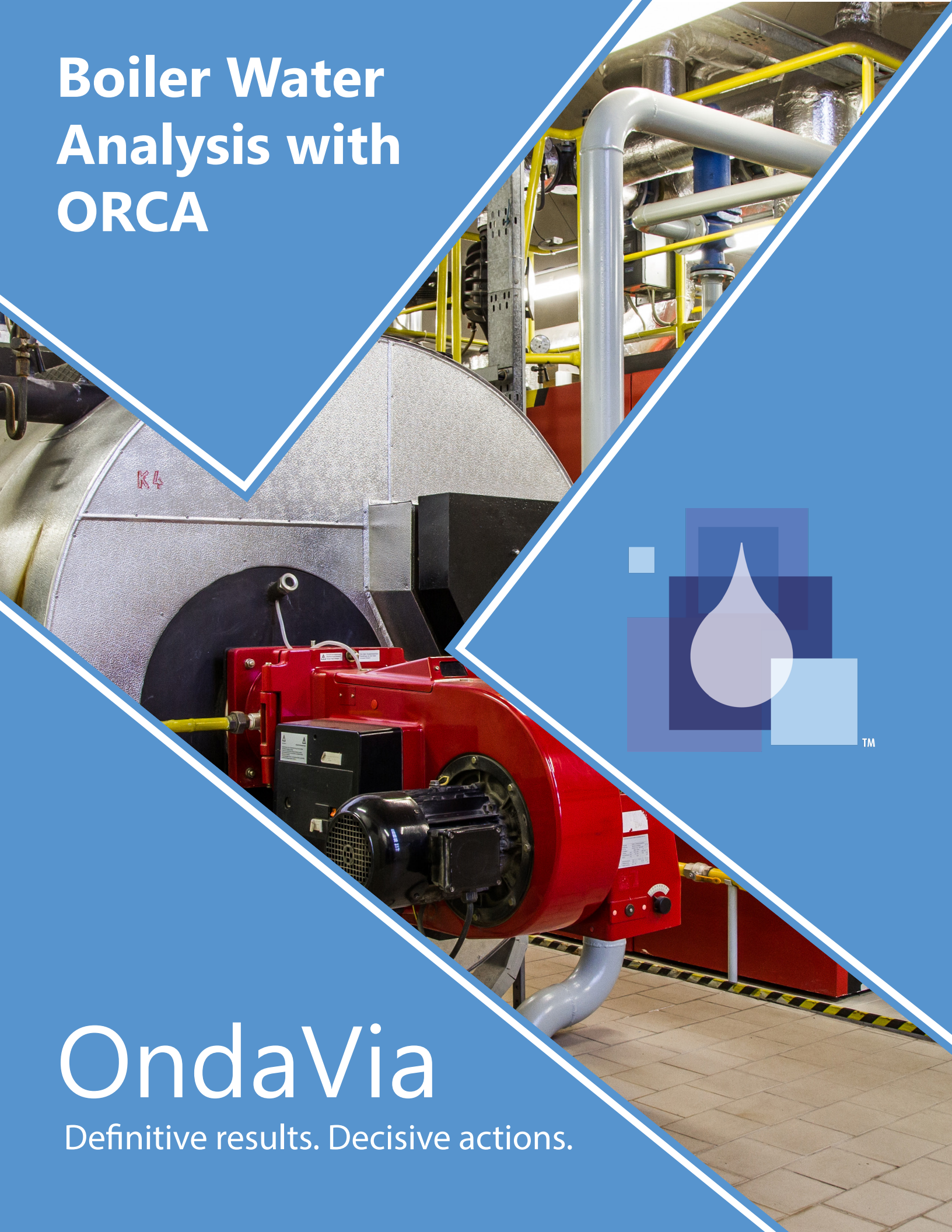
Boiler Water Analysis with ORCA



OndaVia™

Definitive results. Decisive actions.

Brochure

Quantitative Raman Spectroscopy

OndaVia was founded with the mission of making laboratory-grade chemical analysis fast and easy. Our Quantitative Raman Spectroscopy (QRS™) methods enable precise water analysis across hundreds of analytes and industries. As we approach our fourteenth year, we help customers world-wide perform measurements in complex samples across industries as diverse as oil & gas, food & beverage, environmental, and drinking water.

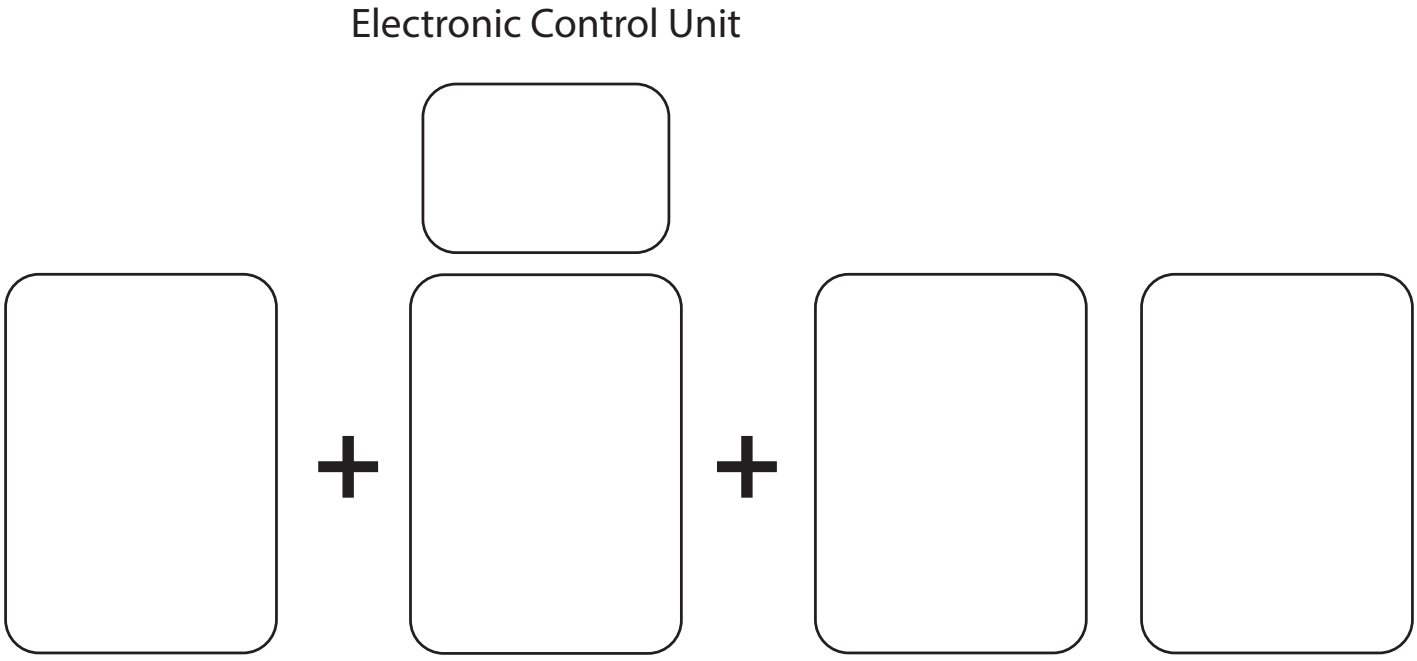
Our unique, powerful products can measure many water components in the most complex sample matrices. When you are trying to optimize a process, protect an asset, or make decisions about material quality, time counts. Why wait for the lab? Get the definitive results you need to take decisive action.

Brochure

OndaVia Raman Controller Automation

The OndaVia Raman Controller with Automation (ORCA) platform is a fully-automated, semi-continuous analysis platform that builds upon our proprietary and patented QRS methods. This system consumes large-volume reagent cassettes, performing all the mixing and sample preparation steps needed for laboratory-grade analysis. All OndaVia methods can be adapted to the ORCA platform.

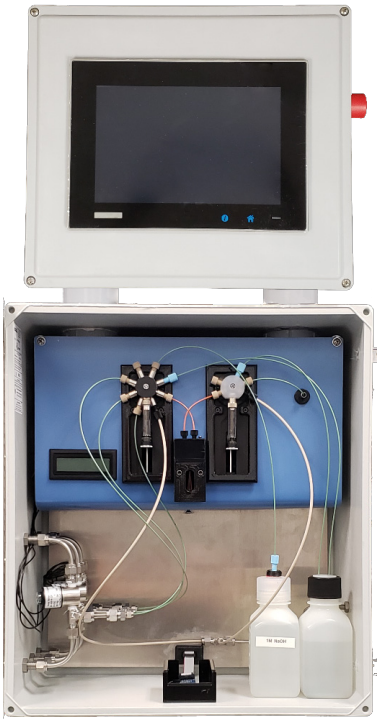
The ORCA-200 Series instruments have two main components: an electronic control unit and a fluidic analysis unit. The control unit contains a Windows®-based computer and Raman spectrometer. One control unit can be connected to multiple fluidic units, each containing syringe pumps, sensors, and electronics to perform the sample preparation steps.



Brochure

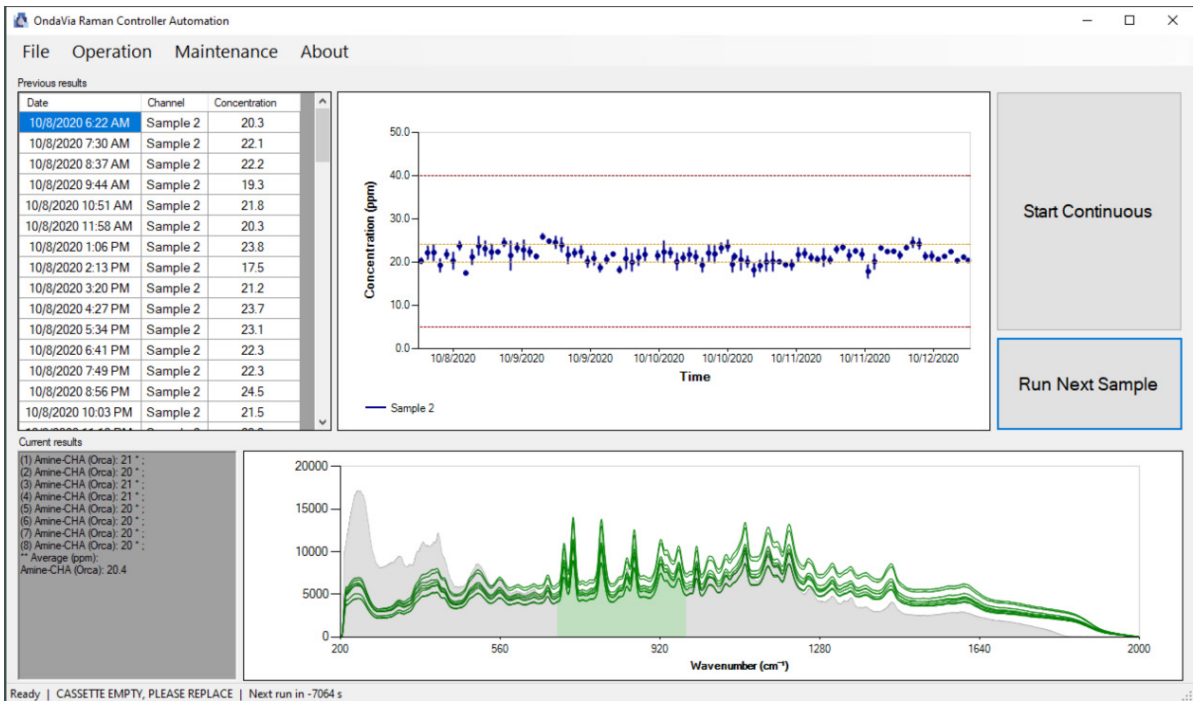
Boiler Corrosion Control

Minimizing corrosion is an essential maintenance process in boiler water systems. Corrosion leads to pitting and thinning of metal within the boiler system, which will eventually lead to leaks and system failure. These costly outcomes can be avoiding through proper boiler water chemistry.



During operation, carbon dioxide in the air will dissolve in the boiler water. This dissolved CO_2 causes the water system to become acidic: the pH decreases. In conjunction with oxygen in the water, the result is a corrosive environment that affects the boiler system.

One common approach to controlling the pH is the addition of volatile amines. Amines are basic, increasing the system pH. Alternatively, film forming amines



can create coatings on metal surfaces that protect the system from a corrosive environment. Proper dosing of either amine is necessary for system control and for keeping maintenance costs reasonable.

Commonly-used amines for boiler water corrosion control.

		CAS	LOD
Cyclohexylamine	CHA	108-91-8	<1-ppm
Monoethanolamine	MEA	141-43-5	<1-ppm
Morpholine	MORPH	110-91-8	<1-ppm
Diethylaminoethanol	DEAE	100-37-8	2-ppm
Monoisopropanolamine	MIPA	78-96-6	2-ppm
Aminomethyl propanol	AMP	124-68-5	2-ppm

Maintaining proper dosing is best controlled by monitoring the amine levels in the boiler water. Monitoring amines in boiler water is essential for corrosion control, pH stabilization, efficiency improvement, contamination prevention, safety assurance, compliance with regulations, and effective maintenance planning. Regular testing and analysis of amine levels enable operators to optimize boiler performance, extend equipment life, and ensure safe and reliable steam generation.

OndaVia's Amine Analysis ORCA system is designed for measuring and monitoring amines at levels found in boiler water systems. Our products can easily and simply monitor all common volatile and film forming amines; see the cor-

responding table. This system provides automated, on-line, semi-continuous amine monitoring capabilities in your boiler water systems. The measurement provides information on specific amines—not just a total amine level—information that becomes more important when amine mixtures are used.

In one example deployment, our cyclohexylamine analysis method is used in a central utility plant that provides steam for humidification across a large medical campus. Not only is it essential to maintain amine levels at a minimum level for cost control, but also to meet regulatory requirements for amine concentration in room air after humidification. This requirement is essential for protecting human health and for maintaining the research environment.

QRS for Amines

Amine analysis via QRS is simple yet powerful. Once the user installs an amine analysis cassette containing the necessary reagents in the fluidic unit, the ORCA system is ready for automated amine analysis. The sample is first mixed with an internal standard—typically an isotopologue of the amine being measured. This mixture provides a reference signal that eliminates false negatives and improves detection limits. A small amount of gold nanoparticles is added to the mixture to increase the Raman signal from the amines. This process makes the measurement specific to amines in solution over other potential water constituents.

OndaVia's QRS methods allow for an adjustable detection range over an order of magnitude down to the limit of detection. With a software change, the quantity of internal standard can be adjusted, effectively changing the measurement range. If the user requires more accuracy at the low end of a range, the mixture ratios can be adjusted to optimize performance as needed.

Definitive results. Decisive actions.

Headquarters

OndaVIa, Inc.
26102 Eden Landing Rd. Suite 1
Hayward, CA, 94545
+1-510-576-0476

European Office

OndaVia B.V.
Marconistraat 16
Rotterdam
NETHERLANDS

Online

Web: www.ondavia.com
Twitter: @ondaviainc
Email: info@ondavia.com