SPECTRO

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SPECTRO **GENESIS** FED37

ICP-OES SPECTROMETER






The high-performance, high-value solution for routine elemental analyses



SPECTRO **GENESIS**

INDUCTIVELY COUPLED PLASMA OPTICAL EMISSION SPECTROMETER (ICP-OES)

Major updates have equipped SPECTRO GENESIS with a compact new design and some key state-of-the-art technologies. These reaffirm its status as the gold standard among entry-level elemental analyzers.

It is easy to use, delivers industrial-grade durability and throughput, and is surprisingly affordable to purchase and operate. Its linear dynamic range allows analysis from parts per billion (ppb) to percent levels. And its exciting new DSOI plasma optics furnish greatly increased sensitivity. So it can deliver fast, accurate analysis for an even wider range of emission control and process control applications.

No wonder it's become the cost-efficient instrument of choice for so many environmental, industrial, and academic laboratories — easily analyzing liquid emission, petrochemical, and chemical samples, and more.

Ask your SPECTRO representative today if SPECTRO GENESIS is right for your unique application. And send your samples to our analytical technology centers in Europe, Asia, or the Americas for a personal demo — virtual or on-site!







Exceptional advantages
SPECTRO **GENESIS** brings winning benefits to users worldwide

Most advanced ICP-OES measurement technique.

Instead of analyzing elements in a sample one at a time, SPECTRO GENESIS uses essentially the same simultaneous measurement technology as top-of-the-line ICP-OES analyzers. This gives it numerous advantages — including outstanding performance in the UV range — over low-end ICP-OES units that employ sequential measurement.

Simultaneous capture of the complete spectrum.

SPECTRO GENESIS measures the entire relevant spectrum simultaneously, regardless of the number of elements present. It also records and stores each spectrum. This is critical for users who need retrospective capability; results can be re-evaluated/recalculated at any later time, even if samples have been consumed.

Greater sensitivity.

The analyzer's new upgrade to SPECTRO's unique ***dual side-on interface (DSOI)*** plasma observation technology offers greatly improved sensitivity. So dual-view systems' second measurements are unnecessary; matrix effects are reduced; accuracy is improved — and high matrix tolerance allows analyses in lower dilutions. Result: SPECTRO GENESIS can handle an even broader array of organic, water, wastewater, and process control applications.

Higher speed.

If more than 10 elements are analyzed, SPECTRO GENESIS's simultaneous capture and ultra-fast readout can deliver results in 90 seconds — more than 2x as fast as sequential ICP-OES. Its fast readout also allows greater dynamic range, to measure high signals on intense spectral lines without difficulty. Throughputs: up to 700 samples per day.

Excellent price/ performance ratio.

SPECTRO GENESIS offers probably the best price-to-performance relationship in its class for routine applications. Purchase is competitive with other CCD-based ICP-OES analyzers. And it offers low operating costs, due to factors such as the optical system: It requires no expensive chiller, and its ultra-low gas consumption saves up to $3000 (€2500) in yearly running expenses when operated 8 hour per day.



Easy installation, training, and use.

With convenient connections and controls, easy access to key components, straightforward design, and simple software, SPECTRO GENESIS offers a short learning curve plus maximum ease of setup, operation, and maintenance.

Compact design.

The instrument's redesigned form factor combines exceptional ruggedness with less bulk and easier installation on tight laboratory benchtops.

Revealing comparisons

Versus Other ICP-OES analyzers

A number of other workhorse analyzers share SPECTRO GENESIS's fundamental ICP-OES technology. But most are low-performance models that lack many of its other advantages.

Good value and speed. Compared to low-end sequential ICP-OES units, SPECTRO GENESIS — using advanced CMOS technology — offers much greater flexibility and faster, simultaneous full-spectrum analysis, at a similar price. Even for certain applications where midrange ICP-OES models might otherwise be considered, SPECTRO GENESIS may offer comparable performance plus considerable time savings at a lower price.

Excellent UV measurements. Limited by their Echelle optical designs, competitive ICP-OES systems can't match SPECTRO GENESIS's ORCA system optical performance in the UV range (below 190 nm). (See "Optical excellence" section below.)

Lowest gas consumption. Competitive ICP-OES optical systems demand high rates of gas purging. They consume about 3 liters of expensive argon per minute while operating, and 1 liter per minute on standby, plus a boost purge to tackle UV measurements. By contrast, the unique small-volume SPECTRO GENESIS optical system runs with only 0.5 liter per minute, and no gas purged during standby. Result: the lowest gas consumption in its class, for savings of approximately $3000 (€2500) per year.

Wider range of applications. SPECTRO GENESIS advantages make it the ideal solution to provide fast, accurate, workhorse analysis across a growing array of applications in process and emission control. These include wastewater, industrial wastewater, soil, sewage sludge, wear metals and additives in lube oils, crude oil, distillation fuels, biodiesel — and more.

Less time and effort. Numerous other intelligent hardware and software features make SPECTRO GENESIS a standout for fast, easy installation and training.



Efficient ergonomics

SPECTRO GENESIS features many of the same components utilized in high-performance analyzers such as SPECTROGREEN and SPECTRO ARCOS. Their designs have also inspired fresh ergonomic approaches.

NEW housing: The latest, ultra-compact SPECTRO GENESIS incorporates a total form factor redesign. This further minimizes its benchtop footprint for today's crowded laboratories. (Boasting the least depth of any ICP-OES analyzer, it can be placed flush to a wall, with room for an autosampler in front.) Its coated aluminum-and-steel construction resists corrosion while maximizing strength and transportability.

NEW quick-mount bayonet torch holder: Pre-aligned torches install quickly and easily, with no need for further adjustments.

NEW connections: All connection points are located on the instrument's left side, for easy, safe, barrier-free access during installation, maintenance, and use. The new design also helps minimize fluid paths for optimal operational simplicity and speed.

NEW Intelligent Valve System (optional): Quick loading of samples into the coil bypasses lengthier tubing between an autosampler and the sample introduction system. Results: minimum sample-to-sample times, for maximum throughput in high-productivity labs.







Optical excellence

SPECTRO **GENESIS** adapts probably the industry's best-selling OES optical concept — The smaller optic volume saves gas consumption yet delivers optimum performance for numerous routine analyses.

Most ICP-OES analyzers use a traditional ***echelle*** design. Unfortunately, these need up to eight internal reflective components — leading to loss of sensitivity, excessive stray light, and variable resolution. In addition, their larger optical compartments consume high levels of costly purge gases and can present problems with cooling and wavelength measurement stability.

By contrast, SPECTRO ICP-OES analyzers such as SPECTRO GENESIS utilize unique, yet proven optics based on ***Optimized Rowland Circle Alignment (ORCA)*** technology.

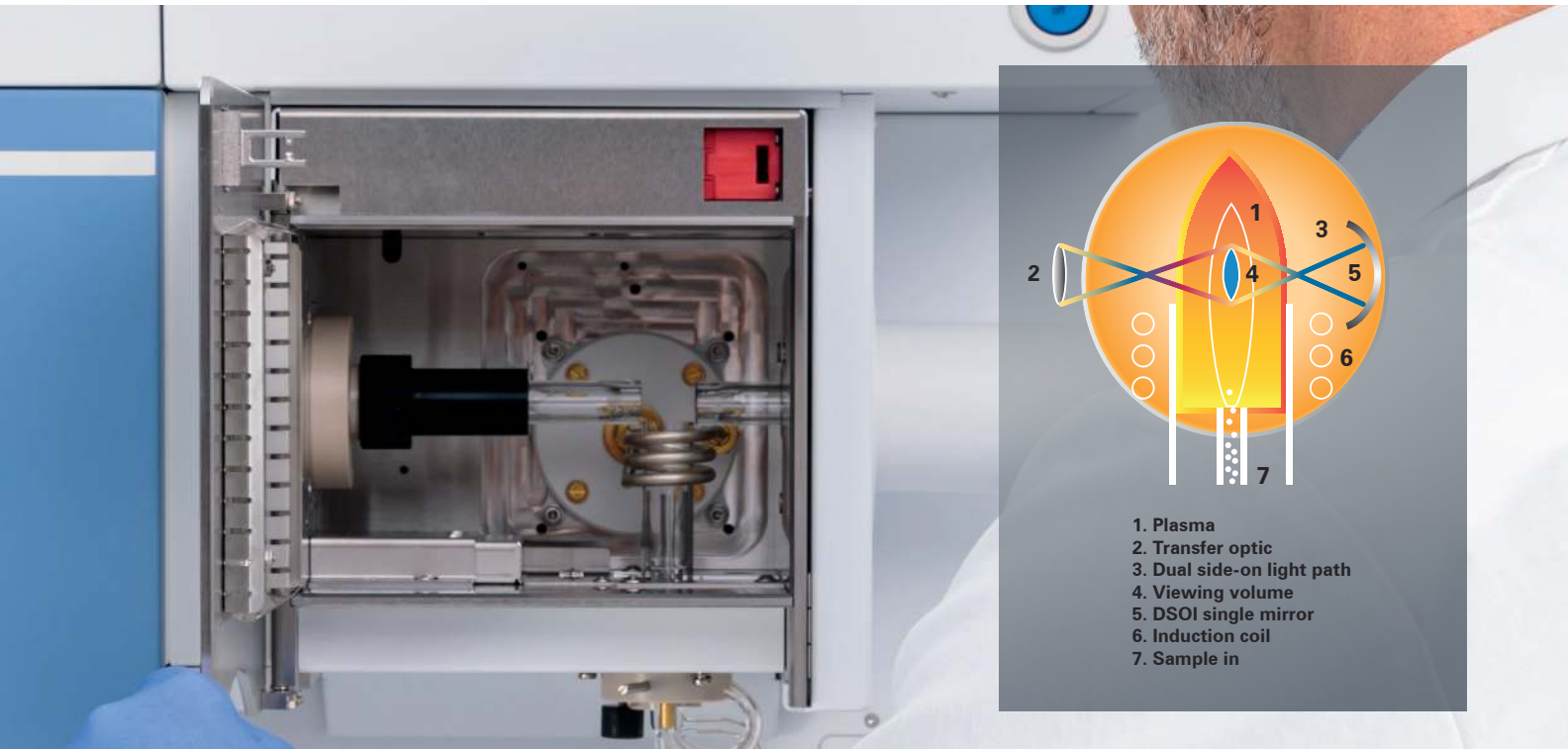
This high-performance system utilizes only three optical surfaces (slit, grating, and detector) to maximize light throughput. So its more direct light path achieves greater light throughput and best-in-class sensitivity for UV elements. It delivers constant resolution across a wide spectral wavelength range, avoiding interferences and improving accuracy. Its low stray light levels allow low limits of detection, as well as trouble-free analysis of higher matrix samples.

The analyzer's small optical system stabilizes quickly and thus contributes to high wavelength stability for continued accuracy. Results: fewer calibrations or control samples, and less need for rework.

The system furnishes full spectrum capture/storage; rapid cycles times (90 seconds or less) for high throughput; and wavelength coverage from 175 to 770 nanometers (nm).

Best of all, SPECTRO GENESIS now features SPECTRO's innovative, highly popular radial dual side-on interface (DSOI) plasma viewing technology. Two optical interfaces capture emitted light from both sides of a vertical plasma, with only a single extra reflection.

DSOI provides up to twice the sensitivity of conventional radial-plasma-view instruments while avoiding problems with light loss, interferences, contamination, and thermal stress. It also requires only one analysis for all wavelengths; delivers faster analysis times; and demands less maintenance.





Further highlights

The NEW solid-state detectors:

SPECTRO GENESIS now features line-array detectors based on *complementary metal-oxide-semiconductor (CMOS)* technology. These read trace elements' low signals even near intense matrix lines; deliver high dynamic range; don't need on-chip cooling — and absolutely eliminate blooming. They also combine lower cost with higher instrument availability.

NEW generator:

NEW generator: An updated *laterally diffused metal oxide semiconductor (LDMOS)* generator delivers up to 1700 W of proven solid-state power. This provides plasma robustness for high matrix compatibility — with low or no need for sample preparation; the ability to run samples at lower dilutions; and better limits of detection. It also helps the instrument to easily run samples from process streams with high total dissolved solids, or organic solutions (lube oils with additives, wear metals, etc.). This new model improves durability and simplifies maintenance. And for many applications, stabilization may take less than 10 minutes.

NEW timed startup:

To save gas and energy, users can now set the system to automatically turn on, begin standby low-level gas purging, etc., at predetermined times. So the instrument can be ready and fully stabilized the minute a shift begins.

High-speed readout:

Utilizing SPECTRO's ultrafast readout, the system delivers a shortest time of integration of 0.1 millisecond (ms). A full-spectrum processing/readout is realized in less than 100 ms. Utilizing the optional SPECTRO Intelligent valve system a complete sample analysis (with preflush and two replicates) can be performed in less than 1 minute. Additionally, the dynamic range can reach up to 9 orders of magnitude.

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Range of solutions

SPECTRO's complete line of spectrometers includes three leading ICP-OES models. Our entry-level instrument SPECTRO GENESIS offers the ideal mix of performance, value, and design for many routine analyses.

Where even more analytical power is needed, three versions of our SPECTROGREEN analyzer specialize in ultra-reliable, accurate analyses — trace as well as higher concentrations — for challenging matrices. These include certain wastewaters, soils, and sludges, as well as some organic, high-salts, and metal samples.

And for the pinnacle of productivity and performance, our flagship SPECTRO ARCOS analyzer may be considered the peak of its class. It excels in industrial and academic applications for the most advanced elemental analysis of metals, chemicals, petrochemicals, and other materials.

Outstanding support

AMECARE Performance Services maximize uptime for all the world-class elemental analyzer products from SPECTRO Analytical and associated companies. The program is staffed by hundreds of experienced service engineers in 50 countries. They provide high-value, customized support designed to ensure optimum performance plus the longest possible equipment life. Ask about SPECTRO PROTEKT secure global remote monitoring, proactive performance maintenance, performance upgrades, applications solutions, consultation, targeted training, and ongoing support.

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