

Complete Water Analysis for

POWER GENERATION



Be Right™



HACH: THE WATER ANALYSIS EXPERTS FOR POWER GENERATION

Hach offers the most comprehensive water analysis solution for continuous power generation.

With more than 65 years as the leading expert in water quality analysis, you can trust Hach's knowledgeable and responsive support team to address your unique needs for the water and steam applications throughout your entire process:

- Influent water treatment
- Condensate
- Boiler feed water
- Cooling water
- Wastewater



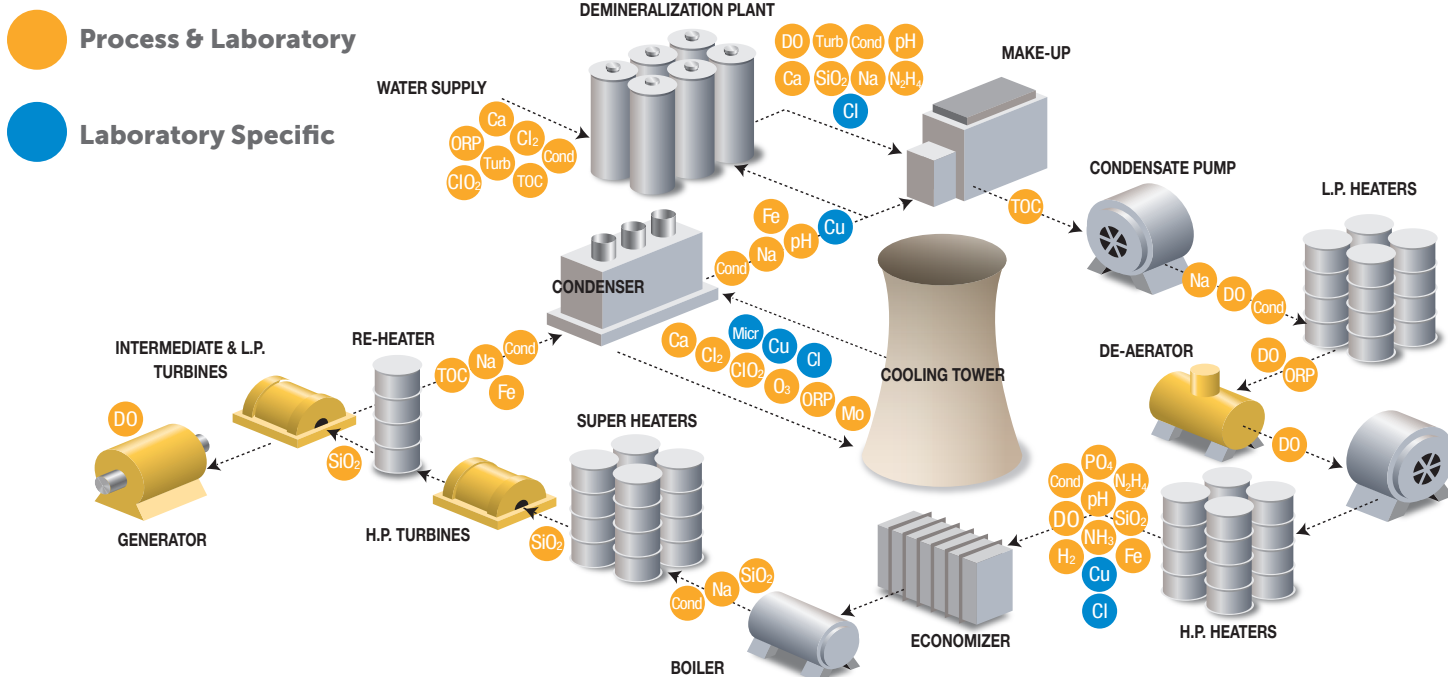
Whatever your water analysis challenge, Hach has the most complete solution—including a broad offering of easy-to-maintain on-line instrumentation, accurate laboratory equipment, comprehensive test kits, and high-quality prepared reagents, measuring the broadest range of test parameters in the industry.

From process monitoring to laboratory verification, Hach is your trusted partner, assuring maximum uptime through preventative protection and superior service.

We invite you to review this brief introduction to Hach's total solution for power generation, and let Hach know how our expertise can help you.



KEY MEASUREMENT PARAMETERS



Water Treatment

Cl	Chloride
Cl ₂	Chlorine
ClO ₂	Chlorine Dioxide
Cond	Conductivity/Total Dissolved Solids (TDS)
DO	Dissolved Oxygen
Ca	Hardness/Alkalinity
N ₂ H ₄	Hydrazine/Oxygen Scavenger
ORP	Oxidation-Reduction Potential
O ₃	Ozone
pH	pH
SiO ₂	Silica
Na	Sodium
TOC	Total Organic Carbon (TOC)
Turb	Turbidity and Suspended Solids

Steam Cycle

NH ₃	Ammonia
Cl	Chloride
Cond	Conductivity/Total Dissolved Solids (TDS)
Cu	Copper
DO	Dissolved Oxygen
N ₂ H ₄	Hydrazine/Oxygen Scavenger
Fe	Iron
H ₂	Hydrogen
ORP	Oxidation-Reduction Potential
pH	pH
PO ₄	Phosphate
SiO ₂	Silica
Na	Sodium
TOC	Total Organic Carbon (TOC)

Cooling Water

Cl	Chloride
Cl ₂	Chlorine/Oxidants
ClO ₂	Chlorine Dioxide
Cond	Conductivity/Total Dissolved Solids (TDS)
Cu	Copper
Ca	Hardness/Alkalinity
Micr	Microbiology
Mo	Molybdate and Other Corrosion Inhibitors
ORP	Oxidation-Reduction Potential
O ₃	Ozone
pH	pH
Na	Sodium

PROCESS INSTRUMENTS & ANALYZERS

CHLORIDE

8810 Online Ion Selective Chloride Analyzer

Delivering reliable results that save critical time and effort.

- Online ISE monitoring
- Unattended operation up to 30 days
- Programmable auto calibration



FREE / TOTAL CHLORINE

CL17 Free/Total Chlorine Analyzer

Dependable, colorimetric DPD free and total chlorine analysis.

- Chlorine analysis independent of pH, temperature, and sample flow
- 0.035 to 5 mg/L free or residual chlorine range
- Unattended operation up to 30 days
- Colorimetric DPD chemistry—fast, reliable, economical

**EPA
COMPLIANT**



CONDUCTIVITY

9523 Cationic Conductivity Analyzer

Simple to integrate. Simple to operate.

- Works with sc200 platform
- 0.01 to 200 $\mu\text{S}/\text{cm}$ range
- Calculates reliable pH measurements even in the presence of contaminants

3700 sc Digital Inductive (Electrodeless) On-Line Sensors

No direct contact between the measuring element and the sample.

- Ideal for demineralizer regeneration
- 200 to 2,000,000 $\mu\text{S}/\text{cm}$ range
- Rugged, non-fouling design
- Sensor works with a Hach sc200™ or sc1000™ Digital Controller



Contacting Conductivity Sensor 8315

Simple to integrate. Simple to operate.

- Works with sc200 platform
- 0.01 to 200 $\mu\text{S}/\text{cm}$ range
- Robust construction with 316 Stainless Steel and a sturdy industrial design



DISSOLVED OXYGEN

Orbisphere K1100 Optical Dissolved Oxygen Sensor

The first maintenance-free optical oxygen sensor for power plants.

- Only 1 calibration per year
- No membranes = 2 minutes of annual maintenance
- Compatible with Orbisphere 28 mm flow chamber for a low cost retrofit



SP 510 Hardness Monitor

Maximize your softener cycle time and minimize your regeneration cost.

- Low maintenance—operates unattended for two months
- Low reagent consumption
- Rugged, lightweight, and self-contained

APA 6000 Hardness Analyzer

Accurate, continuous hardness measurement.

- Accurately and continuously measures up to two sample streams (requires sample sequencing kit)
- 0.05 to 10 mg/L for hardness as calcium carbonate
- Makes your water softening system more efficient and less costly



OXYGEN SCAVENGERS

9586sc Oxygen Scavenger Analyzer

Save time on design. Accelerate your installation. Reduce training complexity. Simplify maintenance and operation.

- 0 to 500 ppb hydrazine programmable range
- 0 to 100 ppb carbohydrazide programmable range



pH

pHD™ Digital Differential On-Line pH/ORP Sensors

For moderate- or high-conductive applications ($>10 \mu\text{S}/\text{cm}$) such as monitoring cooling water blowdown, drum boiler water, or raw water treatment.

- Field-proven differential electrode measurement technique offers better accuracy
- Replaceable salt-bridge/protector simplifies maintenance and extends sensor life
- Sensor works with a Hach sc200 or sc1000 Digital Controller



pH / ORP

8362 High Purity Water System

Simple to integrate. Simple to operate.

- Works with sc200 platform
- -1500 to $+1500$ mV ORP range
- 0 to 4 bar (58 psi) pressure range



PHOSPHATE / SILICA

Series 5500sc Phosphate or Silica Analyzer

Lower Maintenance. Less Downtime.

- Only two liters of reagent are required for the analyzer to perform unattended for up to 90 days.
- The industry's only pressurized reagent delivery system eliminates the frequent maintenance associated with pumps.
- Predictive diagnostic tools, including Hach's proprietary Prognosys technology, warning LEDs, and high-visibility notification screens let you avoid unplanned downtime.
- Grab Sample In and Grab Sample Out features allow quick analysis of a grab sample poured into the analyzer, and facilitate taking a sample out of the analyzer to verify in a lab test.



SODIUM

9240 Sodium Analyzer

Low-level sodium measurement in high purity water.

- Automatic reactivation ensures optimum response time and performance; no acid etching required!
- 0 to 10,000 ppb, freely programmable 0 to 200 ppm with Cation-kit option
- Easy to operate and maintain with automatic calibration
- 100 days between reagent changes
- Up to 4 channels to analyze different sample streams on the same instrument
- 9245 Sodium Analyzer, single channel model, also available



TOTAL ORGANIC CARBON

BioTector B3500C TOC Analyzer

- Patented Two-Stage Advanced Oxidation Technology
- Requires maintenance only twice a year



FP 360sc Oil in Water Sensor

- Continuous online monitoring solution
- Low maintenance
- Easy-to-clean sensor

TURBIDITY



SOLITAX® sc Sensors

- Accurate, color-independent measurements
- Self-cleaning device prevents erroneous values
- Easy one-point calibration
- Sensors work with a Hach sc200 or sc1000 Digital Controller

LAB & FIELD ANALYSIS INSTRUMENTS

PHOTOMETRIC AND COLORIMETRIC



DR 3900 Spectrophotometer

- Easy step-by-step testing procedure
- Elimination of false readings
- Accurate results every time



DR 6000 Spectrophotometer

- Accessories for High Volume and High Accuracy Testing Needs
- Guided Procedures and Elimination of False Readings
- Automatically Avoids Errors



DR 900 Colorimeter

- Fastest and simplest water testing for the most demanding field environments
- Field ready in every way possible
- Intuitive user interface
- Simple data communication

ELECTROCHEMICAL

HQd Meters and IntelliCAL™ Probes

Use a single handheld HQd meter and interchangeable IntelliCAL probes for quick, simple, and reliable measurements.

- Designed for your water applications, the Hach HQd smart probes automatically recognize the testing parameter, calibration history, and method settings to minimize errors and set-up time.
- Hach gives measurement flexibility and ease of operation with its HQd portable and benchtop meter and full suite of interchangeable IntelliCAL laboratory and field probes for testing Conductivity, DO, ORP, pH, Ammonia, and many more!



DISSOLVED OXYGEN

ORBISPHERE 3100 Portable Optical Dissolved Oxygen Analyzer

Designed to be used in harsh environments, the Hach ORBISPHERE 3100 is the most rugged portable dissolved oxygen analyzer in the industry.

- Housed in a shock-tested stainless steel IP66 certified enclosure
- Advanced optical technology provides accurate results in seconds
- Brightly colored graphic display keypad, provides clear results in dark, cold or wet environments
- Only 1 calibration per year



SAMPLING



AS950 Peristaltic Samplers

- Lightweight design, low power requirements
- Equipped with standard memory and USB connectivity allowing all data to be logged and transferred via USB drive
- Large, full color display allows intuitive programming to make these critical, remote sampling applications virtually error-free

Titralab® AT1000 Series

- One-touch automatic analyzers
- Pre-set methods that can quickly deliver accurate and reliable results straight from the box



TITRATION

TOTAL ORGANIC CARBON



QbD1200 Laboratory TOC Analyzer

- Annual 90-minute calibration
- Low total cost of ownership
- 95% less carryover

HACH WATER ANALYSIS TOOLS FOR

From Alkalinity to Zinc, Hach offers reagents, and portable, laboratory, and process instruments for more than 100 test parameters—the broadest range for power industry water analysis.

From Alkalinity to Zinc, Hach offers reagents, and portable, laboratory, and process instruments for more than 100 test parameters—the broadest range for power industry water analysis.		LAB & FIELD ANALYSIS										Applications							
		Photometric & Colorimetric					E-Chem		Titrametric	Microbiology	Other Tools								
		Spectrophotometers	Colorimeters	Prepared Reagents	Test Kits & Portable Labs	Test Strips	MP Meters	HQd Meters & Probe	Titralab® AT1000	Microbiology Media	Sigma Samplers	Laboratory Supplies	Water Treatment	Feedwater	Boiler Water	Steam Condensate	Condensate Polishing	Cooling Water	Wet Scrubbers
ANALYSIS PARAMETER	PROCESS INSTRUMENTS & ANALYZERS																		
Alkalinity	• APA 6000 Analyzer																		
Ammonia	• AMTAX sc Analyzer • APA 6000 Analyzer																		
Chloride	• 8810 Ion Selective Analyzer																		
Chlorine	• CL17 Analyzer • CLF10 sc Analyzer • CLT10 sc Analyzer																		
Conductivity / TDS	• Contacting Conductivity Sensors • Inductive (Electrodeless) Conductivity Sensors • 9523 Cation Conductivity Analyzer																		
Copper																			
Dissolved Oxygen	• 410/A1100 EC Sensor • 410/K1100 Sensor • 3100 Portable Analyzer																		
Hardness / Calcium	• SP510 Analyzer • APA 6000 Analyzer																		
Hydrazine, Oxygen Scavengers, Reducing Agents	• 9186 Oxygen Scavenger / Hydrazine Analyzer																		
Iron																			
Microbiology																			

POWER GENERATION

For more information, call
1-800-227-4224 or go to:
hach.com/Power

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		Photometric & Colorimetric					E-Chem		Titrametric	Microbiology	Other Tools									
		Spectrophotometers	Colorimeters	Prepared Reagents	Test Kits & Portable Labs		Test Strips	MP Meters	HQd Meters & Probe	Titralab® AT1000	Microbiology Media	Sigma Samplers	Laboratory Supplies	Water Treatment	Feedwater	Boiler Water	Steam Condensate	Condensate Polishing	Cooling Water	Wet Scrubbers
ANALYSIS PARAMETER	PROCESS INSTRUMENTS & ANALYZERS																			
Organics	<ul style="list-style-type: none">• UVAS sc Sensor• Hach BioTector B3500c• FP 360sc Oil in Water	■											■				■			■
pH/ORP	<ul style="list-style-type: none">• 8362 High Purity pH/ORP• pHD Differential Sensors• 9523 Cation Conductivity Analyzer		■		■	■	■	■			■	■	■	■	■	■	■	■	■	■
Particle Counting	<ul style="list-style-type: none">• 2200 PCX												■	■			■			
Phosphate	<ul style="list-style-type: none">• 5500sc Phosphate Analyzer	■	■	■	■	■								■	■			■		
Silica	<ul style="list-style-type: none">• 5500sc Silica Analyzer	■	■		■							■	■	■	■	■	■			
Sodium	<ul style="list-style-type: none">• 9240 Analyzer• 9245 Analyzer			■									■			■	■			
Total Dissolved Solids (TDS)	<ul style="list-style-type: none">• Contacting Conductivity Sensors• Inductive Conductivity Sensors						■				■		■	■	■	■	■	■	■	■
Total Organic Carbon (TOC)	<ul style="list-style-type: none">• Hach BioTector B3500c• QbD1200 Laboratory Analyzer	■	■	■							■			■	■	■				■
Turbidity, Suspended Solids	<ul style="list-style-type: none">• 1720E Turbidimeter• SOLITAX sc Sensor• Surface Scatter 7 sc• FT660sc Laser Nephelometer				■						■		■	■				■		■

YOUR PARTNER FOR WATER ANALYSIS IN POWER GENERATION

We invite you to take a look at our comprehensive line of product solutions and services. They're the most accurate, dependable, and cost-effective products you can buy.

Hach offers:

- On-line process instrumentation and reagents
- Laboratory equipment, reagents, and supplies
- More EPA-approved methods than any other company
- Portable test kits and field instruments
- Automatic samplers and flow meters
- Local sales and service teams
- Service partnership programs and customized training

For more information, visit hach.com/Power or call toll-free 800-227-4224



Get your problems solved with Hach ServicePlus programs.

Hach Service can help with your maintenance and support challenges whether it is a lack of resources, an instrument that is down, bringing your plant back online, or the need for a predictable budget. We offer a range of service offerings, including the option to extend product warranty for up to 5 years!

hach.com/service | 800-227-4224

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