



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 over 60 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 applications throughout your entire process:

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

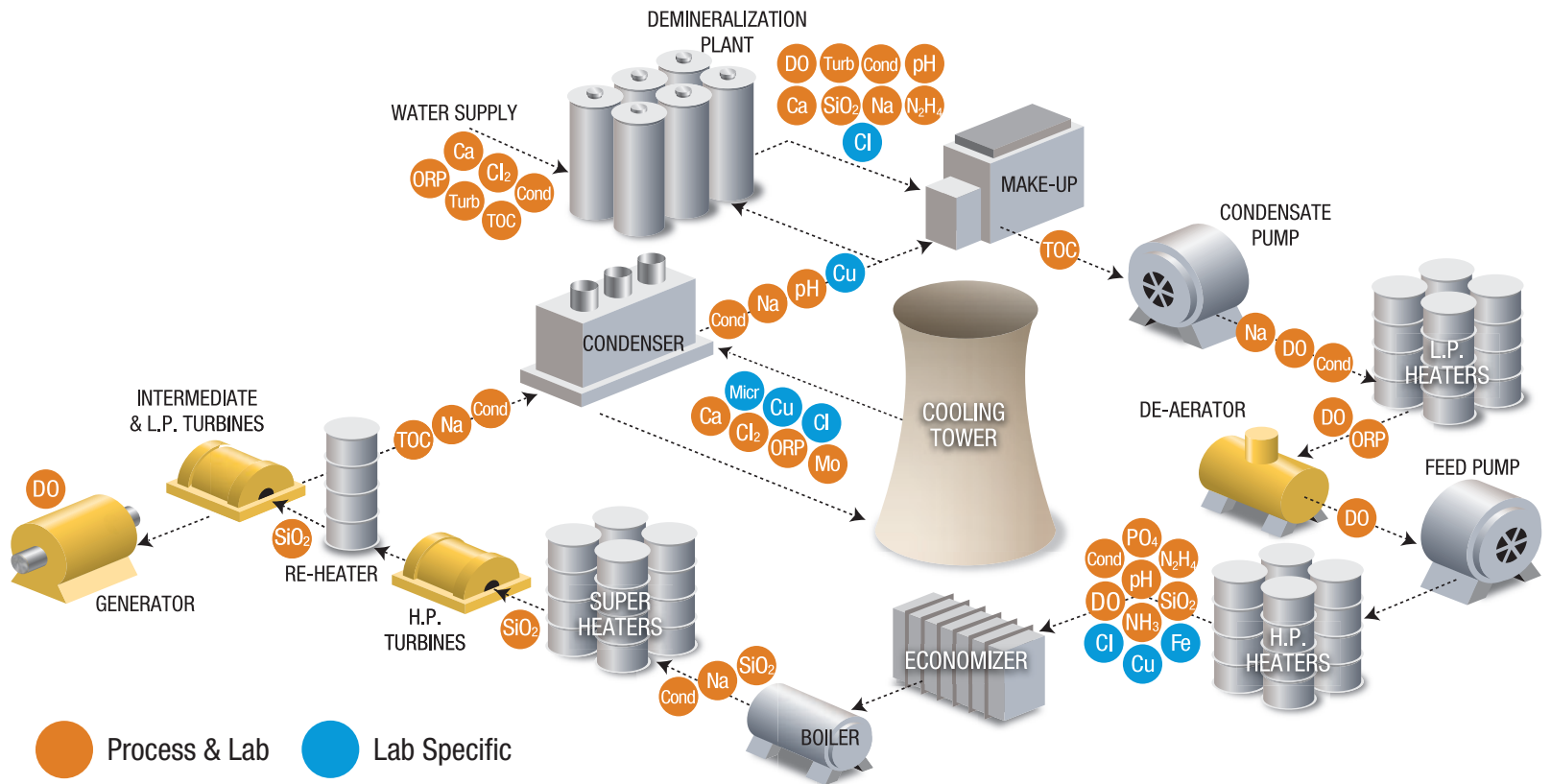
Whatever your water analysis challenge, Hach has the most complete solution including a broad offering of easy-to-maintain on-line instrumentation, accurate laboratory equipment, comprehensive test kits, and high-quality prepared reagents, measuring the broadest range of test parameters in the industry.

Our lifetime technical support and a certified on-site service team are focused on **keeping you on-line, extending the life of your equipment, and driving down your costs.**

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

## Steam Cycle

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

## Cooling Water

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

# Hach Water Analysis Tools for

From Arsenic 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.

ANALYSIS PARAMETER	PROCESS INSTRUMENTS AND ANALYZERS	LAB ANALYSIS																					
		Photometric and Colorimetric					Electro Chem	Titra-metric	Micro	Other Tools	Applications												
		Hach Spectrophotometers	Hach Colorimeters	Hach Prepared Reagents	Hach Turbidimeters	Hach Test Kits & Portable Labs	Hach Test Strips	Hach MP Meters	Hach HQd Meters & Probes	Hach AutoCAT 9000 Titrator	Hach Digital Titrator	Hach Microbiology Media	Hach Sigma Samplers	Laboratory Supplies	Water Treatment	Feedwater	Boiler Water	Steam Condensate	Condensate Polishing	Cooling Water	Wet Scrubbers	Wastewater Treatment	
<b>Alkalinity</b>	<ul style="list-style-type: none"> <li>• APA 6000 Analyzer</li> </ul>					■	■				■			■						■			
<b>Ammonia</b>	<ul style="list-style-type: none"> <li>• AMTAX sc Analyzer</li> <li>• APA 6000 Analyzer</li> </ul>	■	■	■		■	■		■					■			■						
<b>Chloride (Cl)</b>		■				■	■		■		■			■				■		■			
<b>Chlorine (Cl<sub>2</sub>)</b>	<ul style="list-style-type: none"> <li>• Cl17 Analyzer</li> <li>• CLF10 &amp; CLT10 sc Analyzers</li> <li>• 9184 sc Analyzer</li> </ul>	■	■	■		■	■			■	■			■	■					■			■
<b>Conductivity/TDS</b>	<ul style="list-style-type: none"> <li>• Hach/GLI Contacting Conductivity Sensors</li> <li>• Hach/GLI Inductive Conductivity Sensors</li> </ul>							■	■				■	■	■	■	■	■	■	■	■	■	■
<b>Copper</b>		■	■	■		■	■				■			■		■		■					
<b>Dissolved Oxygen (DO)</b>	<ul style="list-style-type: none"> <li>• 410/A1100 EC Sensor</li> <li>• 410/K1100 Sensor</li> <li>• 3100 Portable Analyzer</li> </ul>	■	■	■		■			■		■		■	■	■	■	■						■
<b>Hardness, Calcium (Ca<sup>2+</sup>/Mg<sup>2+</sup>)</b>	<ul style="list-style-type: none"> <li>• SP510 Hardness Analyzer</li> <li>• APA 6000 Analyzer</li> </ul>	■	■	■		■	■				■			■	■					■			
<b>Hydrazine (N<sub>2</sub>H<sub>4</sub>), Oxygen Scavengers, Reducing Agents</b>	<ul style="list-style-type: none"> <li>• 9186 Oxygen Scavenger/ Hydrazine Analyzer</li> </ul>	■														■	■	■					
<b>Iron (Fe)</b>		■	■	■		■	■				■			■		■		■					
<b>Microbiology</b>												■								■			

# Power Generation

For more information,  
call 1-866-450-4248  
or go to:  
[www.hach.com/Power](http://www.hach.com/Power)

ANALYSIS PARAMETER	PROCESS INSTRUMENTS AND ANALYZERS	LAB ANALYSIS										Applications										
		Photometric and Colorimetric					Electro Chem		Titra-metric		Micro	Other Tools		Water Treatment	Feedwater	Boiler Water	Steam Condensate	Condensate Polishing	Cooling Water	Wet Scrubbers	Wastewater Treatment	
		Hach Spectrophotometers	Hach Colorimeters	Hach Prepared Reagents	Hach Turbidimeters	Hach Test Kits & Portable Labs	Hach Test Strips	Hach MP Meters	Hach HQd Meters & Probes	Hach AutoCAT 9000 Titrator	Hach Digital Titrator	Hach Microbiology Media	Hach Sigma Samplers	Laboratory Supplies								
<b>Molybdate</b>	<ul style="list-style-type: none"> <li>MO42 Analyzer</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>							<input type="checkbox"/>				<input type="checkbox"/>					
<b>Organics</b>	<ul style="list-style-type: none"> <li>astroTOC 1950Plus Analyzer</li> <li>UVAS sc Sensor</li> </ul>	<input type="checkbox"/>													<input type="checkbox"/>				<input type="checkbox"/>			<input type="checkbox"/>
<b>pH/ORP</b>	<ul style="list-style-type: none"> <li>8362 sc High Purity pH/ORP</li> <li>pHD Differential Sensors</li> </ul>		<input type="checkbox"/>			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Particle Counting</b>	<ul style="list-style-type: none"> <li>2200 PCX</li> </ul>				<input type="checkbox"/>										<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>		
<b>Phosphate (PO<sub>4</sub>)</b>	<ul style="list-style-type: none"> <li>Series 5000 Analyzer</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>									<input type="checkbox"/>	<input type="checkbox"/>				<input type="checkbox"/>	
<b>Silica (SiO<sub>2</sub>)</b>	<ul style="list-style-type: none"> <li>Series 5000 Analyzer</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>			<input type="checkbox"/>							<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Sodium (Na<sup>+</sup>)</b>	<ul style="list-style-type: none"> <li>9240 Analyzer</li> <li>9245 Analyzer</li> </ul>			<input type="checkbox"/>											<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>		
<b>Total Dissolved Solids (TDS)</b>	<ul style="list-style-type: none"> <li>Hach/GLI Contacting Conductivity Sensors</li> <li>Hach/GLI Inductive Conductivity Sensors</li> </ul>							<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Total Organic Carbon (TOC)</b>	<ul style="list-style-type: none"> <li>astroTOC UV TURBO Analyzer</li> <li>BioTector TOC Analyzer</li> <li>Anatel A1000 TOC Analyzer</li> </ul>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>									<input type="checkbox"/>		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>
<b>Turbidity, Suspended Solids</b>	<ul style="list-style-type: none"> <li>1720E Turbidimeter</li> <li>SOLITAX sc Sensor</li> <li>Surface Scatter 7 sc</li> </ul>				<input type="checkbox"/>		<input type="checkbox"/>						<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>					<input type="checkbox"/>		<input type="checkbox"/>



# Free / Total Chlorine

## CL17 Free/Total Chlorine Analyzer

0.035 to 5 mg/L free or residual chlorine

Dependable, colorimetric DPD free and total chlorine analysis.

- Chlorine analysis independent of pH, temperature, and sample flow
- Unattended operation up to 30 days
- Colorimetric DPD chemistry—fast, reliable, economical

**EPA  
COMPLIANT**



## CLF10 sc and CLT10 sc Free and Total Reagentless Chlorine Analyzers

Hach's answer to reagentless amperometric chlorine measurement.

- Compatible with Hach's "Plug-and-Play" Digital Controllers
- Real time process control
- EPA compliant according to Method 334.0

**EPA  
COMPLIANT**

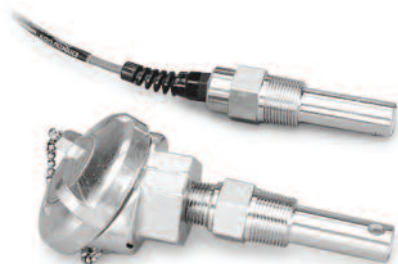
# Conductivity

## 3700 sc Digital Inductive (Electrodeless) On-Line Sensors

200 to 2,000,000  $\mu\text{S}/\text{cm}$

No direct contact between the measuring element and the sample.

- Ideal for demineralizer regeneration
- Rugged, non-fouling design
- Sensor requires a Hach sc200™ or sc1000™ Digital Controller



## Contacting Conductivity/Resistivity On-Line Sensors

Monitor condensate polisher bed efficiency.

- 0.057 to 200,000  $\mu\text{S}/\text{cm}$  range
- High accuracy using Hach's DRY-CAL™ method
- Accurate temperature compensation
- Digital sensors require a Hach sc200 or sc1000 Digital Controller

# 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



**NEW!**



## 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

# Hardness

## 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
- Immediately signals hardness breakthrough to activate regeneration



## APA 6000™ Hardness Analyzer

**0.05 to 10 mg/L for hardness as calcium carbonate**

Accurate, continuous hardness measurement.

- Accurately and continuously measures up to two sample streams (requires sample sequencing kit)
- Makes your water softening system more efficient and less costly

# Phosphate



## Series 5000 Phosphate Analyzer

**Low Range (0-5,000 µg/L) High Range (0-50.0 mg/L)**

Convenient, reliable, and economical phosphate analysis.

- *Low maintenance—analyzer includes auto-calibration and reliable unattended operation*
- *Low reagent consumption and pressurized reagent delivery system reduce maintenance requirements*
- *Continuous auto-zero on each sample analysis prevents interferences*
- *Self-diagnostics alert the operator to any abnormal conditions in the instrument*

# pH

## pHD™ Digital Differential On-Line pH/ORP Sensors

For moderate- or high-conductive applications (>10 µS/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 requires a Hach sc200 or sc1000 Digital Controller*



# pH / ORP



## 8362 sc High Purity Water System

The ultimate in accurate and stable pH/ORP measurement.

- *Complete system for simple and fast operation*
- *Self-pressurizing electrodes*
- *Accurate temperature measurement*



## Series 5000 Silica Analyzer

The industry standard for silica analysis.

- Low reagent consumption and pressurized reagent delivery system reduce maintenance requirements
- Sample failure alarm automatically shuts down and restarts analyzer when sample flow is interrupted
- Continuous auto-zero on each sample analysis prevents interferences
- Self-diagnostics alert the operator to any abnormal conditions in the instrument



# Sodium

## 9240 Sodium Analyzer

**0 to 10,000 ppb, freely programmable 0 to 200 ppm with Cation-kit option**

Low-level sodium measurement in high purity water.

- Automatic reactivation ensures optimum response time and performance; no acid etching required!
- 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

## SOLITAX® sc Sensors

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

# Turbidity



# Spectrophotometers

**Hach, the leader in spectrophotometers for over 60 years, offers simple, accurate, integrated instrument and chemistry solutions.**



## DR 2800™

- Highly customizable for lab and field analysis
- Optimal accuracy, precision and error elimination with TNTplus™ chemistries

**NEW!**



## DR 3900™

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



## DR 5000™

- UV range measurement with advanced scanning function for sample profiling, plus high volume analysis with optional accessories.
- Optimal accuracy, precision and error elimination with TNTplus chemistries

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# Colorimeters

## Pocket Colorimeter™ II

- Measures one or two parameters
- Waterproof, IP67 rated
- Logs last 10 data points with measurement time
- Rugged
- Backlit display



## DR/800 Series

- Easy-to-use software, pre-programmed methods, and prepared reagents
- Datalogging capabilities
- Rugged, waterproof, hand-held, multi-parameter analysis!
- Choose from 3 models

## HQd Meters & IntelliCAL™ Probes

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

- Hach has developed a customized electrochemistry solution for water quality that takes the guesswork out of your 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!



## Hach MP Meters

**Single-handed operation for clean water applications, thanks to their probeless design.**

- Multi-parameter measurement without probes
- Accurate results at the push of a button
- Fill the cell cup, push a parameter key, and take the reading; it's that simple

# Turbidimeters

## 2100Q Portable Turbidimeter

**Easiest calibration and verification with accurate results every time!**

The 2100Q Portable Turbidimeter offers a unique combination of advanced features, such as easy calibration and simplified data transfer, and measurement innovation for rapidly settling samples, giving you confidence you're getting accurate results every time.

- Easy on-screen assisted calibration and verification
- Simple data transfer
- Accuracy for rapidly settling samples
- Convenient data logging





# Titration

## AutoCAT™ 9000 Titrator

**Revolutionary instrument for automatic amperometric titrations.**

- Automatic calculation of analyte concentration
- Automatic "hands-free" operation
- Easy-to-use interface
- Real-time graphics and graphic print output
- Automatic archiving of results
- Titrant calibration
- Electrode cleaning
- Greater accuracy and precision than manual titrations



# Sampling



## Sigma Portable Sampler with SD900 Controller

**Your sampling solution for ease of use, reliability and low maintenance.**

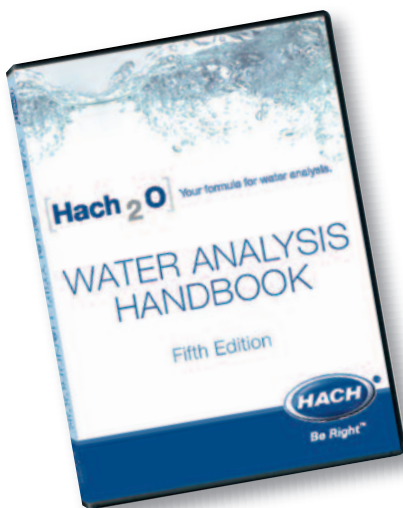
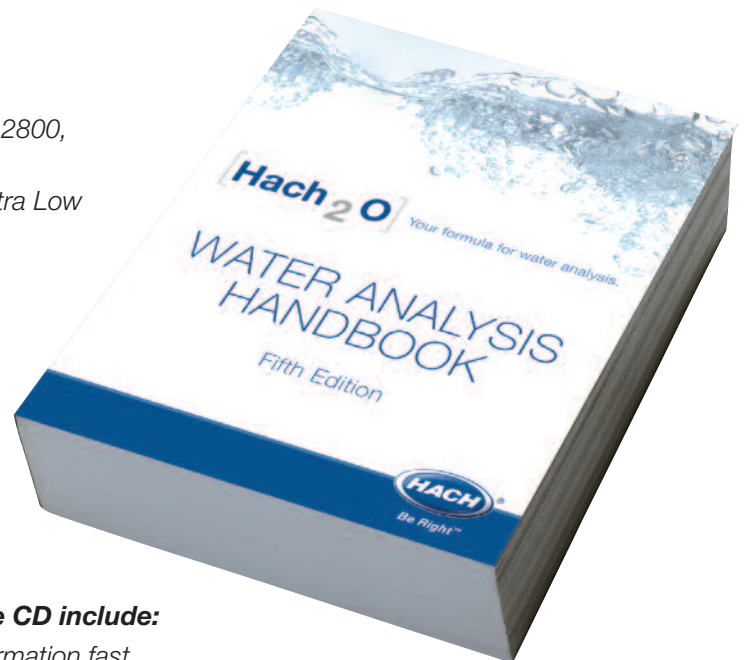
- Obtain and preserve a repeatable sample volume at a timed interval or after a predetermined volume of flow
- Available in a portable, refrigerated or all-weather refrigerated configuration to meet your sampling needs
- Large universal icon keys make set up simple, reducing program errors
- Improved pump means fewer clogs and exceptional performance, even at heights up to 25 feet
- 20x longer pump tubing life than other samplers means less down time and lower maintenance costs

## Simplify Your Water Analysis Process: The Fifth Edition of the *Water Analysis Handbook* from Hach

The Fifth Edition of the *Water Analysis Handbook* is the result of more than 60 years of research and method development. With over 1,700 pages of illustrated, step-by-step instructions, this is your comprehensive source for water analysis procedures. From instruments to reagents, meters to probes, media to general lab supply, this handbook outlines everything you need to perform each procedure, simplifying the water analysis process.

### New in the 5th edition:

- Universal procedure manual for DR/2400, DR/2500, DR 2700, DR 2800, and DR 5000
- More procedures and methods for Power Generation, including Ultra Low Range Chlorine, Copper, Hardness, Iron, Manganese, and Silica
- Easier-to-follow Microbiology section
- HQd E-Chem procedures now included
- Expanded list of reagents and apparatus for easy reordering



### Key features of the interactive CD include:

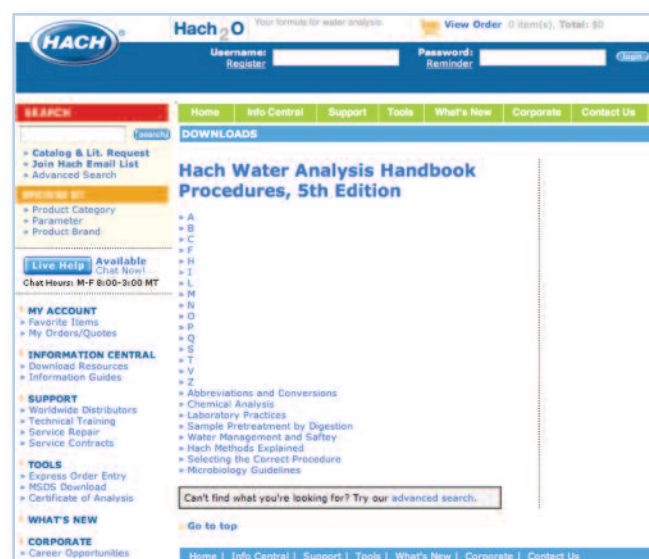
- Search feature to help find information fast
- Mouseover product numbers to see product images
- Print out specific Hach methods
- Ready to purchase? Click-thru to Hach.com by clicking on the product number

**To purchase the 5th Edition hard copy  
or request the FREE interactive CD,  
call: 866-450-4248 or visit: [www.hach.com/wah](http://www.hach.com/wah)**

**You can also access the FREE Online Edition at: [www.hach.com/wah](http://www.hach.com/wah)**

### Extra features of the online edition include:

- Simple alpha listing by parameter
- Click-thru to all eight major sections of the handbook—from “Abbreviations and Conversions” to “Selecting the Correct Procedure”
- Powerful and fast Advanced Search feature



# Hach Service Program



## What is the plus in Hach ServicePlus?

- **Comprehensive coverage**—reduces costs and improves performance for the life of the instrument by providing flexible, end-to-end support options to meet your needs and budget.
- **Fast local response**—over 250 nationwide Hach representatives guarantee maximum uptime by providing a local presence and rapid response whenever and wherever you need it.
- **Unrivalled experience**—connects you to Hach's total organizational expertise, giving you complete access to the most experienced fields and factory service representatives in the industry.

Call: 866-450-4248, ext. 6178 or visit [www.hach.com/Service](http://www.hach.com/Service)





For more information, visit [www.hach.com/Power](http://www.hach.com/Power) or call toll-free 866-450-4248.



*Be Right™*

# 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 [www.hach.com/Power](http://www.hach.com/Power) or call toll-free 866-450-4248.

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**Be Right™**