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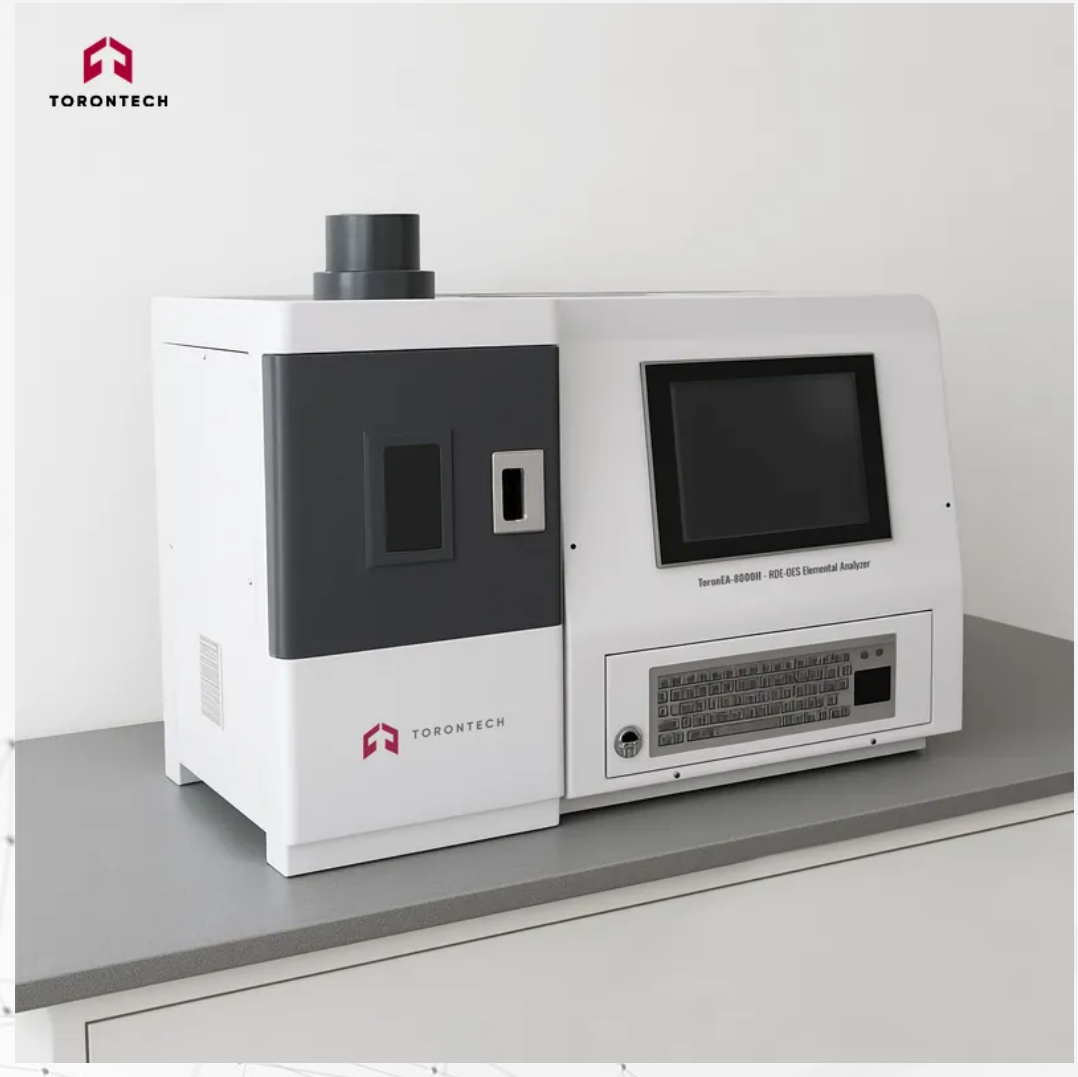

RDE-OES ELEMENTAL ANALYZER - TORONEA™ 8000H

RDE-OES Elemental Analyzer - ToronEA™ 8000H

The RDE-OES elemental analyzer ToronEA™ 8000H gives laboratories and maintenance programs a high-stability option for measuring wear metals, contaminants, and additive elements in oils and fuels. Torontech built the ToronEA™ 8000H on the same rotating disc electrode platform as the rest of the series, then added a constant-temperature optical system to hold spectral output steady from the first test of the day to the last. That stability translates into repeatability within ±10%, a figure labs can rely on when tracking small changes in element concentration over time.

The instrument reads oil samples directly from the cup, with no gas, dilution, or chemical reagents needed to trigger the excitation spark. A single test cycle finishes in 30 seconds and covers 32 trace elements simultaneously, giving labs a wider standard element panel than entry-level RDE-OES instruments typically offer. Detection limits stay at 1 ppm across that panel, supporting trace-level screening in addition to routine wear metal monitoring.

The ToronEA™ 8000H suits commercial oil testing laboratories, power generation facilities, and any operation where test-to-test consistency matters as much as raw detection sensitivity. Labs running comparative trend analysis across many samples benefit most from the tighter repeatability the temperature-controlled optics deliver.

APPLICATIONS

RDE-OES Elemental Analyzer - ToronEA-8000H

RDE-OES Elemental Analyzer - ToronEA™ 8000H Applications

The ToronEA™ 8000H fits testing programs that depend on consistent, repeatable elemental data across large sample volumes.

- Commercial Oil Testing Laboratories: supports high-volume, multi-client testing where repeatable results across sample batches directly affect report accuracy
- Electric Power Generation: tracks wear metals and additive depletion in turbine and generator lubricants as part of scheduled predictive maintenance
- Military and Government Fleets: provides standardized, repeatable elemental data for fleet-wide condition monitoring programs across ground, air, and marine equipment
- Aerospace and Space Ground Systems: screens hydraulic and lubricant systems for propulsion and ground support equipment where consistent trace-level detection matters
- Transportation and Marine Fleets: monitors engine, transmission, and hydraulic oils across large fleets to catch developing wear trends before they escalate
- Mining and Heavy Industry: analyzes lubricants from continuously operating equipment where consistent, comparable readings support long-term trend tracking
- Research and Reference Laboratories: benefits from stable, repeatable output when building calibration references or validating other testing methods

Standards

The ToronEA™ 8000H tests to internationally recognized rotating disc electrode atomic emission spectrometry methods, giving laboratories results that hold up to third-party scrutiny.

- ASTM D6595 - Standard Test Method for Determination of Wear Metals and Contaminants in Used Lubricating Oils or Used Hydraulic Fluids by Rotating Disc Electrode Atomic Emission Spectrometry
- ASTM D6728 - Standard Test Method for Determination of Contaminants in Gas Turbine and Diesel Engine Fuel by Rotating Disc Electrode Atomic Emission Spectrometry[4]

FEATURES

RDE-OES Elemental Analyzer - ToronEA™ 8000H Key Features

The ToronEA™ 8000H prioritizes measurement consistency for labs running high sample volumes or long-term trend analysis.

- Constant-Temperature Optical System: holds the optical chamber at a fixed setpoint to minimize spectral drift across long testing sessions
- ±10% Repeatability: delivers consistent, comparable results test after test, supporting reliable trend tracking across large sample sets
- 32-Element Simultaneous Analysis: reads a wider standard element panel in a single test cycle than entry-level RDE-OES instruments typically cover
- 1 ppm Detection Limit: identifies trace-level wear metals and contaminants alongside standard wear metal screening
- 30-Second Test Cycle: completes a full elemental scan quickly enough to support high sample throughput without a backlog
- Reagent-Free Direct Testing: analyzes oil samples straight from the cup, with no gas or chemical reagents needed for excitation
- International Standards Compliance: tests to ASTM D6595 and ASTM D6728, supporting defensible results for labs serving multiple industries

THEORY & METHOD

Theory and Method

Rotating disc electrode atomic emission spectrometry measures elemental composition by generating a spark discharge between a rotating graphite disc and a fixed counter electrode. The disc dips into the oil sample and carries a thin film into the spark gap on each rotation, so every discharge vaporizes fresh material instead of repeatedly striking the same spot on

the sample surface.

The spark energizes atoms and ions in the oil film, pushing their electrons to higher energy states. As those electrons return to their original state, they emit light at wavelengths specific to each element. A Paschen-Runge optical structure mounted on a Roland circle separates this light across a 500 mm focal length, positioning each element's characteristic wavelength at a fixed point on the detector array.

The ToronEA™ 8000H adds one refinement to this process: a constant-temperature system holds the optical chamber at a fixed setpoint regardless of ambient conditions or how long the instrument has been running. Optical component dimensions and diffraction gratings shift slightly with temperature, which can drift a spectral line's position over the course of a testing session. Locking chamber temperature keeps that drift out of the measurement, which is the main reason the ToronEA™ 8000H holds repeatability within ±10% across extended testing runs.

TECHNICAL SPECIFICATIONS

RDE-OES Elemental Analyzer - ToronEA™ 8000H Technical Specifications

Parameter	Specification
Optical Structure	Paschen-Runge structure, Roland circle mount
Optical Focal Length	500 mm
Spectral Range	190-800 nm

Detector	CCD
Detection Limit	1 ppm
Repeatability	±10%
Test Cycle Time	30 seconds
Detectable Elements	32 elements simultaneously (24 standard elements, expandable)
Measuring Range	0-6,000 ppm
Operating Temperature	0°C to 55°C
Optical System Temperature Control	Constant-temperature system
Power Source	AC 220V ±10%, 50/60 Hz
Dimensions (L × W × H)	860 × 410 × 620 mm
Weight	Approximately 97 kg

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