Representing the wealth of PANalytical’s experience in analytical XRF, SuperQ 5 takes advanced X-ray analysis to a new level. Designed to meet the needs of all industry sectors, its modular format enables application-specific adaptation for efficient, high-performance analysis.

High-performance X-ray analysis software

Measuring up to your analytical needs

The Analytical X-ray Company
SuperQ 5 makes accurate quantitative and qualitative analysis even easier. This latest version of PANalytical’s proven software is available for the Axios range of sequential XRF spectrometers.

The package is both efficient and user-friendly. All aspects of analytical control are easily accessible and straightforward. Measurement setup, calibration and analysis protocols are all supported by a comprehensive, built-in help function and robust default settings.

**SuperQ 5 advantages**

- Easy to use and to learn: for both daily operators and system owners
- Tailored package: fits individual analysis needs
- Modular structure: add only the required functionality for your industry
Combining ease of use with flexibility
Advanced XRF analysis is straightforward with SuperQ 5. The intuitive user interface allows inexperienced users to create and execute sophisticated measurement protocols.

For Axios systems, SuperQ 5 features a sample changer interface designed according to a user-centered design process. This interface provides all necessary functions for preparing and measuring batches of samples and includes reporting of intermediate results.

Creating measurement batches is as simple as assigning a measurement program to a sample. While measuring, new samples can be added to the batch or new batches can be created and placed in a queue.

For urgent measurements, QuickStart can be triggered while a batch measurement is in progress, simply by placing the urgent specimen in the priority position. This will allow immediate measurement of the sample. Quickstart can also be used in combination with APS (Automatic Program Selection) making routine analysis as simple as placing a sample on the spectrometer.

Conditional measurements can fully automate application maintenance tasks. Measurement of check samples can be scheduled and automatically followed by monitor correction when limits are exceeded.
Accurate analysis made easy

Results evaluation

Transparent results and reporting
SuperQ 5 enables users to look closely at all data, compare results, view statistics and reprocess results when necessary.

During quantitative analysis, provisional concentrations are displayed real time. Final results are automatically reported on measurement completion in the results evaluation section of SuperQ. For the evaluation of qualitative results (scans), the spectra evaluation module is used.

Application-specific databases store data, enabling easy access using a variety of date/time, sample ID and measurement-type filters. Data can be transmitted to LIMS, printed directly or transferred to files, spreadsheets and word processing programs.

Fit for purpose - dedicated industry modules
It is easy to tailor a system to specific application needs with ready to use industry modules, such as the metals, petrochemicals, minerals, cement and polymers modules. These include pre-defined application setups and industry-specific reference materials.
System setup

Intuitive yet flexible application setup
Application setup and analytical program assembly is easy. While experienced analysts have complete freedom to define their own measurement conditions, other users benefit from the software’s built-in intelligence.

Application setup is carried out via a simple and logical succession of tabs - from measurement conditions to reporting scheme.

Analytical program assembly is also straightforward. Elements or element ranges are simply selected from a periodic table display. Default measurement channel and scan conditions are generated automatically. Depending on application requirements, these can provide either maximum sensitivity or resolution for each analyte. Assistance is also available for determining appropriate measurement times based on either detection limits or precision.

Simplified calibration

SuperQ 5 uses details introduced during the application setup to simplify and streamline calibration procedures.

Calibrations can be derived using a number of matrix correction and line-overlap correction algorithms, regression models and error weighting. Standard matrix models include theoretical and empirical influence coefficients (α’s), a full FP model and Compton ratio correction.

Details can be viewed or exported in either graphic or table formats. Lower limits of detection are reported for both standards and unknown samples.

Fit for purpose - data security

SuperQ 5 includes full GLP (Good Laboratory Practice) capabilities. Access to programs and stored data can be controlled using individual user identities and privilege levels. Dated and timed messages indicating errors and non-routine actions are recorded together with the user ID, for future reference by the laboratory supervisor.

Fit for purpose - support

PANalytical has always prioritized the highest possible levels of customer service, so our global customer support network is always on hand to assist and give advice.
SuperQ 5

Dedicated modules for your industry

Meeting the demands of industry

The growing demand for more accurate, application-specific results requires flexible, cost-effective XRF analytical solutions. SuperQ 5 has been designed in a modular format to enable specific industry requirements to be met.

Omnian offers standardless quantitative analysis for a wide variety of unknown samples. Using scans and optional peak measurements, high precision measurements are achieved for solids, liquids, pressed powder, fused beads and loose powders.

Omnian advantages include:
- Advanced peak search & match and line-overlap algorithms
- Fundamental Parameter algorithms that deal with:
  - Finite thickness characteristics
  - Fluorescence Volume Geometry (FVG)
  - Unmeasured ‘Dark-Matrix’ compounds
- Adaptive Sample Characterization (ASC)

Oil-Trace is a complete solution for the petrochemical industry. Oil-Trace corrects both ‘Dark-Matrix’ composition and density mismatches between samples and standards. Its main advantages are a dramatic reduction in the number of calibrations and operational cost savings.

Oil-Trace can be applied to:
- Fuels and bio-fuel mixtures: B20, E5, E85
- Screening for S, Ni, V and other restricted elements in oil
- Wear metals in new and used lubricating and hydraulic oils
- Chlorine in compressor oils
- Metals in catalysts
- Catalyst poisoning

Pro-Trace is a cost-effective solution offering accurate quantification close to the detection limit for traces in sample types ranging from biomass to rocks and ores.

Incorporating high quality setup standards, along with options such as a smart element selector, wizard assistance, robust defaults, and expert assistance, Pro-Trace also features a series of unique algorithms for:
- Iterated spectral overlap correction
- Mass attenuation coefficients with absorption jump edge correction
Process optimization modules

**Automation** and XRF system integration is made easy with a combination of SuperQ’s Universal Automation Interface (UAI) module and Supervisor control software. This setup can manage relatively simple XRF/XRD (twin) interface projects right through to more complex custom-designed automated laboratory setups incorporating a host computer that controls sample transport, sample preparation and other components.

**Statistical Process Control (SPC)** performs statistical evaluation of data trends for management and control of production processes or monitoring of long-term spectrometer performance in accordance with the principles of Good Laboratory Practice (GLP).

**Dedicated modules for your industry**

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**Type Standardization** is commonly used in the metals industry. Accurate results for many different alloy grades are achieved using just a few general-purpose calibrations. Production samples are mapped onto these calibrations using factors derived from in-type alloy standards.

**Enhanced Data Security** helps laboratories meet the requirements for FDA 21 CFR part 11 and includes secure user login, electronic signatures, electronic record audit trail and data integrity protection.

**FP Multi** uses fundamental parameters to determine the thickness and composition of coatings and surface or sub-surface layers on samples such as metals and semiconductor wafers. Crucially, calibration can be carried out using conventional bulk reference materials or multi-layer samples that differ from the unknown samples.

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PANalytical
PANalytical is the world’s leading supplier of analytical instrumentation and software for X-ray diffraction (XRD) and X-ray fluorescence spectrometry (XRF), with more than half a century of experience. The materials characterization equipment is used for scientific research and development, for industrial process control applications and for semiconductor metrology. PANalytical, founded in 1948 as part of Philips, employs around 1000 people worldwide. Its headquarters are in Almelo, the Netherlands. Fully equipped application laboratories are established in Japan, China, the USA, and the Netherlands. PANalytical’s research activities are based in Almelo (NL) and on the campus of the University of Sussex in Brighton (UK). Supply and competence centers are located on two sites in the Netherlands: Almelo (development and production of X-ray instruments) and Eindhoven (development and production of X-ray tubes). A sales and service network in more than 60 countries ensures unrivalled levels of customer support. The company is certified in accordance with ISO 9001:2000 and ISO 14001.

The product portfolio includes a broad range of XRD and XRF systems and software widely used for the analysis and materials characterization of products such as cement, metals and steel, nanomaterials, plastics, polymers and petrochemicals, industrial minerals, glass, catalysts, semiconductors, thin films and advanced materials, pharmaceutical solids, recycled materials and environmental samples.

Visit our website at www.panalytical.com for more information about our activities.

PANalytical is part of Spectris plc, the precision instrumentation and controls company.

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