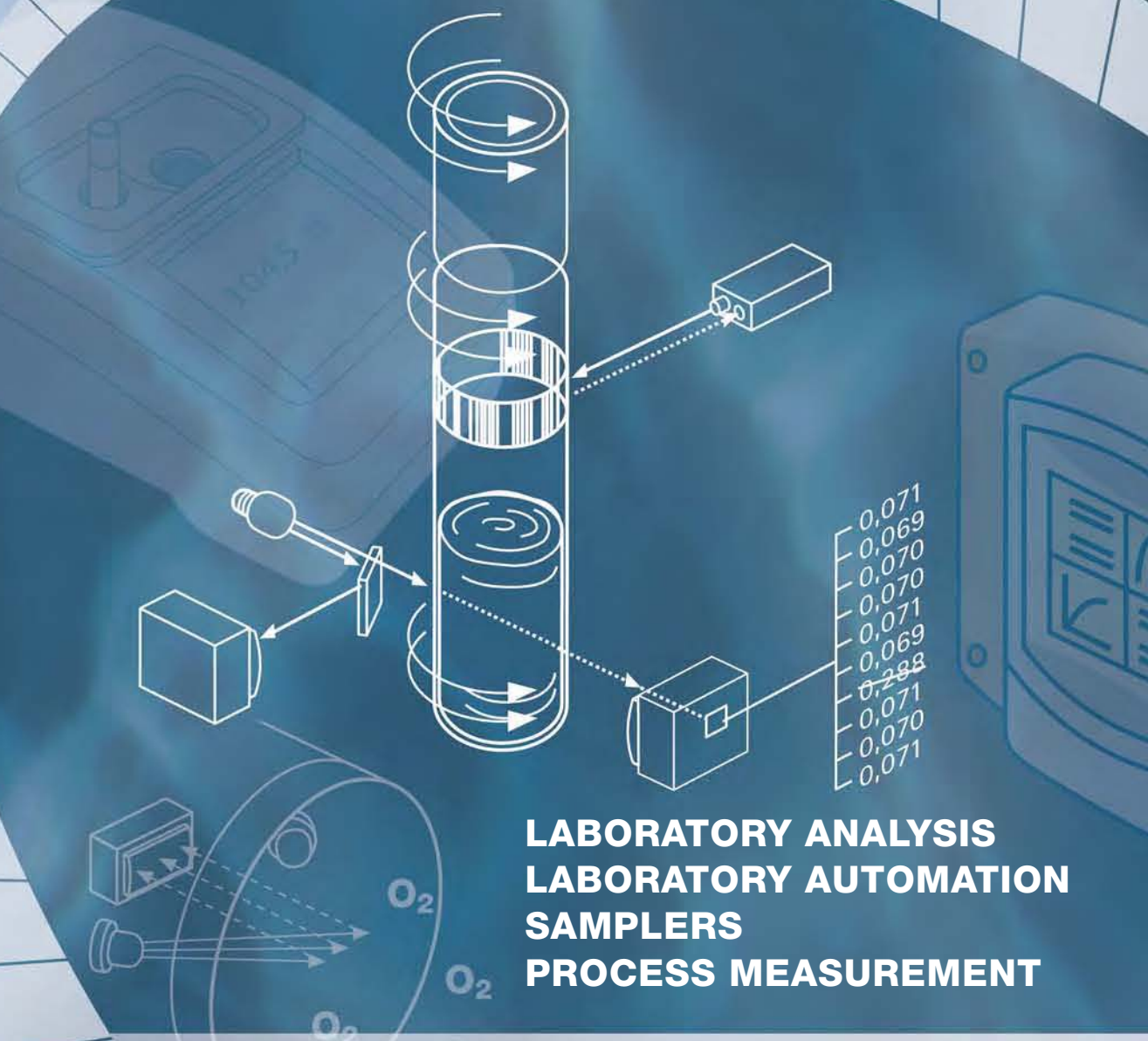


**WASTEWATER
DRINKING WATER
PROCESS WATER**



**LABORATORY ANALYSIS
LABORATORY AUTOMATION
SAMPLERS
PROCESS MEASUREMENT**

CATALOGUE

2006 / 2007

Welcome!

New demands and technologies continuously spur us on to develop new and better solutions to the problems you encounter in everyday analysis.

The proof of this can be found in our latest catalogue. Amongst our wide range of market leading products you will find:

- An impressively large selection of photometric methods for the laboratory, with the latest in Spectrophotometry; the DR 2800 and DR 5000
- Outstanding measuring reliability and flexibility for pH and oxygen with the new digital HQD systems
- A wide range of applications for the new TOC automatic laboratory analysers
- Reliable solutions from the new process analysers for N and P parameters
- Innovative new telemetry service for process measurement technology
- Latest technology for monitoring the quality of surface water

All this and more – take a look for yourself!

The ideal team for water analysis



On-site support



Technical support and orders



Seminars and workshops



Disposal and recycling



Quality assurance



Web Shop and downloads



Customer information



Service and maintenance

BÜHLER
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EVITA
GLI
HACH
LACHAT
POLYMETRON
RADIOMETER ANALYTICAL
SIGMA

Introduction

Chapter

Parameters, wastewater, drinking water, process water, service, water quality	Page 4	1
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Laboratory analysis

Chapter

<p>HACH LANGE laboratory solutions ensure accurate and reliable analysis for all parameters in the municipal, regulatory and industrial sectors. In the lab and in the field.</p>	OVERVIEW	Page 16	2
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Laboratory automation

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Samplers

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Process Measurement Technology

Chapter

<p>HACH LANGE process solutions for drinking water, wastewater and industrial treatment systems and industry. Providing reliable instrumentation, cost effectively.</p>	OVERVIEW	Page 95	11
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Reference

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Practical solutions— parameter by parameter

The HACH LANGE product range covers the complete spectrum of parameters in water analysis. From wastewater, drinking water to process water. Whether in the lab or in the field. We have the right solutions for you.



O₂, pH, conductivity

Dissolved oxygen concentration influences wastewater purification more than any other parameter. Its precise measurement is of major technical and economic significance. The pH and redox values of wastewater and drinking water are essential for the assessment of many other parameters and process steps. The conductivity of water provides information about its salt content.

In view of the importance of these parameters, HACH LANGE has developed an extensive range of products using its outstanding advanced technologies.

- **Laboratory analysis:** see page 16
- **Process measurement technology:** see page 95



Turbidity and sludge

Clear water is the desired end product of wastewater and drinking water treatment. Suspended solids and particles can effect the end product and may also interfere with the process. The determination of turbidity is therefore an important task. The central role of active sludge in the wastewater treatment process needs careful monitoring: with parameters such as the solids concentration, sludge volume, sludge index and sludge level, HACH LANGE has a comprehensive range of products for determining the lowest to the highest solids content as well as key sludge properties.

- **Laboratory analysis:** see page 16
- **Process measurement technology:** see page 95



Sum parameters

COD, TOC, SAC, BOD and AOX provide no direct information about individual substances, but are sum parameters which indicate, for example, the chemical or biological oxygen-consuming capacity or UV absorption of water. HACH LANGE sum parameters offer perfect solutions, easy handling, including proven, fast digestions. For TOC analysis, HACH LANGE offers everything from individual analysis in the laboratory to on-site process analysis.

- **Laboratory analysis:** see page 16
- **Laboratory automation:** see page 83
- **Process measurement technology:** see page 95



Nutrients

Nitrogen and phosphorus compounds are not toxic, but encourage the growth of algae in surface waters, which results in oxygen depletion. The elimination of ammonium, nitrite, nitrate, total nitrogen, orthophosphate and total phosphate plays a key role in wastewater treatment processes. In the analysis of drinking water, special attention is paid to nitrite and nitrate as potential precursors of carcinogens. HACH LANGE nutrient analysis covers all parameters, and makes use of fast and effective digestion methods.

- **Laboratory analysis:** see page 16
- **Laboratory automation:** see page 83
- **Process measurement technology:** see page 95

WW

DW

PW

Wastewater

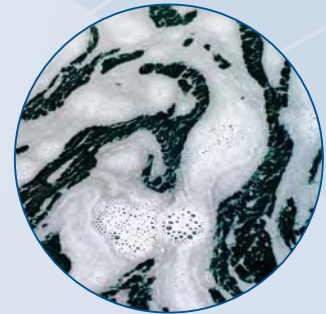
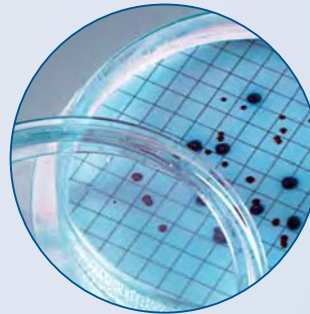
Made-to-measure solutions for wastewater analysis in the municipal and industrial sectors

Drinking water

Dependable analysis for providers and users

Process water

Process and laboratory analysis for special analytical problems

**Chlorine**

Disinfectants are used to eliminate microorganisms from drinking water and recreational water. Besides chlorine, products such as chlorine dioxide, ozone, iodine and bromine are used. Careful analysis of these substances is not just advisable on economic grounds. It is essential, since disinfectants and their reaction products are associated with risk potential. From paddle testers through to quality controlled laboratory analysis and analysers for process control applications, HACH LANGE has a complete range of products for disinfection analysis.

- **Laboratory analysis:** see page 16
- **Process measurement technology:** see page 95

Metals

Many metals from industrial processes may be present in wastewater. Metals may also be present in drinking water due to geological circumstances and corroded pipes. Although the toxicity of metals varies widely, they are all rated as having a very high risk potential. Metals are not biodegradable and therefore accumulate in activated sludge systems. Metals are usually present in water samples in complex forms, so a special sample preparation has to be carried out before the analysis can be performed. HACH LANGE metal analysis covers all relevant parameters, from aluminium, copper and nickel to zinc.

- **Laboratory analysis:** see page 16

Microbiology

Bacteria, fungi and other microorganisms in drinking water and recreational water can be a cause of disease, while in industrial plants they may form troublesome coatings. The HACH LANGE range of products enables quantitative and qualitative microbiological tests of surfaces and water to be carried out in conformity with legal requirements. Ready-to-use tests, media and accessories are available, together with a variety of methods, e. g. membrane filtration, MPN, Presence/Absence, BART and paddle testers. In contrast, the luminescent test uses bacteria as a tool to determine the toxicity of water and soil.

- **Laboratory analysis:** see page 16

Other parameters

Special parameters need to be analysed in water for many reasons, such as monitoring a process or a legally specified value—cyanides or surfactants in industrial wastewater, organic acids in aeration tanks, biogas fermenters and digesters, hardness in drinking water, chloride, sulphate and silica in water treatment systems, colour values such as iodine, Hazen and Gardner in industrial quality control, and many others. HACH LANGE can supply a comprehensive range of products for a variety of parameters and needs.

- **Laboratory analysis:** see page 16
- **Process measurement technology:** see page 95

WW

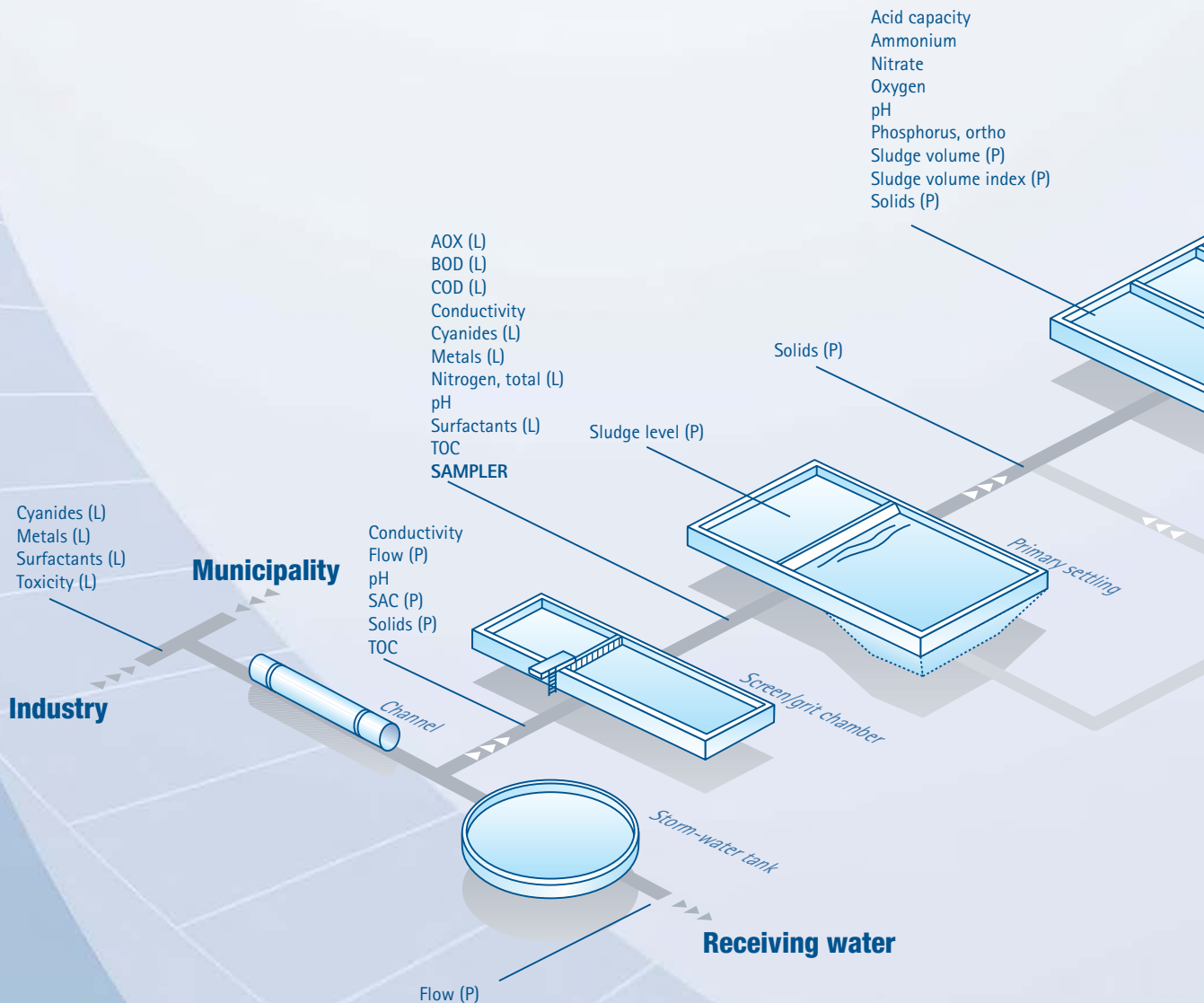
For municipal and industrial users— HACH LANGE wastewater analysis

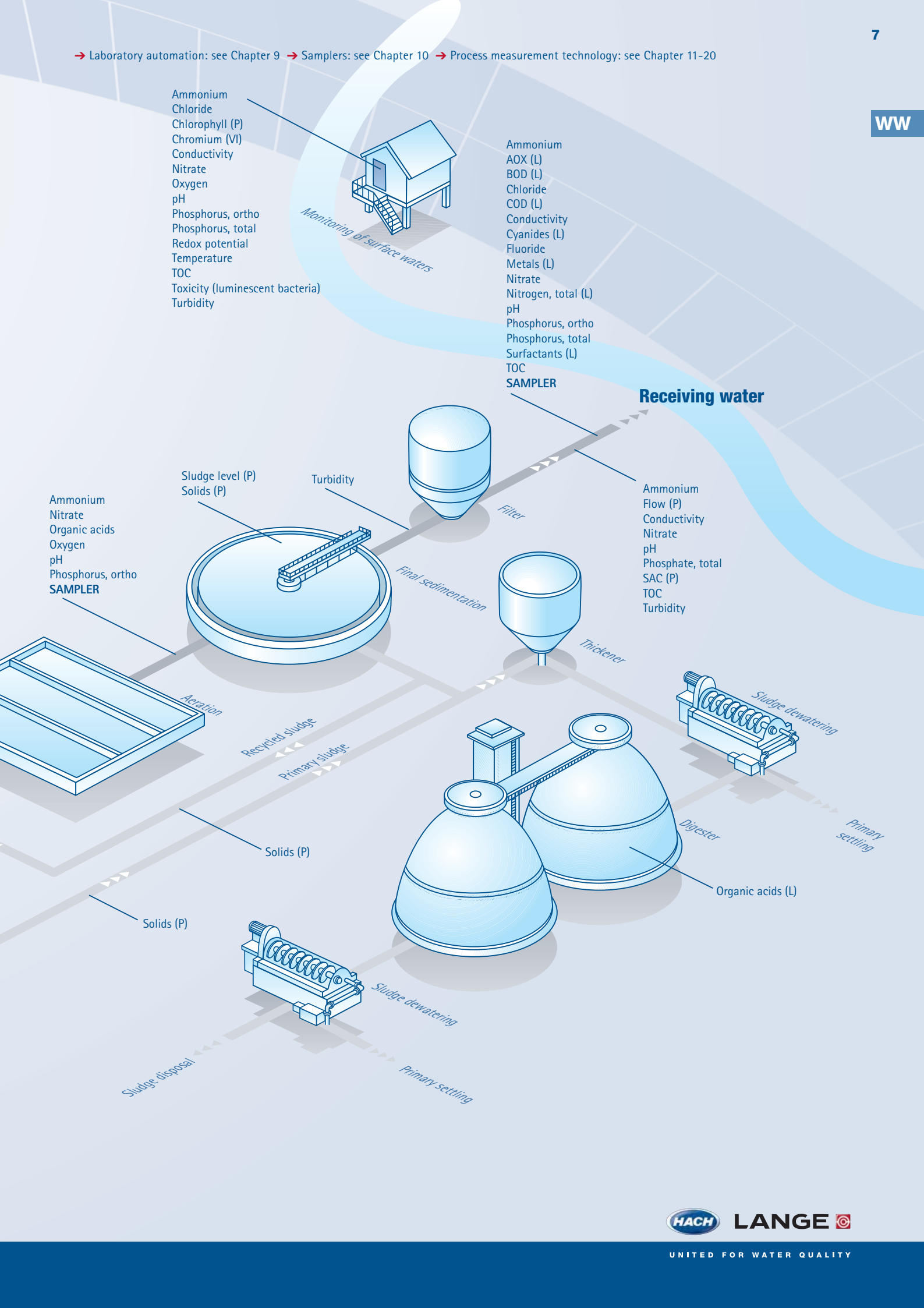
Wastewater is one of the main waste products of our society. To ensure that it can be returned to the natural water cycle without harming the environment, producers of wastewater are obliged to comply with certain minimum requirements. Threshold values can only be monitored correctly and treatment processes can only be controlled economically with the help of accurate and reliable analysis.

HACH LANGE wastewater analysis is the result of decades of practical experience. Innovative solutions for a wide range of parameters in the industrial and municipal sectors.

(L) laboratory only

(P) process only





- Ammonium
- Chloride
- Chlorophyll (P)
- Chromium (VI)
- Conductivity
- Nitrate
- Oxygen
- pH
- Phosphorus, ortho
- Phosphorus, total
- Redox potential
- Temperature
- TOC
- Toxicity (luminescent bacteria)
- Turbidity

- Ammonium
- AOX (L)
- BOD (L)
- Chloride
- COD (L)
- Conductivity
- Cyanides (L)
- Fluoride
- Metals (L)
- Nitrate
- Nitrogen, total (L)
- pH
- Phosphorus, ortho
- Phosphorus, total
- Surfactants (L)
- TOC
- SAMPLER

Receiving water

- Ammonium
- Nitrate
- Organic acids
- Oxygen
- pH
- Phosphorus, ortho
- SAMPLER

- Sludge level (P)
- Solids (P)

Turbidity

Filter

Final sedimentation

Thickener

- Ammonium
- Flow (P)
- Conductivity
- Nitrate
- pH
- Phosphate, total
- SAC (P)
- TOC
- Turbidity

Aeration

Recycled sludge

Primary sludge

Sludge dewatering

Solids (P)

Digester

Organic acids (L)

Primary settling

Solids (P)

Sludge dewatering

Sludge disposal

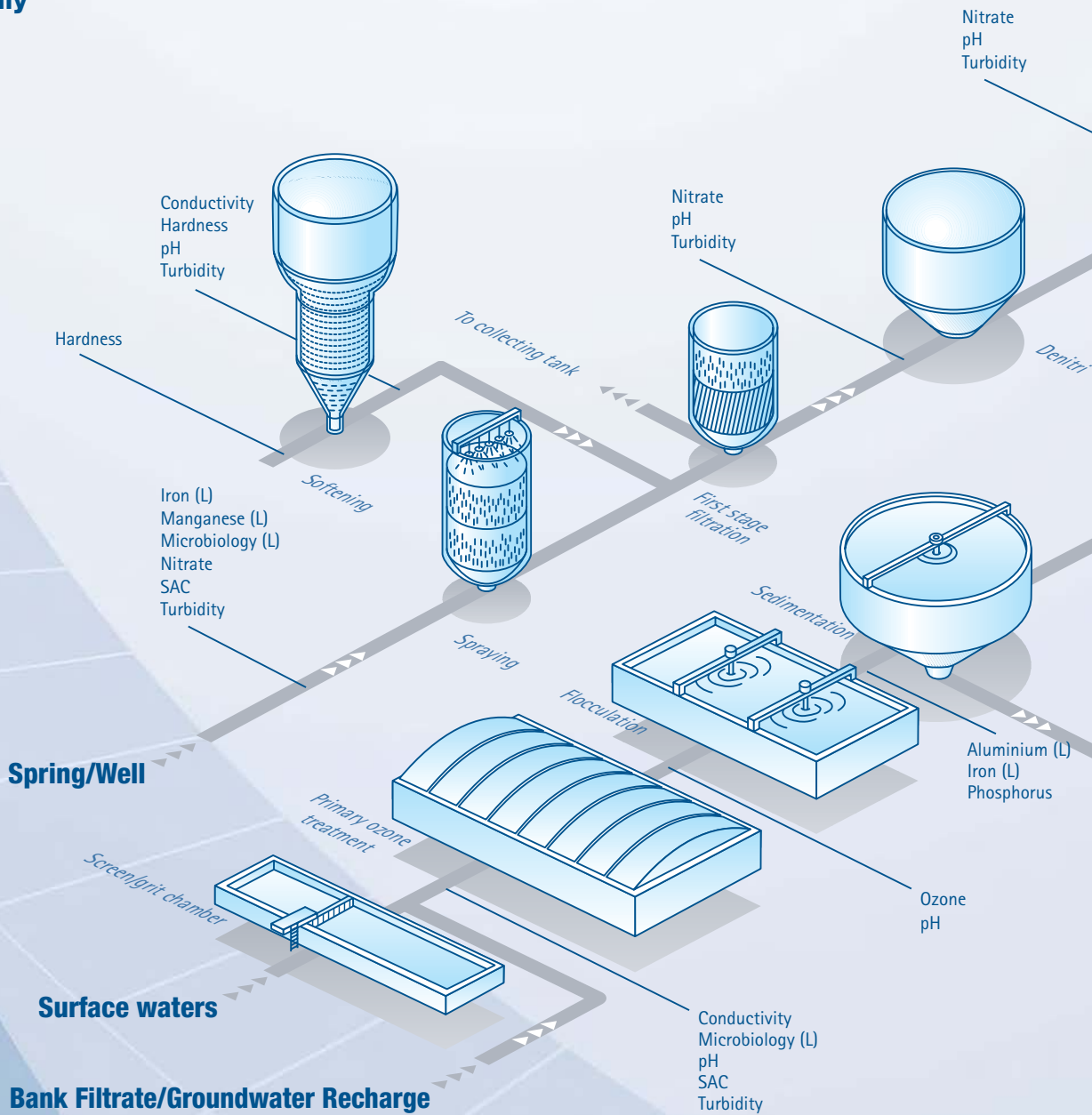
Primary settling

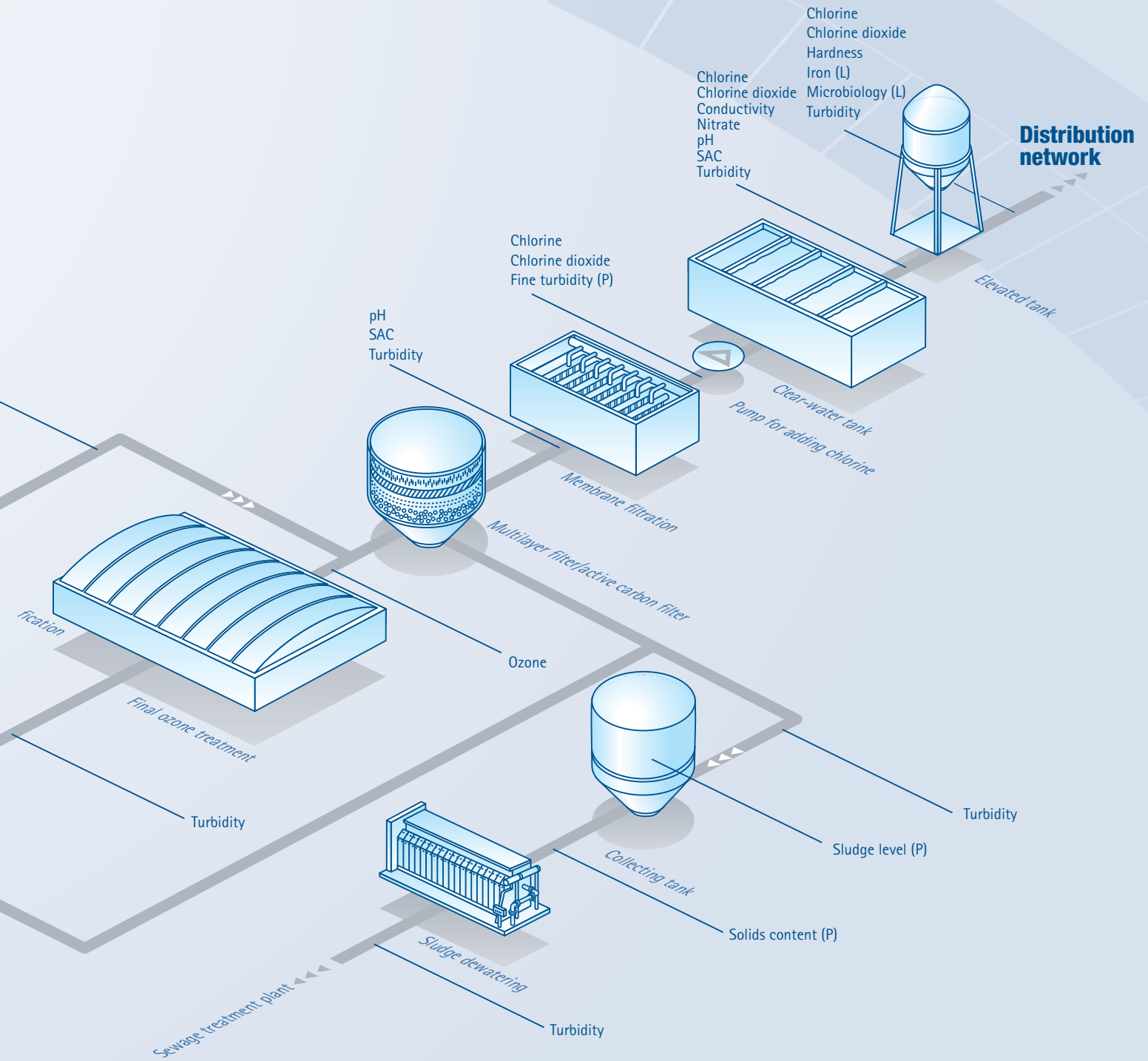
DW

HACH LANGE drinking water analysis— solutions for suppliers and consumers

Drinking water is essential to human life. Consumers and suppliers alike expect it to be of the highest quality and legislation dictates this. HACH LANGE is an expert with years of experience in drinking water analysis. We provide proven solutions for all relevant parameters in the field, in the laboratory or process control. Drinking water analysis solutions from HACH LANGE gives you confidence in drinking water treatment and use.

(L) laboratory only
(P) process only





PW

HACH LANGE process water analysis – solutions for industry

The control of industrial production processes is under scrutiny from many sides. Not just from companies themselves, but also customers and legislators. Verified data is needed about product quality, energy consumption and operating procedures, etc. Only practice related and reliable analysis can supply this data. HACH LANGE offers an extensive programme of analytical solutions for industry, e.g. for widely varied applications such as cooling and boiler water, but also for special areas in a variety of industrial sectors.

(L) laboratory only

(P) process only

Acid capacity
Alkalinity
Ammonium
Chloride
Chlorine
COD (L)
Copper (L)
Conductivity
DEHA (L)
Hardness
Hydrazine
Iron (L)
Molybdenum (L)
Nitrite
Oxygen
pH
Phosphonate
Phosphorus
SAC (P)
Silica
Sodium
Sulphite
TOC
Toxicity (L)
Turbidity

Chlorine
Conductivity
Hardness
pH
Oxygen
Silica
Turbidity

Receiving water

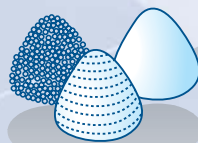


Water conditioning

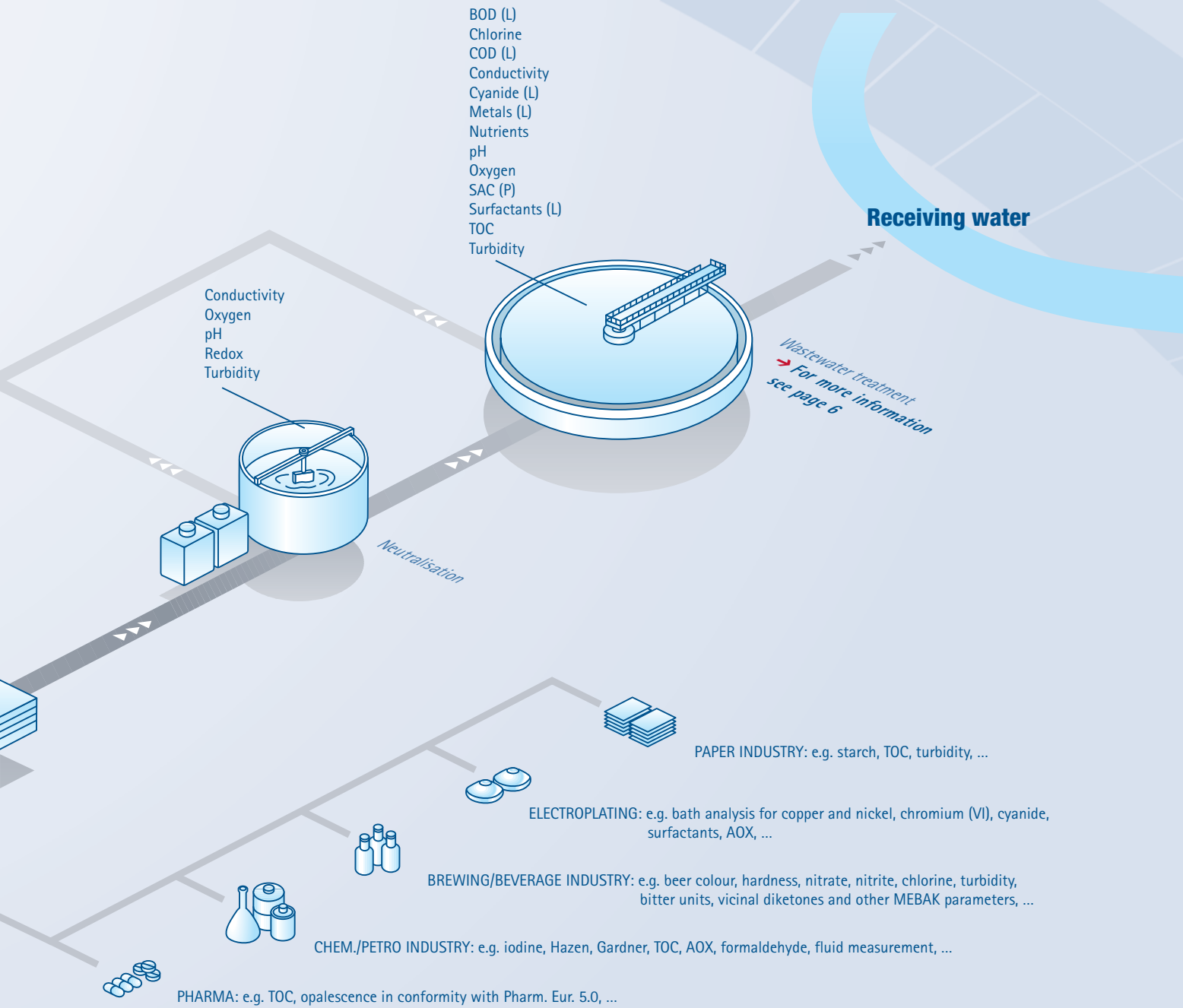


Cooling and boiler water

Production

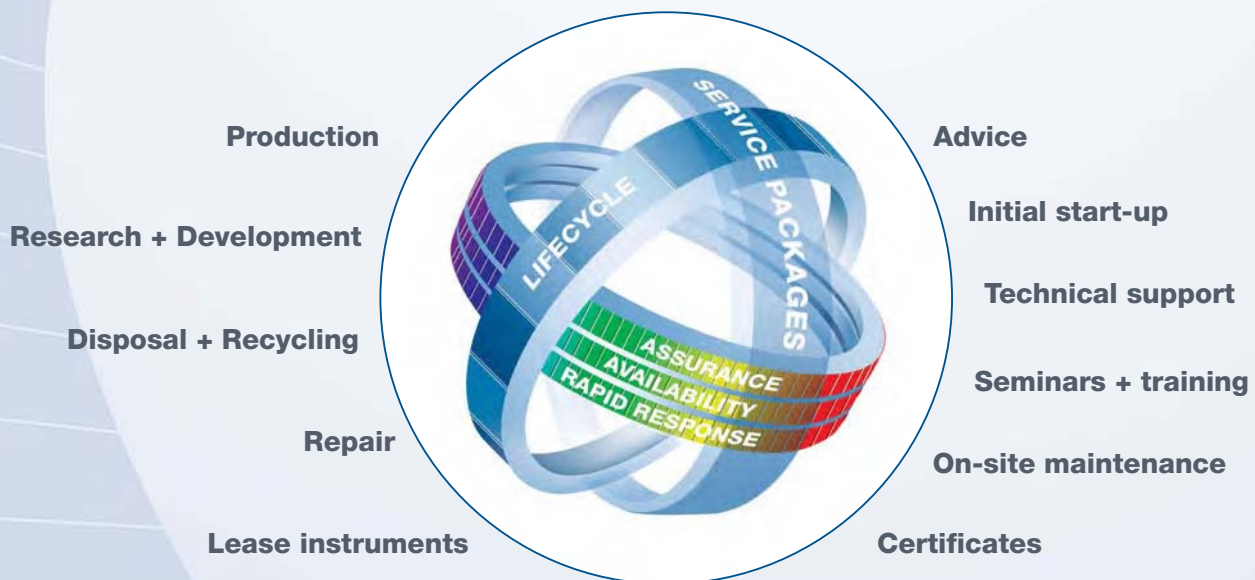


Raw materials



Service Solutions – flexible packages

Our customers depend on the availability of reliable analytical data at all times. HACH LANGE supports the use of its instruments throughout their life cycle, from initial start-up to disposal. Drawing on decades of practical experience, HACH LANGE has developed comprehensive service packages to suit customers needs. Flexible service packages provide the necessary assurance for smooth operation of the instrument.



Start-up service package: Initial start-up + Commissioning

From the very first day our qualified staff will offer support during commissioning. We provide documentation for quality assurance purposes and for the reliable operation of the measurement systems.

Service Package 1: One-off Inspection

Flexible assurance without contractual ties: ensuring a high level of continuity with the instruments thanks to replacement of wear parts or repairs as necessary.



Service Package 2: Inspection + Maintenance

60 month warranty period: regular inspections of the instruments in line with the maintenance contract. For a long instrument life and reliable operation with no hidden costs; call-out, labour and spare parts are included.

Service Package 3: Service-Plus contract

On-site service plus teleservice for SC-based process measurement technology: service engineer call-out as required and as scheduled in the maintenance contract. Plus round-the-clock monitoring; to keep up to date at all times with event reports by SMS.





Face to face—personal support from the very first day

Initial start-up and thorough instruction by qualified engineers are part of the course with HACH LANGE service. We ensure that you have a comprehensive knowledge of operating and maintenance of the instruments.



Documented service—documented quality

With regard to the monitoring of measurement and test equipment, verification of operational processes and comprehensive internal quality management. HACH LANGE provides all documentation required by DIN ISO 9001:2000.



Tested on site—for example the inspection report

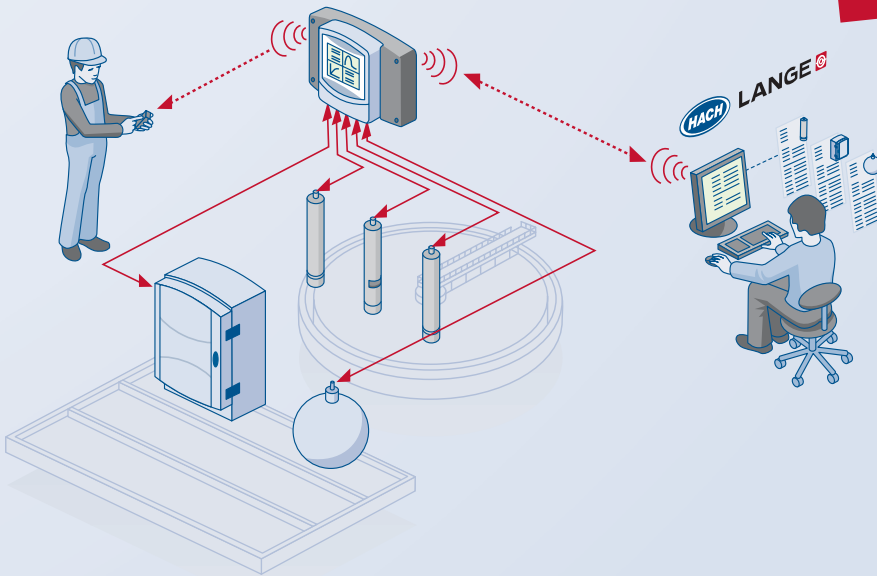
Regular and preventive inspections are fully traceable through individual inspection reports. The HACH LANGE flexible service contracts give customers the satisfaction of having done everything to ensure correct set up of the instrument on site.



NEW!

Teleservice—the new SC-based service

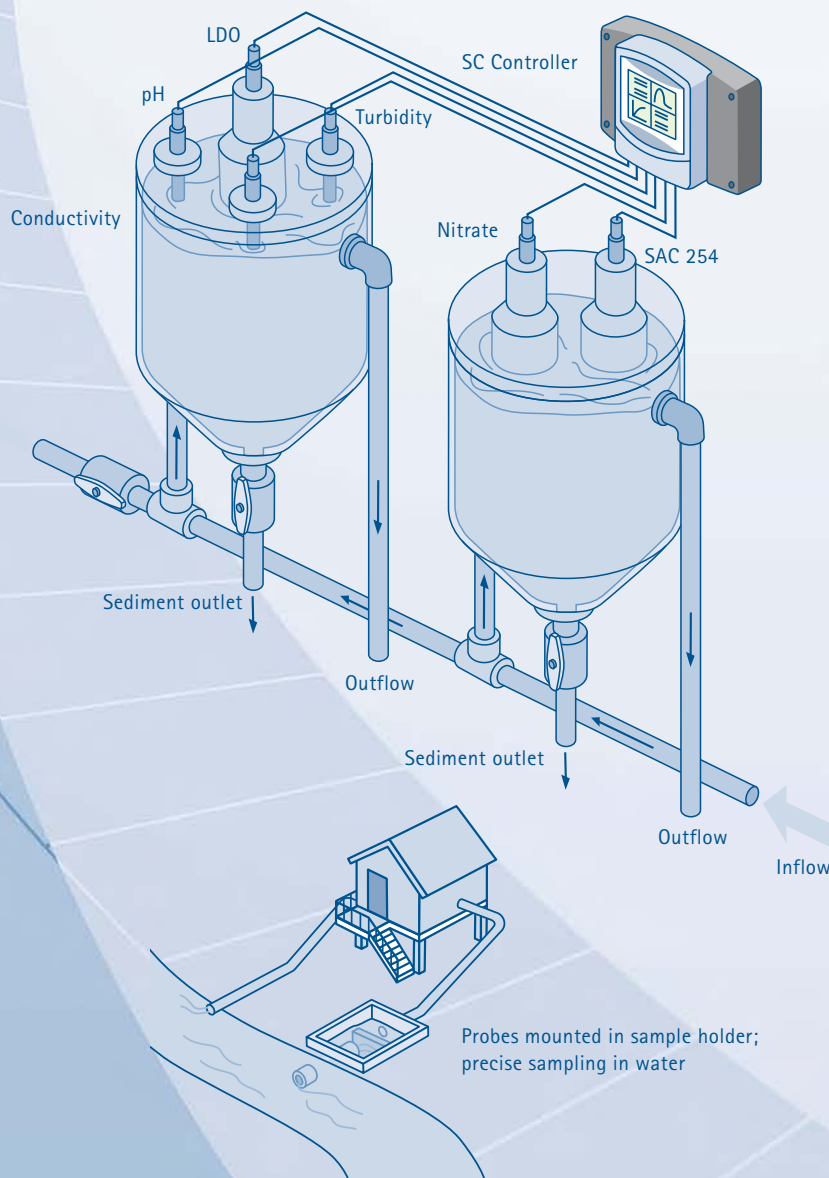
24 hours a day, 7 days a week: the SC 1000 controller informs the appropriate personnel about the connected SC process sensors by SMS. At the same time, the event or alarm messages are sent to the HACH LANGE Teleservice Centre for analysis by skilled engineers. If necessary, they contact you by phone or intervene directly to take corrective action. Plant visits can also be prepared more efficiently, so the engineer has all the necessary parts with him. Quick and convenient way of reporting faults, ensuring the continued operation of the instruments.



Service Support – for more information about HACH LANGE Service go to www.hach-lange.co.uk, www.hach-lange.com

Total solutions for monitoring water quality

- Comprehensive measurement stations; stationary and portable
- Made-to-measure analysis equipment
- Remote diagnosis and data transmission via GSM
- For industrial monitoring that conforms with the IPPC Directive



EU monitoring Regulations from 2006

The timetable for the implementation of the European Water Framework Directive requires the EU member states to have programmes in place by the end of 2006 for monitoring river basins. The aim of the monitoring is to catalogue the current water quality for the desired restoration of the river basin to a good ecological condition. The regional authorities responsible for river basins have been given the task of implementing the programmes.

Simple implementation with turnkey equipment

As an experienced producer of water analysis systems, HACH LANGE can offer a comprehensive service. Monitoring stations are individually planned and constructed, and the equipment covers all the necessary parameters. The physical, chemical and biological measurement systems have proven themselves in all kinds of applications. The service includes the complete delivery of power. The turnkey solution from HACH LANGE helps companies implement the EU directive.

→ Laboratory automation: see Chapter 9 → Samplers: see Chapter 10 → Process measurement technology: see Chapter 11-20



Measurement station, built to specification and fully equipped



Stationary industrial container, available in a variety of versions



Pump in operation. Depending on its location, submersible or pressure pump

Turnkey total solutions—possible configurations

Characteristics	DREL mobile laboratory; ready to use equipment; mains/independent power instruments; reagents and accessories	Mobile measurement container (independent power optional)	Stationary measurement station with power supply and telephone connection
Parameters	e.g. Acidity, Alkalinity, Ammonium, Bromine, Calcium, Chloride, Chlorine, Chromium (VI), Colour, Copper, Hardness, Iodine,	Iron, Manganese, Molybdenum, Nitrate, Nitrite, Phosphorus, Silica, Sulphate, Sulphide, Sulphite, Suspended solids	As in the previous column, as well as: • Ammonium • Flow • Level measurement • Luminescent bacteria test in compliance with DIN EN ISO • Phosphorus (total and ortho) • Rainfall • TOC
Sample delivery	Manual	Submersible pump Pressure pump Suction pump	Submersible pump Pressure pump Suction pump
Data communication	USB memory stick	GSM	GSM, optional dedicated line

→ Details of the sensors and instruments for process measurement technology and laboratory analysis can be found on the following pages

→ For more information about DREL portable laboratories see page 38



SC 1000 Controller:
a maximum of eight SC probes can be connected
→ For more information see page 98



More information at www.hach-lange.co.uk,
www.hach-lange.com, keyword "Water quality"