AOX Analyzer
multi X 2500

Sum Parameter Analysis – AOX/TOX

analytikjena
An Endress+Hauser Company

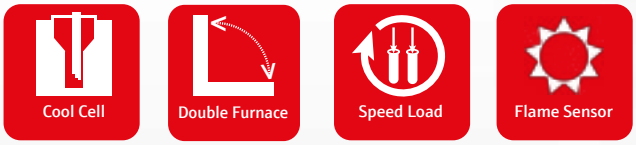
multi X 2500

multi X – a generation of AOX analyzers that is setting standards – flexible, reliable, easy to operate, and capable of much more than just AOX/EOX/POX analysis.

The multi X 2500 is a multi-talent to be applied in many areas, from TOC measurement, important for water analysis, to the determination of TX/TOX concentrations in challenging matrices. Our instrument development focuses on simple operation, flexibility of the analysis system as well as a high degree of automation, stability and precision in instrument performance. This directly results in reliable results, maximum sample throughput and low operating costs.

multi X – experience the innovation:

- **Double Furnace:**
  For optimum adaptation to each sample matrix
- **Cool Cell:**
  Patented wide-range coulometer for comfortable analysis of concetrations from trace to percentage range
- **Speed Load:**
  Highly efficient sample preparation systems
- **Flame Sensor:**
  Matrix-optimized quantitative combustion even for unknown samples



multi X 2500

AOX analyzer

multi X 2500
The Market Leader. And for a Good Reason!

The innovative double furnace technology with tilting furnace combines the advantages of vertical and horizontal combustion in one analysis system. A design that sets standards.

Straightforward operation, rapid operational readiness, and a minimum amount of maintenance are only a few of the many advantages the multi X 2500 has to offer. The intelligent multiWin software, the fast changeover between column and batch method and the user-friendly design ensure outstanding ease of use and efficiency.

Sophisticated automatic sampling systems allow both fully and partially automated AOX determination in combination with our versatile sample preparation systems.

multi X 2500 is THE answer to increasing costs and a growing number of samples. Developed as a particularly efficient and low-maintenance AOX analysis system with extremely low operational costs, multi X 2500 provides you with reliability, true flexibility, precision, and a high level of ease of use.

multi X 2500 — Impressive highlights:

- Uniquely wide application spectrum – AOX, EOX, POX, TOC, TX/TOX analysis
- Free selection of the furnace mode – vertical and horizontal sample feeding in one system
- Analysis of AOX samples prepared according to the column or batch method within the container or directly after pushing the activated carbon out of the columns, with only one system
- Versatile automatic sampling systems – automated with unique throughput for all parameters using only one sampler
- Effective analysis – high sample throughput, precise measurements, low operational costs
- Unique wide-range coulometer for precise measurements in the range from ng to mg
- Integrated high performance gas-box (HPGB)
- Self Check System (SCS)
- Intuitive software guidance
- System Performance Check
- Minimal amount of maintenance

High Performance Gasbox (HPGB)

AOX, EOX or POX – regardless which measuring method you have selected, the maintenance-free, integrated gas-box provides the utmost operational safety and reliable analysis results. It guarantees a stable gas flow for complete combustion, and is automatically regulated by the system. Thanks to the integrated electronic flow sensor, the operator can directly check the system for leak-tightness at any time. Time-consuming and imprecise adjustment and constant visual inspection of the rotameter display are a thing of the past.

HPGB — Your Benefits

- Maximum operational safety
- Unmatched ease of use
- Guaranteed quantitative sample decomposition
- Reliable analysis results
- Reduced amount of maintenance
- Easy operation
- Minimal operational costs

Plug-and-Play

After the start, the multi X 2500 independently tests all components and functions. Applicable method packages are automatically loaded. For existing sampling systems, the active configuration is determined and automatically transferred into the multiWin software configuration. Your multi X 2500 independently adjusts all settings. You only have to press the start button!

Double Furnace Technology

The globally unparalleled double furnace technology enables the fast changeover between vertical and horizontal applications in a single instrument. That means fast and optimal adjustment for each sample matrix with minimal expense. As an essential component of uniquely flexible operation, double furnace technology comes with the multi X 2500 standard equipment.

Self Check System (SCS)

To ensure trouble-free and fully automated operation, each multi X 2500 is equipped with the SCS. It continuously checks all parameters that are important for instrument safety and the quality of the analyses. The result: impressive performance and perfect measurement results!

SCS — Your Benefits

- Maximum operational safety with minimal operating effort
- Best suited for 24-hour operation in the conventional laboratory
- Timesaving, automatic identification and conditioning of all modules
- Independent monitoring of maintenance intervals
- Automatic system shutdown in case of system failure

Optimal Adjustment – for Each Sample Matrix

Whether ultra-fast AOX routine analysis in the vertical operation mode or reliable determination of the smallest EOX trace concentrations in the horizontal operation mode, double furnace technology allows you to freely select the best combustion mode for your application.

Experience unique flexibility! The multi X 2500 combines vertical and horizontal mode in one and the same instrument. In next to no time, the furnace is set up in vertical or horizontal mode and automatically ready for safe operation.

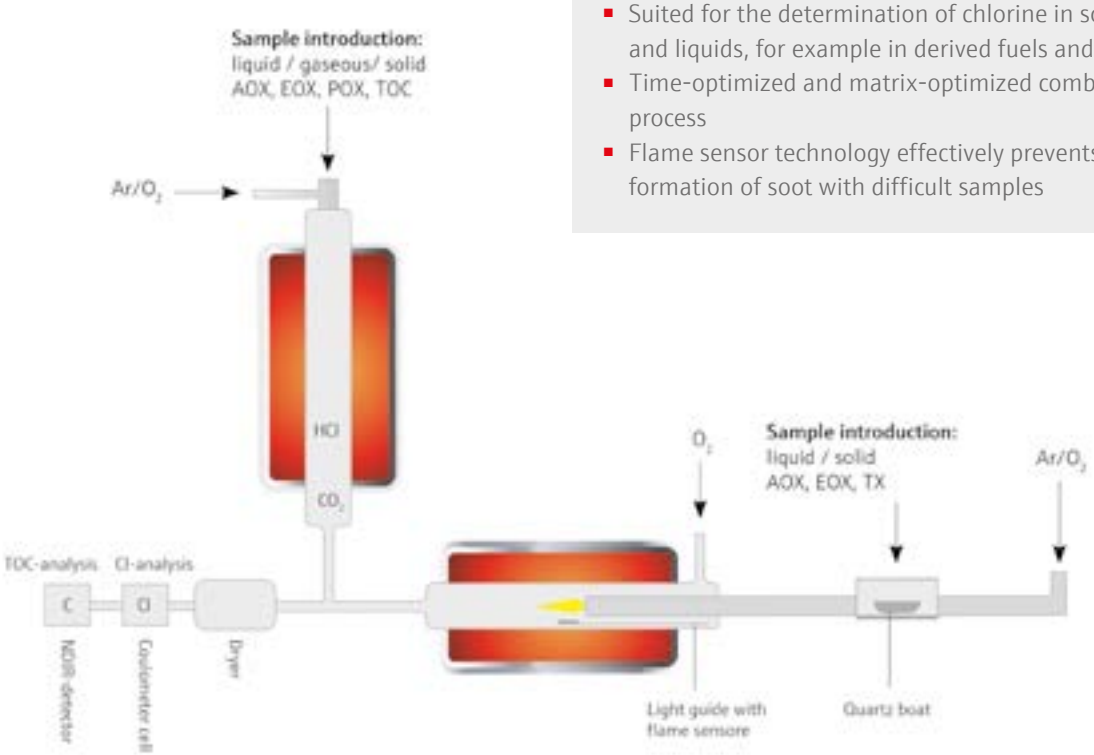
Through the use of flame sensor technology, the combustion process is temporally optimized and automatically adjusted to match the specific requirements of your sample matrix. The multi X 2500 easily handles quantitative, trouble-free combustion, even of derived fuels.

Advantages of the vertical sample feed:

- Especially well-suited for AOX analysis using the batch and column method
- Optimal for the AOX direct feed
- Fast analysis
- Small bench space required
- Low operating costs
- Also suited for EOX, POX, and TOC determination

Advantages of the horizontal sample feed:

- Especially well-suited for the EOX determination
- Optimal for EOX extracts with a high percentage of light volatile components and resinous components
- Suited for the AOX determination using the column and batch method
- Suited for the determination of chlorine in solids and liquids, for example in derived fuels and used oil
- Time-optimized and matrix-optimized combustion process
- Flame sensor technology effectively prevents the formation of soot with difficult samples



Effortless Sample Preparation

Get to know perfectly harmonized concepts of sample preparation and analysis! Remain flexible and cost-effective with a system that greatly minimizes idle time and increases the throughput of AOX samples.

APU 28

The automatic sample preparation system **APU 28** allows sample preparation for AOX determination according to the column method. The individual samples are processed immediately one at a time. The first samples are available for analysis shortly after adsorption. The specified adsorption rate is maintained due to highly precise pump technology.

Extremely short and direct paths as well as the absence of any valve technology minimize the maintenance effort. System care and routine maintenance are done within a few minutes.

In addition, the **APU 28 SPE** allows sample preparation according to the SPE method. Adsorption on the SPE column, eluting and adsorption on the activated carbon are done fully automatically and without any manual intervention. Simple and unrivaled!

A world-wide unique two-channel system: the **APU 28 S** doubles the speed in sample preparation. Two samples are enriched simultaneously.
As a result, 28 samples can be prepared for analysis in one run, without intervention and within short time – fully automated and compliant with standard methods.
APU 28 S significantly speeds up sample preparation, the step that significantly influences the speed of AOX analysis.

APU *sim*

This automatic adsorption unit for preparing samples for AOX determination according to the column method provides simultaneous sample preparation of up to six samples. Sample volume, wash volume and flow rate are adjusted individually and variably. Thanks to its robust design and easy handling, water samples of all kinds are enriched on active charcoal in next to no time.

AFU 3

For the automation of the batch method, the automatic filtration unit AFU 3 is an indispensable part of the routine. After the adsorption process, three samples can be filtered simultaneously with gas pressure and transferred quantitatively to the filter container using a washing solution.

Sample Feed – Reliable. Fast. Individual.

A multitude of samplers allows adaptation to individual needs – from manual operation to fully automated sample feed for all applications.

Versatile automatic sampling systems
For efficient, convenient, and uniquely flexible operation, diverse automatic sampling systems are available for the complete automation of the measurement procedure.
You can analyze samples prepared according to the column or batch method with the quartz container. Without retrofitting the system! In one sample sequence! With the optional direct feed, you are able to analyze only the loaded charcoal after pushing it out of the columns.

Advantages of the quartz container feed:
- Protection of the sample from environmental impacts
- Especially well-suited for trace concentrations of AOX
- Minimal AOX blank values
- Particularly well-suited for small and medium-sized sample series
- Less wear on the combustion tube

Advantages of the direct feed:
- Especially well-suited for high AOX concentrations
- Maximum sample throughput
- Particularly well-suited for large sample series

The fully automated samplers of the autoX series ensure an unmatched sample throughput in the vertical and horizontal operation mode. A special quartz container technology and the sophisticated protective covering of the sampler shield the charcoal from environmental impacts. An additional purging of the sample rack with inert gas is not necessary.

The autoX samplers also allow the direct feed of samples, if required. Therefore, the charcoal is pushed out of the columns. With direct feed, you can use the maximum capacity of the combustion tube and increase the sample throughput.

In vertical operation mode, the samples are loaded via a gas lock. Completely maintenance-free, this provides a fast and reliable measuring process without complicated mechanics.

The autoX samplers are available in different versions to optimally adapt the multi X 2500 to your laboratory requirements.

autoX 36

The automatic sampler autoX 36, for small AOX sample series in the vertical mode, introduces up to 36 samples, prepared according to batch or column method, into the instrument within one sequence.

autoX 112

The autoX 112 allows an extremely high sample throughput in the vertical and horizontal mode for large AOX sample series using the column or batch method. In vertical mode, the charcoal is fed into the combustion system together with the container or directly after pushing it out. In horizontal mode, AOX samples can also be introduced via the boat inlet. The analysis of the parameter EOX can be automated in vertical operation by means of direct injection into the combustion tube as well as in horizontal mode using the boat inlet. The optional flame sensor technology guarantees residue-free combustion.

autoX 112 – Your Benefits

- AOX/EOX vertical and horizontal
- Automatic feed of up to 112 samples
- Quartz container feed or direct feed
- Racks for containers, sample vials, sample boats
- Also suited for the TOC determination

Autoinjector

An autoinjector allows the exact dosing of EOX samples using standardized filling volumes. The injection speed is controlled by the multiWin software. You dose samples as an autosampler.

Whether AOX or EOX, vertical or horizontal – with the multi X 2500 you are flexible in application and efficient in operation. The optimal combination of sample preparation and sample feed always guarantees flexibility, speed and low operational costs for your requirements.

Precise Analysis Made Easy

A patented measuring cell adjusted to match all measurement tasks guarantees precise analysis. Even with large concentrations, overtitration is impossible. An extremely dynamic operating range with increased sensitivity provides reliable analysis of samples with unexpectedly high AOX concentrations.

Highly sensitive detection for precise results

The measuring cell of the multi X 2500 has a compact and robust design. The optimal protection from the effects of ambient light, the self-cleaning silver anode and the unique cooling system guarantee highest sensitivity, long-term stability and an operator comfort you do not want to miss. The measuring cell and the electrolyte are designed for maximum sample throughput and adjusted to the operation of the automatic sampler. With multi X 2500 you analyze large sample series with intensely changing concentrations without any special effort. No need for changing the electrolyte. The patented detection of the multi X 2500 meets all requirements of AOX analysis.

A special wide-range coulometer guarantees a wide dynamic measuring range and enables the adaptation to diverse analytical tasks while maintaining a unique sensitivity. EOX determination in the trace range or high TX concentrations in derived fuels are handled with ease.

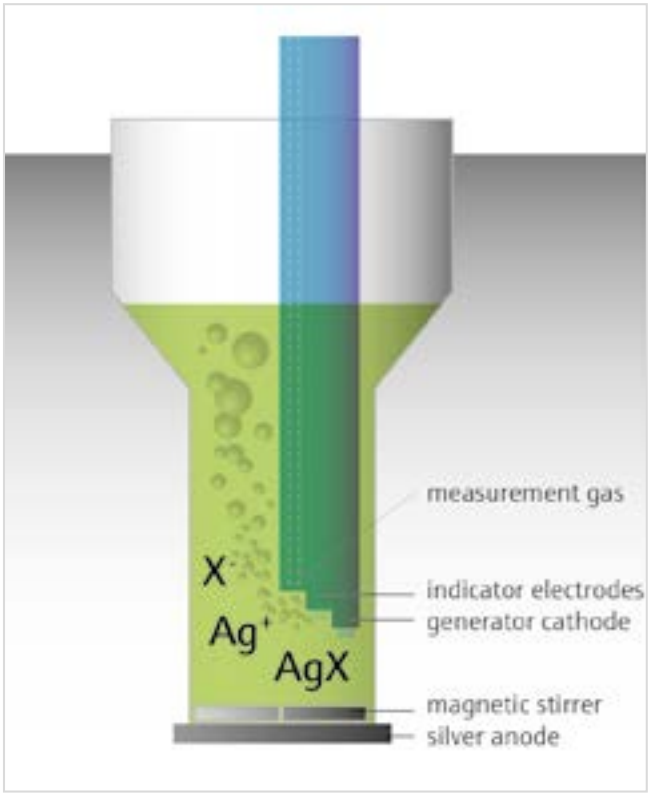
Thanks to innovative ceramic technology, the multi X 2500 is equipped with an extremely robust and durable electrode. The combination electrode combines indicator electrodes and a generator cathode in one. This requires no diaphragm or salt bridge and is therefore quickly ready for operation and maintenance-free.

Your Benefits

- Wide-range coulometer with high dynamic measuring range
- Unique sensitivity to trace concentrations
- Also suited for TX concentrations in the percent range
- Extremely low-maintenance
- Fast titration, overtitration is impossible

Software that reliably guides you to your goal

The self-explanatory multiWin software is your personal assistant and consultant. It easily guides through the entire menu, from the system start to system shut-down, at the end of the working day. It monitors and controls all relevant system parameters. It checks the system performance and the analysis quality. It delivers a clear presentation of the measurement results in individual analysis reports, and much more.



Coulometer cell

Uniquely Reliable. – Uniquely Versatile.

Unparalleled versatility opens up new horizons and gives you the security to handle all analytical requirements in next to no time.

Benefit from an advanced concept: a single analyzer for AOX, EOX, POX, TOC, and TX/TOX analysis operating in vertical and horizontal mode. Determine the various parameters quickly and reliably.

Features such as the innovative gas-box, optimized standard methods and the Self Check System (SCS) ensure the quantitative decomposition of the various sample matrices. Even demanding samples, such as derived fuels and polymer waste, are easily analyzed thanks to the optional flame sensor.

With versatile sample preparation systems and flexible options for automation, you can quickly and automatically prepare diverse samples, such as drinking water, groundwater, sludge, sediment, wood, and combustibles for the determination of relevant environmental parameters. Thanks to ready-made methods, the multi X 2500 can be adjusted in next to no time to match diverse measurement tasks. This enables a uniquely high sample throughput.

Environmental analysis made easy! With the multi X 2500, you are well prepared for all requirements. And you can rely on fast, precise and cost-effective analysis.

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