

RDE-OES ELEMENTAL ANALYZER - TORONEA™ 300



RDE-OES Elemental Analyzer - ToronEA™ 300, also known as an oil analysis spectrometer or atomic emission spectrometer, operates on the principle of atomic emission spectroscopy. It uses a graphite rotating disk electrode light source to measure the elemental composition of oils.

The system is built with a high-energy electric arc excitation power supply, a rotating disk electrode device, a Paschen-Runge spectrometer, a high-precision CCD detector, an electronic control system, and advanced computer analysis software.

The RDE-OES Elemental Analyzer is designed for testing new and used lubricating oils, hydraulic oils, light fuel oils (gasoline and diesel), heavy oils, lubricating greases, antifreeze, industrial and domestic water, and steam turbine condensate. It is widely applied in military, aviation, marine, land transportation, steel production, mining, power generation, and commercial oil testing laboratories.

FEATURES

Key Features

- Patented digital arc light source with solid-state excitation delivers stable current frequency output, eliminating the need for periodic cleaning or error correction.
- High-resolution solid-state CCD optical system with 3,648 pixels (8 × 200 µm pixel size) enables detection of more effective spectral intensities.
- Windows-based spectral analysis software (compatible with Windows 7 and Windows 10) integrates instrument control, data management, and both qualitative and quantitative analysis.
- Compact single-station unit with built-in computer system and motorized grinder, making it easy to transport.
- Short warm-up time with high reliability, ideal for use in shipboard environments.
- Requires no argon, oxygen, or chemical solvents; oil samples can be tested directly without pretreatment.
- Built-in printer and electrode grinder for convenient operation.

Performance Index

- Simultaneous analysis of 24 elements (Al, Ba, B, Ca, Cd, Cr, Cu, Pb, Mg, Mn, Mo, Ni, P, Si, Ag, Na, Sn, Ti, V, Zn, Fe, K, Li, Sb), precisely identifying wear metals, contaminants, and additives in oil samples.
- Detection range:
 - 0–1000 ppm for 19 elements (Al, B, Cd, Cr, Cu, Pb, Mn, Mo, Ni, Si, Ag, Na, Sn, Ti, V, Fe, K, Li, Sb).
 - 0–6000 ppm for 5 elements (Ba, Ca, Mg, P, Zn).
- High-performance CCD optical system.
- Dual optical configurations: Rowland circle optics and C-T optical path.
- Dual fiber-optic signal input for improved accuracy.
- No requirement for auxiliary gases or chemical reagents; oil samples can be tested directly without pretreatment.
- Optical focal length: 400 mm.
- Spectral range: 190–800 nm.
- Optical system temperature control at 38°C ± 0.1°C, ensuring stable and accurate results.
- Rapid testing speed with analysis completed in under 30 seconds.
- High sensitivity with a detection limit below 1 ppm.
- Small sample volume requirement: less than 2 mL.
- Built-in graphite electrode grinder.
- Optional built-in printer.
- Integrated industrial control computer for convenient on-site operation.
- Exhaust structure designed to prevent cross-contamination.
- Proprietary spectral analysis software with expert system functions, including data management, trend analysis, and predictive diagnostics—supporting equipment condition assessment, maintenance planning, and operational reliability.

TECHNICAL SPECIFICATIONS

Model	ToronEA-300
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Detector	CCD Detector
Focal Length	400 mm
Spectral Line Range	200-800 nm
Test Time	Not more than 30 seconds
Dimensions	550 x 330 x 430 (Length x Width x Height)



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