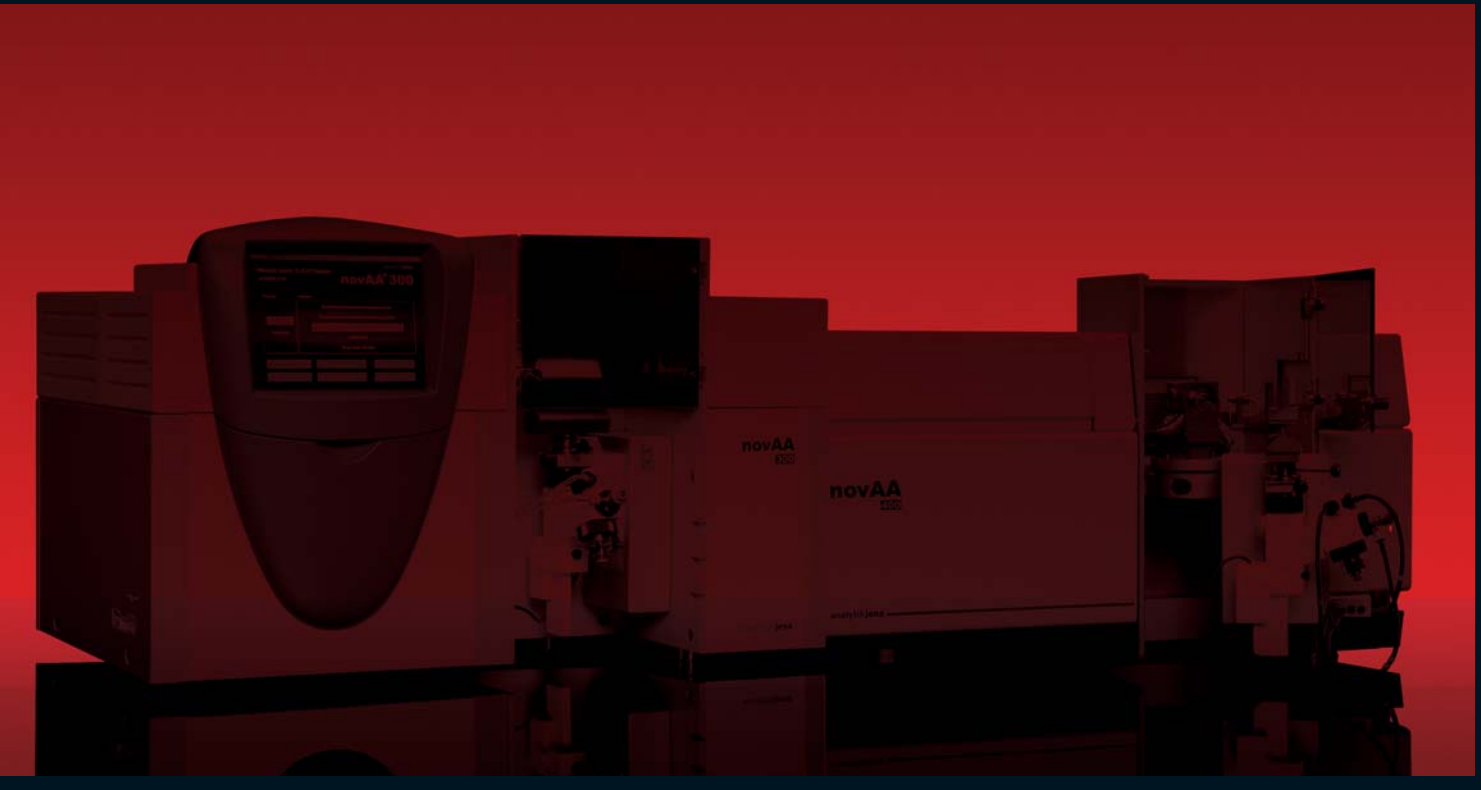
analytikjena

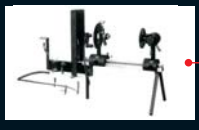
novAA®

Quality is the difference



More than 150 Years of Experience in the Field of Optical Systems

Analytik Jena has a long tradition in developing high quality and precision analytical systems which dates back to the inventions made by Ernst Abbe and Carl Zeiss. Today Analytik Jena is a leading manufacturer of high performance analytical instruments and one of the most innovative companies.



1874 First spectrometer

1924 First Pulfrich photometer – the basis for the development of spectrophotometry in Jena

1937 First flame photometer – Carl Zeiss establishes the methodology of flame photometry

1963 SPEKOL and SPECORD update the tradition of Pulfrich photometers in Jena

1969 Prototype of the first commercial flame AAS

1971 Launching of the first AAS 1 of Carl Zeiss Jena

1982 First simultaneously measuring UV VIS spectrometer with Multi Channel System (MCS)

1993 Introduction of the first Zeiss-AAS graphite system with transverse-heated graphite furnace

2000 AAS ZEEnit, the first transverse-heated Zeeman graphite furnace AAS instrument with variable magnetic field and 3field mode

2003 First high speed photometer with 50 cell changer and Diode Array Detector

2004 Analytik Jena AG presents the first High-Resolution Continuum Source AAS (HR-CS AAS) worldwide, a revolution in Atomic Absorption


Start menu
WinAAS touch
analytikjena
novAA® 300
Technik:
Aufgabe:
Kochbuch-Methoden/Anwendungen laden
Gespeicherte Methoden/Anwendungen laden
Quick Start
Sequ.-Mult.-Routine
Hydrid/Hg
Konfiguration ...
OK
HKL-Wechsler
Exit
novAA
300
analytikjena

novAA® series – systems for all techniques

Quality is the difference

Our overriding goal is to provide high-performace analytical instruments with:

- Highest quality
- Optimum precision
- Innovative technology
- Durability

No compromises:

- Usage of certified high-end-components only
- Quartz coated optics
- Completely encapsulated optical systems

Meeting these high demands our customers primarily benefit: Analytik Jena is the only company who offers a 10-year warranty on optical components.

High-end optics – guarantees high light throughput and excellent features

Superb-quality optical components meeting the highest performance and safety standards are the prime features of each of our spectrometers. We guarantee for best protection and exceptional durability. For many years now, our optical system designs have been governed by some important principles:

- Aspheric optics ensure ideal imaging conditions and minimized aberrations
- Unique possibility of switching between single and double beam mode
- Thanks to encapsulation and quartz-coating the components are convincing also in aggressive laboratory atmospheres with durability
- Strong background correction with the D2 -HC lamp as prerequisite for analysis of samples with high matrix content

A new generation for the whole range of AAS

The novAA® series covers up the complete range of fully automatic single element and sequential multi element analysis. There are flame-AAS, graphite furnace-AAS and compact spectrometer for all techniques.

The novAA® series combines a unique union of performance, versatility, automation, reliability and flexibility. With its vast range of adjustable parameters, flexible analysis systems and the highest precision found on the market, it lives up to the demands of modern environmental analysis and regulations.

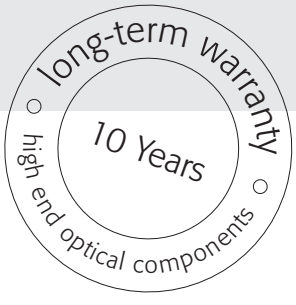
Various configurations available:

novAA® 300 – Fully automated flame system with single beam (novAA® 315) and/or double beam (novAA® 330) mode and with automatic 6-lamp turret, available as stand alone-system or with external PC

novAA® 400 – PC-controlled fully automated compact spectrometer for flame and graphite technique with transverse heated graphite furnace, with single and double beam mode and with automatic 6-lamp turret

novAA® 400 F – Flame system upgradeable with graphite furnace module

novAA® 400 G – Graphite furnace system upgradeable with flame module



novAA® 400

novAA® 300 stand alone with autosampler AS 52 s

Automated flame technology - High precision and speed

In today's laboratories, automation of the AA flame-mode is more important than ever. Fast analysis, automated dilution, reliable quality monitoring, all with uncomplicated handling, are a must. Meeting these requirements with ease, the novAA® series is bound to become an indispensable routine spectrometer for elemental analysis.

Leading graphite furnace technology

The novAA® series combines the advantages of the transverse-heated graphite furnace with the advantages of deuterium background correction. This unique concept is employed in all graphite furnace systems of Analytik Jena.

Direct analysis of solids – Innovation throughout

Innovative instrument concepts and their translation into smooth everyday routine procedures are the prerequisites of success also in traditional fields of work. Direct solid AAS with novAA® 400 is one of the most advanced developments in the field of atomic absorption spectroscopy and opens up completely new fields of modern analysis in a wide variety range of applications.

Unique combination – Precise hydride element analysis

Given the choice of diverse hydride systems, the user can perform selective, highly sensitive analyses of mercury and the hydride elements. Featuring a unique combination of batch and continuous – flow modes, the novAA® series with its varied systems can optimally match analytical assignments.

Whether in the traditional quartz cell or coupled with the graphite furnace – both modes guarantee the best possible detection limits, compliant with the most stringent statutory limits.

The HydrEA technique combines the advantages of hydride generation (isolation of the matrix) with those of element-specific optimization in electrothermal atomization.

WinAAS® – A software package that is a cut above the rest

WinAAS® is a high-performance, new generation 32-bit software, which is fundamental to the complete control, monitoring and data recording of all processes – from the spectrometer to the accessories. Its extensive control capabilities are vital to future-oriented AAS technologies.

Quality control figures prominently in WinAAS®. An extensive, completely integrated QC module guarantees operation conforming to GLP.

Satisfying FDA requirements, WinAAS® provides the conditions for operating the system in compliance with 21 CFR Part 11.

Touch and go

The novAA® 300 stand alone-systems fascinate with a touch-screen interface and flexibility. A large, brilliant colour LCD touch screen sets a new standard of operation. The Windows based software offers the same excellent features as our well known WinAAS® software.
By simply touching the built-in screen the user is guided through the analysis! Running samples will be easier than ever before. The "Quick Start" routine makes method development as well as successful in less than six steps. The best way for fast analysis and fast results! Different user levels with selective rights make operation possible dependent upon the users experience!

Whether as a stand-alone system or teamed

The flame AAS instruments of the novAA® series are the ideal analytical tools for your requirements in lab.

At first glance:

- Rugged design for the toughest demands and laboratory environment conditions
- Easiest operation with a comfortable integrated touch screen
- High degree of automation through an multifunctional optimization routine and automated gas box
- Easy to upgrade with versatile accessories for complex applications

In the flame mode, you can choose between single and double-beam operation depending on the analytical job. The flexibility is guaranteed by a simple change between Emission with Background correction and Absorption.

Precision

There is no successful analysis without a mature, precise burner-nebulizer system. Our system features:

- Improved and coded titanium burners (50 and 100 mm)
- Corrosion-resistant nebulizers with Pt/Rh capillary and PEEK jet, adjustable for every analysis
- Optimized Teflon mixing chamber, almost completely free of memory effects, for ideal aerosol formation and high vaporization efficiency
- Adjustable impact bead for optimum conditions
- Burner system for Propane (novAA® 300)

Efficiency

Automation of flame AAS is a permanent demand in lab routine. Injection technology and sampler operation can eliminate a sizeable part of your chores, such as dilution and mixing, giving you free time for other activities.

Autosampler with intelligent diluting function, automatic burner height adjustment, fully automatic gas control and monitoring – efficient features for the automatic optimization of all parameters – have meanwhile become standard for routine analyses.

An easy bayonet mechanism allows fast and simple change of burner heads and change-over between flame and hydride techniques and guarantees maximum sample throughput.

Adjustable impact bead

Burner heads

Safety

We place great importance on safety, especially where flames and gases are involved. You can rely on a stringent control system, with sensors (SCS Self Check System) monitoring gas flow, the burner the siphon for condensation residue. In case of a power failure, the flame is safely extinguished. All gas parameters are controlled and monitored by the software.

Variety

Highly proven performance of optimized accessories like the injection module SFS 6 make the application of extensive samples with high salt content easier. In addition to the standard flame technique the software-controlled SFS 6 for injection mode operation, is convincing by:

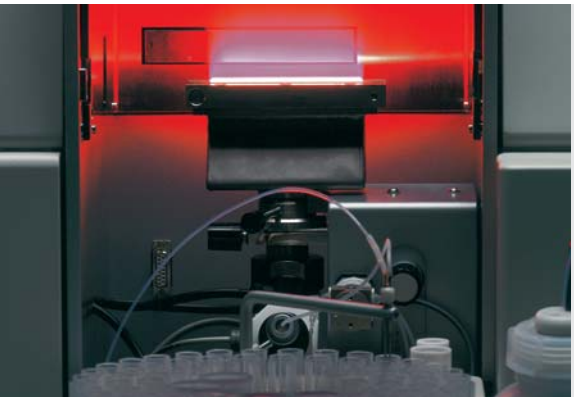
- Constant rinsing for samples with high salt or acid content
- Stable burner conditions guaranteed by continuous rinsing and constant temperature conditions
- Automatic metering of smallest sample volumes

Robustness

The „Scraper“ is an intelligent, automatic, software controlled cleaning device for the nitrous oxide burner head for trouble-free work over a long period.

Once activated in the software the Scraper guarantees continuous and reproducible measuring cycle in the routine analysis without the necessity to shut down the flame for cleaning the slot of the burner head. Before each sample measurement and calibration the slot is cleaned.
During the heating phase of the acetylene/nitrous oxide flame the scraper is working in an interval of 30 seconds.

The concept of this simple accessory is easy to use.



left to right:

Scraper – automatic cleaning device

novAA® 300 with autosampler and SFS 6

User-friendly – touch and go

Transverse-heated graphite furnace – state-of-the-art in graphite AAS ...

... standard at novAA® 400

Precise measurement of trace elements over a wide concentration range while saving time, space and money – an assignment the novAA® 400 handles with:

- The high precision you would expect from our high-performance optics
- The speed required in a high-sample-throughput routine laboratory
- The robustness needed to withstand high salt concentrations in routine work

Automation

Let the novAA® 400 do the work for you. It controls not only the temperature-time program for unknown sample matrices, but also all instrument and accessory functions via software. Combined with the graphite-tube autosampler, the instrument will measure your samples over night – and even perform dilutions, should varying element contents so require.

The core – transverse-heated graphite furnace, always a step ahead

Today, transverse-heating is the state-of-the-art in graphite AAS. This innovative concept is employed in all graphite furnace systems from Analytik Jena.

Transverse-heating contributes significantly to the high performance of the graphite furnace and thus to the analytical efficiency of the entire system. Analytik Jena has been setting the standard on the AAS market for several years.

The transverse-heated graphite tube and the furnace are designed to guarantee constant temperature distribution in the graphite tube. This considerably reduces matrix influences and makes analysis almost free of memory effects.

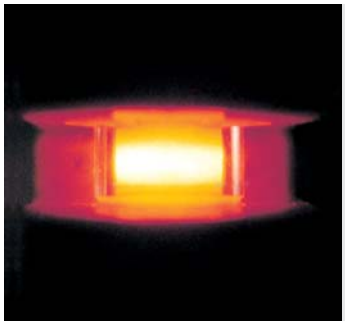
The analytical advantages of transverse-heated graphite tube technology are obvious:

- Problem-free trace and ultra-pure analysis of real samples with varied matrices
- Loss of sensitivity and contamination interference, common with conventional longitudinally heated graphite tubes, are eliminated
- Even extremely low- volatility elements such as vanadium and molybdenum can be analyzed without difficulty

As an added economic advantage over the longitudinally heated tube, the transverse-heated tube has an atomization temperature several hundred degrees lower. This saves energy and considerably extends tube life.

Make your choice from our range of tubes:

- The pyrolyzed standard tube for simple up to difficult tasks
- Or the sophisticated Composite Tube-Platform system with PIN platform for complex applications

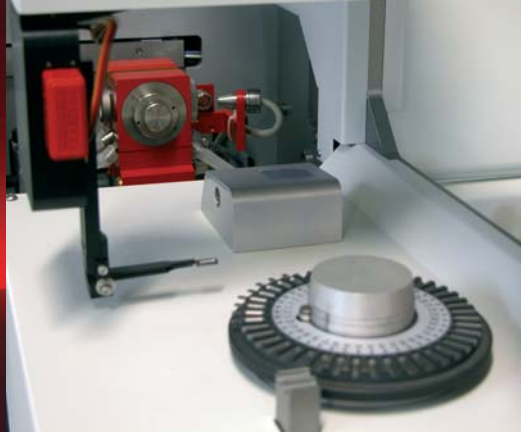


left: Constant temperature distribution in the graphite tube

right: Graphite tube

Sample chamber with MPE and graphite furnace

Automatic feeding SSA 600



Detail of SSA 600

Accuracy

Unique, emission-independent temperature recalibration guarantees the right temperature in the graphite tube, regardless of the age of the graphite material. The automatic formation routine corrects for age-related decay of graphite parts. It guarantees identical atomising conditions for new and used tubes, and optimal sensitivity.

High speed in graphite furnace AAS is essential to every analyst

The Fast Furnace concept of the novAA® 400 instruments guarantees the shortest analysis times thanks to:

- Superfast heating rates up to 3000 °C per second
- Overlapping autosampler functions
- Temperature-regulated cooling times
- Preheating of the next element lamp in multi-routine mode
- Simple change of graphite tubes
- Sensorless temperature control

Graphite furnace analysis the direct way – the solid solution for solid samples

The problem of sample digestion is ever present across the range of atomic spectrometry - from environmental studies and food inspection to materials analysis and medical applications. The novAA® 400 is the only system worldwide that permits direct analysis of liquid and solid samples.

In combination with the various solid samplers, the novAA® 400 instruments made by Analytik Jena can analyze solid samples directly. The sample material, whether powder or lump, is placed directly on a pyrolytic coated graphite sample carrier (platform).

Once it has been weighed, the platform with the sample is transported into the graphite tube without further modification, and analyzed.

The analytical advantages

- Analysis of artefact-free original samples
- No solvents used for sample digestion or dilution
- Minimum risk of contamination
- High sensitivity
- Smallest sample quantities are sufficient
- Detection limits in the pg - fg ranges

The economic benefits

- Reduced costs
- Flexibility
- Efficiency

Manual feeding – SSA 60

- Manual guidance of the platform for reproducible insertion
- Manual weighing
- Automated data transfer to the software

Automatic feeding – SSA 600

- Automated insertion of the loaded platform into the furnace
- Fully automatic weighing with an integrated microbalance
- Up to 80 positions availability
- Choice of different modes of operation

Efficiency and productivity feature greatly

Maximum sample throughput and automatic dilution

Autosamplers for the flame mode AS 51 s and AS 52 s make your routine analyses of standards and samples almost fully automatic. Integrated in the overall concept of the instrument, either sampler can be simply hung directly into the sample compartment. This saves space and minimizes tubing lengths – the best way to prevent contamination in case of real samples.

To prolong the service life of the samplers, all parts liable to be contacted by acids or solvents are made of corrosion-resistant materials. Varied, freely selectable rinsing routines markedly reduce the risk of carry-over and contamination.

The intelligent dilution function of the AS 52 s makes manual dilution, a time-consuming and error-prone process, unnecessary. Automatically, it dilutes your samples down to a factor of 1:625. Therefore, sample lots with greatly varying element contents can be processed without interruption. If concentrations exceed the calibration range, an automatic clean control prevents contamination of the subsequent samples. All these functions are completely integrated in the autosampler, so no costly, space-consuming extras, are required.

More than only a sampler

With the MPE 60, the autosampler for graphite furnace AAS of liquid samples, automated sample preparation and analysis are easy:

- Automatic generation of reference curves from one or several stock solutions (up to ten points)
- Dosing of extremely small sample volumes with excellent repeatability
- Automatic sample dilution and enrichment by a specified factor
- Intelligent automatic dilution of samples exceeding the calibration range; clean control limits to avoid contamination
- Automatic enrichment of samples below the calibration range
- Unique automatic correction of the immersion depth for every vessel containing sample or other liquid
- Robust, low-noise operation
- Fast, easy adjustment

Its many functions and the automatic running of optimizing routines make the MPE 60 an intelligent sample preparation.

Mercury and hydride analysis – multiple solutions for special challenges

Mercury / Hydride systems

The measurement and monitoring of mercury and such elements as arsenic or selenium down to low ppb concentrations has always been a challenge. In order to keep the amount of these toxic substances under control in the environment, fast methods and convenient, yet flexible systems are required.

The combination of continuous-flow and batch systems at the various automation levels from HS 50 through HS 60 guarantees convenient handling, precision and efficiency during the analysis of hydride forming elements and mercury with the cold vapour technique.

Continuous-Flow mode

With the continuous flow mode you benefit from all advantages of automated analysis, including multi-element determination over night.

Batch mode

As conversion to batch mode is quick and easy, the user can readily benefit from the advantages of this type of operation. The use of large sample volumes where element concentrations are minimum guarantees problem-free handling of foaming samples and fast overview measurements.

Autosampler AS 51 s and AS 52 s

Hydrid System HS 60 A

Enrichment unit

Whenever the lowest concentration ranges are of importance, mercury is enriched on the gold-platinum net before the entire Hg quantity is released. Combined with one of the two operating modes, this is a neat solution for limit inspections. Forget the awkward and unpleasant handling of your old system – the integrated amalgamation unit relieves you of this work.

The integration of hydride and graphite furnace technique – a new dimension in analysing hydrid-forming elements

There is a growing demand for measurement systems that are largely immune to interferences and have the potential for automation, while being able to detect ultra-trace levels of toxic elements. In contrast to mercury, traditional hydride systems do not offer a facility for enriching elements such as arsenic or selenium. But this very capability is becoming an increasingly relevant requirement in environmental analysis.

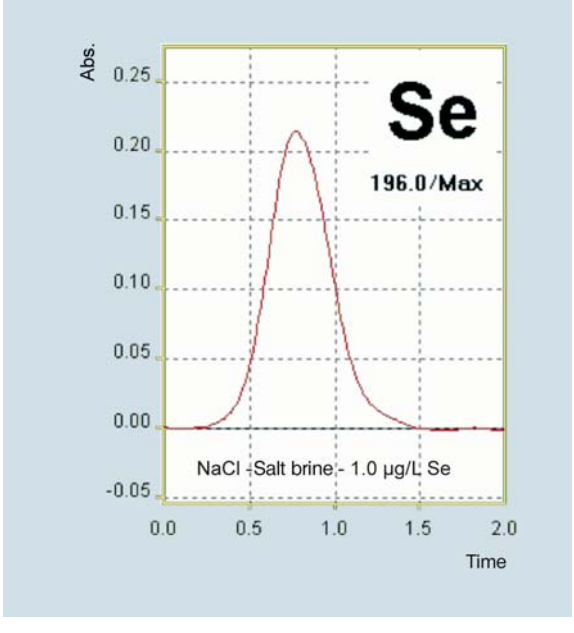
The HydrEA technique is the answer – the unique achievement of coupling hydride generation to electrothermal atomization in a graphite tube. Combining a graphite- furnace AAS instrument with the hydride system and an autosampler opens up new avenues to automated hydride analysis.

The principle is simple

A carrier gas stream carries conventionally generated metal hydride into the graphite tube instead of a quartz cell. The tube, permanently pre-coated with iridium, absorbs the inflowing hydride or mercury. Subsequent steps resemble the usual procedure followed in conventional graphite tube systems. An optimized temperature-time program is run, and the data are evaluated.

The advantages are obvious:

- Continuous and discontinuous mode available
- Capability to enrich hydride-forming elements in the graphite tube, plus specific atomization



1.0 µg selenium in 30% NaCl

WinAAS® – comfortable new generation software, versatile and user-friendly

Clarity through state-of-the-art data structure

The basic database structure offers unique and diverse possibilities. With unprecedented clarity and intelligibility, WinAAS® allows easy searching for methods, parameters or measurement results. Transparent data structures, clear user guidance, a straightforward storage algorithm and simple data handling are features of the WinAAS® that make it user-friendly and allow fast analysis. Real multitasking enabled to operate with other Windows-applications or rather to prepare new methods and sample tables – today's requirements of flexibility!

Advanced user-friendliness

When simple, routine handling is required on the one hand, and high variability on the other, merging the two demands may be difficult. WinAAS® unites them perfectly. The clear layout of the user interface guarantees fast and simple method development on the screen. Entry to method development is facilitated by standard cookbook recipes.
The user in research is offered enormous flexibility to push the limits of the analyzer and perform special optimization.

Comprehensive statistical functions

Even the basic software provides extensive statistical analysis and optimization functions to meet the requirements of today's accredited laboratories and research institutions:

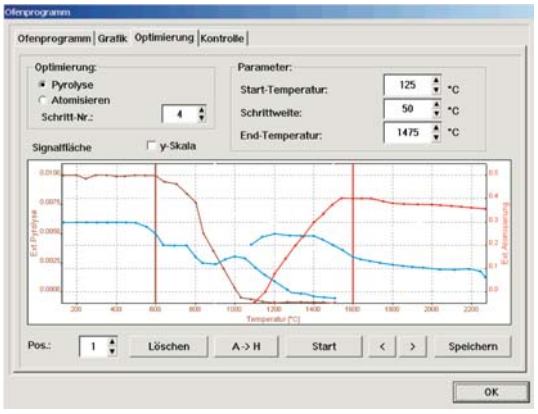
- Different statistical methods
- Independent statistics for sample and calibration
- Recognition and elimination of outliers (Grubbs outlier test)
- Determination of procedural parameters and limits conforming to statutory provisions, e.g. DIN EN (german industrial standard)

Screen display during an analysis

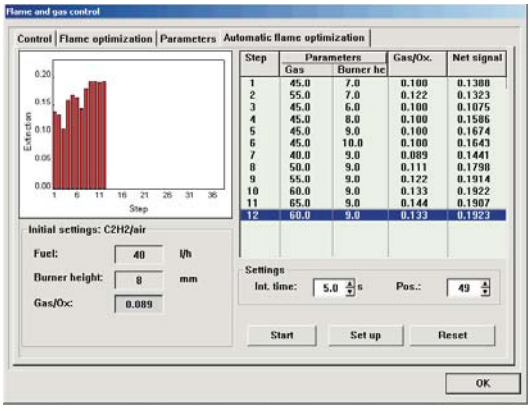
Online help, accessible at any time, saves the analyst time-consuming search in the user manual. In routine operation, only a few keystrokes or mouse clicks are needed to carry out daily tasks.

Advanced automation

The software ensures the highest degree of automation for all techniques. Automatic optimization routines make it easy to adapt methods to an unknown matrix. All parameters and functions are automatically monitored and controlled.



Automatic optimization graphite furnace method



Automatic optimization flame method

Conforming to standards and rigorous requirements

Quality control and GLP

In view of today's statutory and in-house requirements, comprehensive quality assurance is a prime consideration implemented in the AAS software. According to GLP, all analytical data must be accessible and their accuracy ascertained and documented. Compliance with these requirements can be assured by a variety of measures for the fully automatic monitoring of the precision and accuracy of measurements:

- Keeping different control charts for statistical quality control
- Various responses when error limits are exceeded or warning levels reached
- Automatic instrument functionality test
- Data recording and printout conforming to GLP

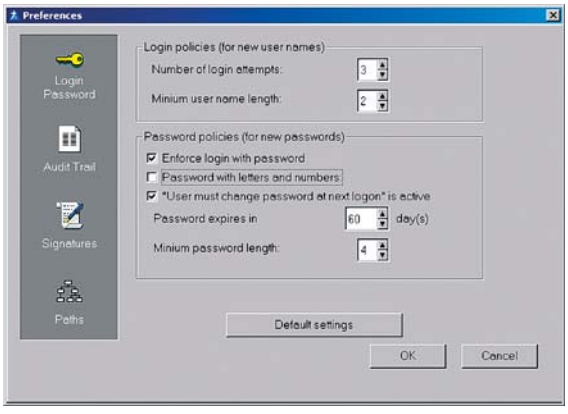
FDA 21 CFR Part 11

Conformity to FDA 21 CFR Part 11 is a must for modern analysis software. The functions integrated in WinAAS® ensure data security as well as the reliability, lucidity and traceability of all actions throughout the measuring time. All processes are presented in easily comprehensible terms and with a clear layout. Comprehensive user management, an electronic signature facility and the Audit Trail satisfy the requirements of FDA 21 CFR Part 11.

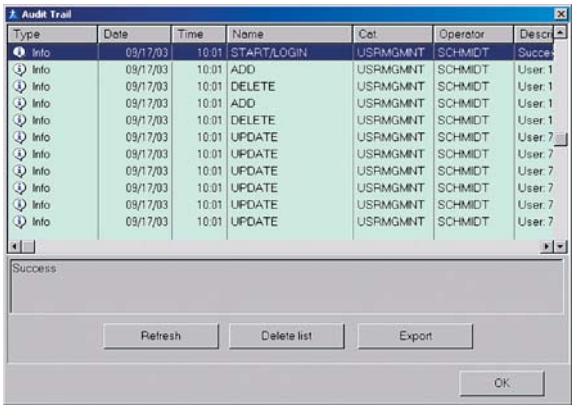
In the User Management function you can define the access rights of individual users. Passwords with specified runtimes guarantee data security.

In the Audit Trail, all actions and accesses during the run of a measurement are lucidly recorded. Together with the electronic signature, this allows every result to be traced back and prevents manipulations.

Every audit will supply convincing proof that with these functions, WinAAS® has the ideal tools you need for efficient work in everyday lab routine and yet conforms to FDA 21 CFR part 11.



User Management



Audit Trail

Technical Service & Application Support

Premium quality from Analytik Jena

Our high-precision analytical systems, based on Carl Zeiss technology and produced according to a stringent quality management system, guarantee the premium quality our customers are used to obtain from us.

Before our high-performance instruments are delivered, all technical parameters are tested, the results recorded and entered in a test certificate. Only those instruments that have passed the complete range of tests, as confirmed by the inspector's signature, will be delivered.

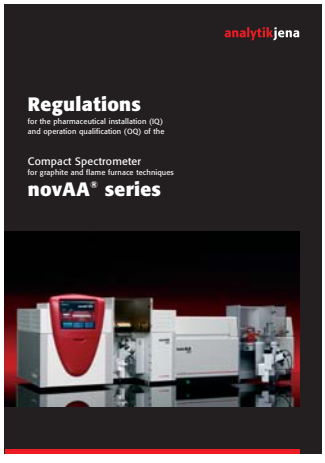
Reliability and certainty

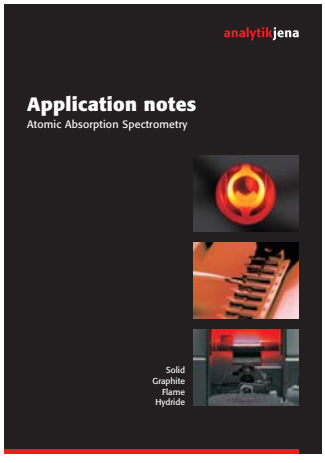
Well-deliberated design concepts, the expertise of our staff, individual application consulting and comprehensive customer service ensure the certainty and reliability of your results. All service operations and safety tests are recorded in the device logbook. Software updated at regular intervals satisfies the requirements of the FDA for conformity to 21 CFR Part 11 and guarantees the safe and reliable electronic documentation of your data.

Our prompt delivery of parts and consumables allows you to work without losing time.

We take time for you

While installing the device, our specialists will intensively train your personnel in operating it, demonstrate the analytical performance of the device and record the obtained results. Our application specialists also provide comprehensive qualification of your personnel enabling them to solve specific analytical problems.





Technical Service

Our world-wide service network guarantees nearness to our customers thus ensuring quick response times, short travel times and low costs for you.

With comprehensive solutions, such as:

- Continuous quality control by our service engineers
- Individual maintenance and service contracts
- 24-hours advisory phone service via our hotline
- Documentation of performed service operations and safety tests in a logbook
- Continuous software update service
- Factory-trained staff employed by our subsidiaries and sales representatives

We provide total service support.

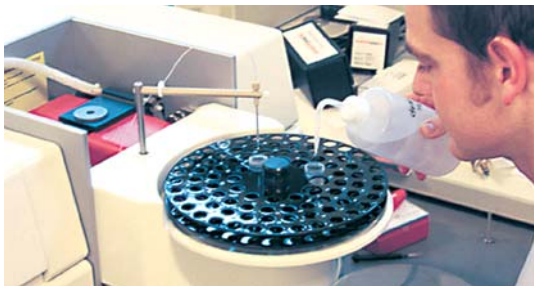
Application Support

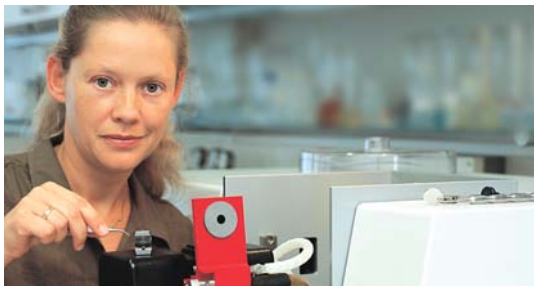
A strong team of application specialists is available to you at any time to assist you in your everyday laboratory work.

With our services and staff giving you advice around the globe, we ensure optimum customer care and support at any time:

- Individual advice on specific questions of application
- Development of analytical method packages
- Validation of analytical systems
- Individual hands-on user training in specific applications
- Organization of user workshops
- Preparation of application newsletters

Our well-trained, globally active staff ensures optimum customer care and support at any time, as we are keenly aware that this, together with product quality, is the key to customer satisfaction.





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