TORONTECH

WEAR PARTICLE ANALYSIS EQUIPMENT FOR PETROLEUM OILS

Petroleum Wear Particle Analysis Equipment | Ferrous, Elemental & Fluid Cleanliness Testing

Petroleum wear particle analysis equipment covers the instruments used to detect, quantify, and diagnose wear debris in in-service lubricants, hydraulic fluids, and greases. Torontech's range spans four test methods: magnetic particle quantification, ferrography, elemental spectrometry, and laser particle counting. Each method follows its own governing ASTM or ISO standard. Oil analysis laboratories, reliability engineers, and maintenance teams rely on this equipment to catch abnormal wear before it causes unplanned downtime.

Why Choose Torontech for Your Petroleum Wear Particle Analysis Equipment

Torontech supplies testing and measurement equipment to laboratories and manufacturers across North America and worldwide, backed by responsive technical support and calibration service. The Petroleum Wear Particle Analysis Equipment range is built for reliable, standards-driven results, so you can standardize on one supplier as your testing needs grow. Our team helps you match the right configuration to your samples, applicable standards, and throughput, then supports you through installation and beyond.

Request a Quote

Tell us which fluids you test, your sample throughput, and whether you need trend screening, diagnosis, or both, and we will recommend the right combination of instruments. Contact the Torontech team for pricing, specifications, and lead times.

APPLICATIONS

Applications

Petroleum wear particle analysis equipment supports reliability and maintenance programs anywhere lubricant or hydraulic fluid condition affects uptime. The right instrument, or combination of instruments, depends on whether the goal is trend screening, root cause diagnosis, or fluid cleanliness verification.

- Power Generation & Turbine Maintenance: tracks ferrous wear metals and additive depletion in turbine and gearbox lubricants to plan outages before a failure occurs.
- Mining, Construction & Heavy Equipment: monitors hydraulic and engine oils across large fleets, where unplanned downtime carries a high cost per incident.
- Marine, Aerospace & Defense: verifies fluid cleanliness and wear metal trends in hydraulic systems used on aircraft, vessels, and defense platforms.
- Commercial Oil Analysis Laboratories: runs PQ screening, ferrography, RDE-OES, and particle counting as a standard panel for client samples.
- Industrial Manufacturing: checks hydraulic press and production-line fluids for contamination that shortens component life.

TECHNICAL SPECIFICATIONS

Petroleum Wear Particle Analysis Equipment Range

The range covers four distinct test methods rather than variations on one instrument, so buyers typically combine two or more to build a complete monitoring and diagnostic workflow.

Particle Quantifier Instrument (ToronPQI™ Series)

The ToronPQI™ Series measures ferrous wear debris in lubricating oils, greases, and hydraulic fluids to ASTM D8184, reading magnetic flux disturbance from ferromagnetic particles as a PQ Index. All three models, ToronPQI™ 1000, 2000, and 3000, share a 0 to 15,000 PQ range and deliver a result in about 7 seconds with no chemical preparation. The lineup runs from a compact benchtop unit to an adjustable-volume model and a rugged, battery-powered version for field use.

Ferrograph (ToronFG™ Lineup)

The ToronFG™ lineup separates wear particles from in-service lubricants onto a ferrogram under a controlled magnetic field, then supports microscopy-based diagnosis to ASTM D7690. Direct reading models give a fast quantitative trend signal, while dual-channel analytical ferrographs (ToronFG™ 100, 200, 300) and the manual ToronFG™ L 400 prepare ferrograms for detailed particle typing. Microscope, software, and portable field-analyzer options complete the workflow from screening through reporting.

RDE-OES Rotating Disc Electrode Optical Emission Spectrometers (ToronEA™ Series)

The ToronEA™ Series excites a small oil aliquot on a rotating graphite disc and reads the emitted spectra to quantify wear metals and additive elements to ASTM D6595 and ASTM D6728, typically in about 30 seconds with under 2 mL of sample. Standard models cover 24 elements, expandable to 32 on the ToronEA™ 8000H, across compact bench, integrated-print, ultra-compact, and high-throughput lab configurations. No digestion, argon, or reagents are needed, which keeps the workflow straightforward for routine QA/QC.

Liquid and Oil Particle Counter (ToronOPC™ Series)

The ToronOPC™ series uses laser-based light blocking to count and size solid particles in hydraulic oil, lubricating oil, transformer oil, turbine oil, and fuel, reporting cleanliness to ISO 4406, NAS 1638, and SAE AS4059. The range spans portable and online monitors through laboratory analyzers and inline sensors, so one reliability program can cover field checks, permanent installation, and lab confirmation. It flags all particulates rather than wear metals alone, making it the broadest contamination check in the range.

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