

NEWSLETTER

July, 2026



Rapid Elemental Intelligence with RDE-OES Spectrometers: From Used Oil Analysis to Predictive Maintenance

July 2026 – When iron levels begin to rise or unexpected bearing wear is suspected, timely elemental analysis becomes critical for preventing costly equipment failures. **Rotating Disc Electrode Optical Emission Spectrometers (RDE-OES)** deliver rapid multi-element analysis of wear metals, contaminants, and additive elements at ppm (mg/kg) levels in typically less than 30 seconds, providing the actionable data needed for effective condition monitoring and predictive maintenance.

The **QualiRDE™** family of RDE-OES spectrometers ranges from compact benchtop systems to advanced dual-optic platforms, delivering fast, direct oil analysis with minimal sample preparation and compliance with **ASTM D6595** and **ASTM D6728**. Designed for laboratories supporting industrial, power generation, mining, marine, transportation, and aviation applications, QualiRDE™ helps maintenance professionals improve asset reliability and reduce unplanned downtime.

Product Highlight

Ultra Compact RDE OES Oil Spectrometer

QualiRDE™ 3000



Feature/Advantages:

- **Smallest Footprint:** 400 mm focal-length benchtop system for space-limited laboratories and mobile testing.
- **Sub-1 ppm Detection:** 190–800 nm CCD detector for early wear metal identification.
- **<30 s Analysis:** Simultaneous measurement of 24+ elements from a single 2 mL oil sample.
- **Direct Oil Analysis:** No argon, solvents, or sample pretreatment required.



Qualitest USA

Toll-Free: 1.877.884.TEST (8378) | Fax: 954.697.8211
E-mail: info@qualitest-inc.com

Corporate Address: 8201 Peters Rd., #1000,
Plantation, FL 33324, USA.



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Industrial RDE OES Oil Analysis Spectrometer

QualiRDE™ 800



Feature/Advantages:

- **500 mm Paschen-Runge optics:** Stable wavelength registration for highly reproducible analysis.
- **190–800 nm CCD detector:** Simultaneous measurement of wear metals, contaminants, and additives.
- **38°C ±0.1°C Optical Control:** Maintains calibration stability for consistent daily performance.
- **Automatic Electrode Grinder:** Ensures repeatable electrode conditioning before every test.
- **Integrated Analysis Software:** Instrument control, trend analysis, LIMS connectivity, and report generation.

High-Performance RDE OES Oil Spectrometer

QualiRDE™ 800H



Feature/Advantages:

- **Precision Digital Arc Source:** Software-controlled arc frequency, voltage, and gap for consistent instrument-to-instrument performance.
- **Optimized Multi-Matrix Analysis:** Stable results across lubricants, hydraulic oils, coolants, fuels, and water-based fluids.
- **Patented Solid-State Arc Design:** Eliminates mechanical timing drift for improved stability and reduced maintenance.
- **Extended Elemental Panel:** Simultaneous analysis of up to 32 elements, including wear metals and additives.
- **Advanced Spectral Processing:** Automatic interference correction and background subtraction for complex oil matrices.



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Laboratory RDE OES Oil Spectrometer

QualiRDE™ 1000



Feature/Advantages:

- **All-in-one Platform:** Analyzer, PC, graphite grinder, arc source, and software in one compact system.
- **500 mm Paschen-Runge Optics:** High-resolution multi-element analysis with excellent wavelength stability.
- **Designed for Field Deployment:** Ideal for marine and remote applications—no argon, cooling water, or chemical reagents.
- **Direct Sample Testing:** Analyze oil without dilution, acid digestion, or ash preparation.
- **Integrated Analysis Software:** Real-time calibration, element identification, interference correction, trending, and maintenance diagnosis.

QualiTrivia

Rotating Disc Electrode (RDE) optical emission spectrometry was developed in the early 1970s **specifically to solve a problem** that ICP-OES could not: **How to analyze used engine oil rapidly in the field without sample digestion.**

The rotating graphite disc picks up a thin film of oil as it turns through the sample cup; a graphite electrode then strikes an arc across the oil film, exciting the metal atoms to emit characteristic light. The entire excitation and measurement sequence — for 24 or more elements simultaneously — takes under 30 seconds from sample loading.

ASTM D6595 (the primary standard) was first published in 2000, but the RDE technique it codifies had been in wide military and commercial aviation use for more than two decades by that point, making it one of the most field-validated elemental analysis methods in tribology.



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Which QualiRDE™ System Matches Your Oil Analysis Lab?

BEST FOR	PRODUCT TAGS	RECOMMENDED MODEL	WHY IT'S THE RIGHT CHOICE
Routine laboratory oil analysis, quality control, and condition monitoring.	Laboratory	QualiRDE™ 1000	Compact benchtop RDE-OES spectrometer for routine laboratory testing. Delivers direct multi-element oil analysis in approximately 30 seconds with no argon gas or sample pretreatment, making it ideal for commercial laboratories, universities, and industrial QC laboratories.
Industrial laboratories, manufacturing plants, and predictive maintenance programs.	Industrial Laboratory	QualiRDE™ 2000	Designed for demanding industrial environments, it combines laboratory-grade performance with rapid, direct oil analysis to improve maintenance efficiency and maximize equipment uptime.
On-site maintenance, production lines, and field laboratories requiring immediate results.	On-Site	QualiRDE™ 3000	Designed for portability without compromising performance, it provides rapid, direct multi-element oil analysis wherever it's needed. Its rugged, compact design and integrated industrial PC enable real-time, on-site decision-making, reducing reliance on external laboratories, minimizing downtime, and maximizing operational efficiency.
Secure in-house elemental analysis for organizations where data confidentiality is essential.	Secure	QualiRDE™ 800	Designed for organizations that require complete control of analytical data. High-performance RDE-OES technology enables confidential, in-house oil analysis for mission-critical assets in defense, aerospace, government, nuclear, and other high-security industries.
Advanced laboratories requiring maximum analytical performance and high-resolution analysis.	Flagship	QualiRDE™ 800H	The flagship QualiRDE™ model featuring a high-resolution optical system for enhanced sensitivity, accuracy, and repeatability. Ideal for advanced research, forensic investigations, failure analysis, and demanding industrial reliability programs.

Why Choose Qualitest for Your RDE-OES Oil Analysis?

No Argon. No Solvents. No Pretreatment: All QualiRDE™ models test oil directly from the sample cup — eliminating argon gas supply costs, hazardous solvent waste streams, and the sample preparation time that add complexity and cost to ICP-based programs.

Built for Global Compliance: Every QualiRDE™ system is designed and validated to ASTM D6595, ASTM D6728, and associated international standards — so your wear metal data is defensible in any regulatory, fleet, or OEM audit.

Scalable Lab Economics: Qualitest's Best Price Guarantee and QualiFinance flexible payment program mean commercial oil labs, fleet maintenance operations, and independent testing facilities can access professional RDE-OES capability at every budget level.

Worldwide Technical Support: A central service hub backed by a global QualiService authorized network ensures QualiRDE™ instruments stay calibrated, maintained, and supported wherever your laboratory is located.

Ready to Upgrade Your Oil Analysis Capabilities?

Qualitest's QualiRDE™ lineup is built for repeatable, standards-based elemental oil analysis — helping predictive maintenance programs, commercial oil labs, and fleet managers detect machine wear earlier, with faster results and less operator dependency.

Explore the full lineup here: <https://www.worldoftest.com/rde-oes-elemental-analyzer/>

For expert guidance on selecting the right model for your throughput, compliance requirements, and reporting needs, contact: sales@qualitest-inc.com

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