



AMETEK
MATERIALS ANALYSIS DIVISION

SPECTRO **GENESIS** ICP-OES

CONDITION MONITORING SYSTEM



Performance, price, and productivity
for lubricating oil analysis

ASTM • D4951
• D5185

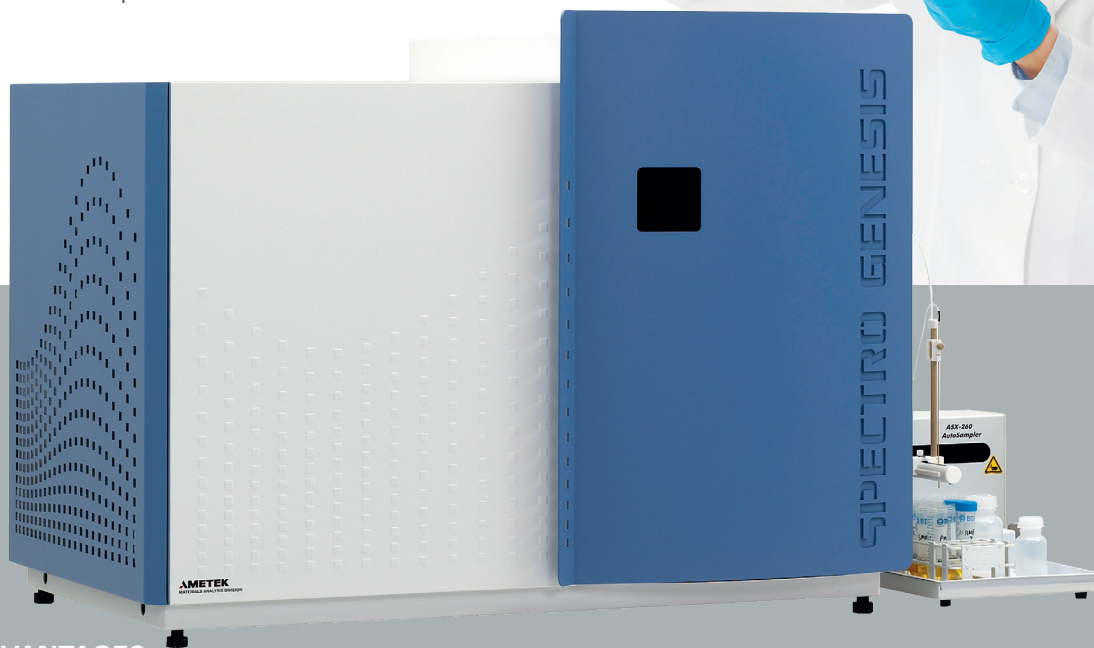
• D7111
• D7691

EN • 14538
• 16294

SPECTRO GENESIS

The high-productivity, right-priced
ICP-OES condition monitoring system

The SPECTRO GENESIS inductively coupled plasma optical emission spectrometer (ICP-OES) is setting a new standard in the analysis of wear metals in oils for condition monitoring. This high-performance analyzer swiftly, accurately, and cost-effectively assesses component wear trends, detecting additive and wear elements and contaminants that may accelerate wear. It allows lubricating oil users to prevent equipment failure and optimize their maintenance programs. Unlike previous ICP analyzers, the innovative SPECTRO GENESIS is easy to use, possesses industrial-grade durability, and is surprisingly affordable to purchase and operate.

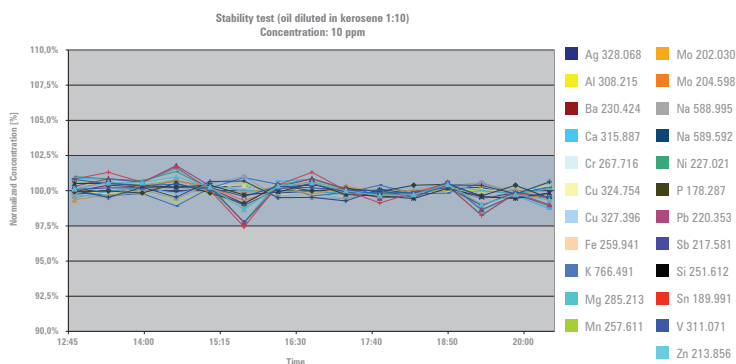


SPECTRO GENESIS ADVANTAGES

- Its full-spectrum capability covers the entire range needed for additive, wear, and trace element analysis of lubricating oils — including high sensitivity for light elements (Na, Mg, Al, and Si)
- Available with a full complement of factory methods, compliant to ASTM and EN methods and standards. Including standard operating procedures, they are set up for instant use
- It features an ultra-low purge gas rate for the optical system — delivering minimum consumable gas costs, and saving thousands over the life of the instrument
- With fully simultaneous analysis, it can achieve sample cycle times of 90 seconds, independent of the number of elements to be determined
- Available as a complete condition monitoring package, containing factory methods, an autosampler, the sample introduction system, and dedicated application specific standard operating procedures
- Unlike FAAS instruments and many other ICP analyzers, it performs a complete spectrum capture with every measurement, for later evaluation if needed
- It provides both condition monitoring laboratories and oil blenders with all the uptime, productivity, stability, and reliability they require

FAAS versus ICP

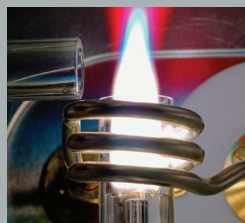
The high price of conventional ICP-OES spectrometers has meant that many laboratories still depend on flame atomic absorption spectroscopy (FAAS) for used oil analysis. However, labs are increasingly finding that FAAS systems can't keep up with their growing productivity needs. For most condition monitoring labs running more than 50 samples per day with 10 or more elements, the SPECTRO GENESIS petrochemical package represents the ideal solution.



EXAMPLE: Examining only 16 elements, a typical FAAS instrument can sequentially analyze up to 180 samples in an 8-hour shift. In the same time, the affordable SPECTRO GENESIS can analyze up to 320 samples — independent of the number of elements to be analyzed. Plus it enables safe automatic operation, uses no flammable gases, while analyzing elements such as silicon, aluminum, and phosphorous where FAAS analysis falls short.

COMPACT AND LIGHTWEIGHT

With a sturdy but lightweight (150 kg/330 lb) aluminum construction, SPECTRO GENESIS fits into tight laboratory spaces. It can usually be installed on the same standard benchtop as an FAAS analyzer.



COMPREHENSIVE, FAST, AND AFFORDABLE

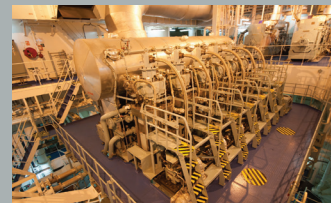
Its advanced optical system features innovative technologies with continuous wavelength coverage from 175 nm to 520 nm, plus added detectors for sodium, potassium, and lithium. Unlike FAAS or most other ICP spectrometers, SPECTRO GENESIS offers full simultaneous analysis — with rapid sample cycle times of 90 seconds or less. It delivers excellent UV performance, and avoids expensive gas consumption to provide the lowest operating costs in its class.

ACCURATE AND EASY

The analyzer's side-on interface for radial plasma observation is optimum for condition monitoring applications. It's robust, ideal for high and varying sample loads, and superior to axial designs for handling organic matrices. Results: added linear range and precision, plus outstanding stability and ease of maintenance.

POWERFUL AND STABLE

The SPECTRO GENESIS' new laterally diffused metal oxide semiconductor (LD MOS) generator delivers up to 1700 W of proven power. The high power gives the instrument great agility — for high matrix compatibility. Finally, this generator is extremely robust, and its innovative air-cooled system operates without external cooling, delivering low running costs.



- Condition monitoring package designed to fulfill ASTM and EN standards
- Latest detector technology
- Coverage of entire relevant elemental range
- Superior sensitivity for light elements
- High sensitivity for wear and trace elements
- Excellent long-term stability
- Fit for purpose construction and easy operation
- Low operating and consumables costs
- Low investment costs

OUTSTANDING ANALYTICAL PERFORMANCE

Used oil analysis is quite challenging for traditional spectrometers. SPECTRO GENESIS performs with ease. Robust and stable, it can easily handle organic matrices with superior performance.

Recoveries of NIST SRM 1084a diluted in Kerosene (1:10)

Element	Certified Conc. [mg/kg]	Measured Conc. [mg/kg]	Recovery [%]
Al	(104)	102	98.1
Ag	101.4 ± 1.5	100.5	99.1
Cr	98.3 ± 0.8	101.1	102.8
Cu	100 ± 1.9	103.8	103.8
Fe	98.9 ± 1.4	106.5	107.7
Mg	99.5 ± 1.7	97.7	98.1
Mo	100.3 ± 1.4	103.3	103
Ni	99.7 ± 1.6	105.7	106
Pb	101.1 ± 1.3	103	101.9
Sn	97.2 ± 2.6	100.7	103.6
Ti	100.4 ± 3.8	104.3	103.9
V	95.9 ± 9.4	102.4	106.8
S	(1700)	1570	92.4
Si	(103)	106.9	103.8

values in brackets are indicative

AMECARE PERFORMANCE SERVICES

Downtime is the enemy of critical sample turnaround speed. Condition monitoring laboratories can't afford to keep customers waiting. SPECTRO helps ensure uninterrupted performance as well as maximum ROI over a spectrometer's life with our AMECARE programs — including proactive performance maintenance, performance upgrades, applications solutions, consultation, targeted training, and ongoing support.



A RANGE OF SOLUTIONS

SPECTRO's complete line of spectrometers includes several suitable for oil analysis/condition monitoring. SPECTRO GENESIS offers the ideal mix of performance, value, and construction for much routine oil analysis. However, for laboratories whose needs include analysis of halogens and other elements in the 130-160 wavelength range, plus extreme workloads (> 300 samples per day) and the greatest possible sensitivity, our flagship SPECTRO ARCOS is probably the most advanced ICP-OES system now available.

And where X-ray fluorescence spectrometer (XRF) analysis is indicated instead, our SPECTRO XEPOS (with autosampler) model provides exemplary service.

Out of the box, the SPECTRO GENESIS is compliant with the following standards and methods:

- ASTM: • D4951
• D5185
• D7111
• D7691
- EN: • 14538
• 16294

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