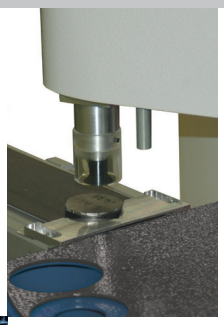
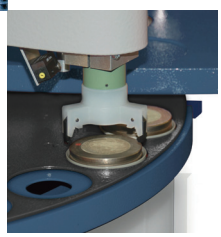
Product Specifications

Automated ARL OPTIM'X with SMS-Omega

Thermo Scientific automated XRF

This compact and innovative solution is a unique combination of Thermo Scientific XRF and automation technology in a footprint of less than 1m². With fully automated sample preparation and analysis of one material type, this cost effective system responds to the needs of users for fast and precise analysis in metals, mining and cement applications.





Circular sample magazine for ARL OPTIM"X spectrometer

Fully automatic XRF analysis at low cost of ownership

For industrial production control purposes, when different types of material have to be processed in parallel using fully automatic dedicated systems, the automated Thermo Scientific ARL OPTIM'X with SMS-Omega is the solution: the speed of analysis and the quality of results are improved with automatic sample preparation and handling, while analysis and distribution of results is automated with no user intervention required.

A sample handling arm equipped with a suction device (metals version) or a gripper (oxide version) is used to load the samples for analysis which are processed under strict identical and reproducible conditions.

A fixed circular magazine with 8 positions provides storage of reference standards and for the occasional manual introduction of prepared samples. One additional position is dedicated to the filing of production samples following analysis.

Ensuring that the spectrometer permanently delivers quality results is essential to prevent scrap or waste and the need for production rework.

Unattended instrument monitoring and integrated audit trail functions are standard features of the system.

The complete system can also be supplied within a Thermo Scientific ARL QuantoShelter container for in-situ analysis closer to the process. This system is often called "The Lab in a box".

Communication and work with the external world

The automated ARL OPTIM'X with SMS-Omega can be installed in centralized laboratories or on the production shop floors without need of any significant changes.

- **Customized and flexible sample registration**
  Samples can be registered manually via terminal(s). Options are available to facilitate and speed up registration such as reading data via network files, bar codes readers or selecting from sample lists. On-line registration via network by means of other computers (process computers, laboratory management systems) is also possible to avoid errors and save time. The SMS sample registration is a powerful and customizable process for the generation of all details on the processing to apply. It is at the heart of the automation operation and intelligence. It is factory configured, customized and fine tuned according to your particular needs before delivery to avoid mistakes, simplify the operators' job and automate the selection of all operational parameters such as preparation and analytical programs, etc.
- **Result transmission**
  Analyses are immediately and automatically transmitted following sample analysis; a variety of different transmission methods are available. The relevant destinations (computers, terminals) are automatically selected to avoid delays and mistakes. Up to 18 different destinations can receive results transmitted via network and serial lines

Automatic sample preparation

Rapid, reliable and reproducible sample preparation is essential for on-line unattended operation. We offer a complete range of fully automatic machines for the preparation of:

- Metallic samples (ferrous and non-ferrous)
- Oxides associated with metal production (mineral ores, sinters, baths, slags and blast furnace slags)
- Oxides associated with minerals and cement

The ARL SMS-Omega is designed for the automatic preparation and analysis of one type of production samples (metals or oxides).

The compatibility with other types of samples (e.g., vitrified slags, fused beads, other metals) has to be evaluated for every application based on the different sample shapes and dimensions.

Automatic analysis

To speed up the system and eliminate mechanical components, no closed cassette is used by the ARL SMS-Omega for analysis. Holders with centering rings are used to position the samples during measurement and for storage of standards and manual samples.

Sample management following analysis

The production samples can be returned to the preparation system via a single conveyor system:

- For recycling of the supports (steel rings for pellets, metal supports for beads)
- For centralized sorting and filing (metals)
- For complementary analysis by other instruments (e.g., by Optical Emission for stainless and highly alloyed metals)

Following analysis, metal samples can also be filed locally in a container.

Unattended instrument monitoring

The ARL SMS-Omega provides storage capacity for up to 8 standards and manual samples.

Control samples are regularly analyzed and processed by statistical evaluation techniques (SPC) to detect eventual anomalies.

Automatic instrument standardization is triggered by the system when necessary and alarms are produced when manual interventions are required to prevent the system going out-of-control.

For certification purposes, the instrument analytical performance can be permanently recorded and visualized in the form of control charts (SPC-Full option) without operator intervention. The SPC-Full software is not merely limited to instrument monitoring; it can be applied automatically to production control as well for quick review of the performance and identification of possible process improvements.

A true multi-tasking system

The system is permanently available for users to perform other tasks, i.e.:

- The occasional introduction of manual samples with compatible shapes and dimensions via the SMS-Omega magazine for analysis
- Sample tracking and system monitoring via a synoptic display showing the samples position in the system and the status of every system component
- Consulting the audit trail of recorded system activities.
- Examination, update and transmission of stored results
- Evaluation of standardization results
- Presentation of SPC charts for evaluation of the instrument performance (requiring SPC-Full)
- Request to run control samples to verify instrument performance
- Request to standardize the instrument for all or only specific channels

Better traceability of quality control activities

In addition to recording the analytical performance over time, audit trail functions permit to log the history of the activities in the form of events with time stamps. All or only selected events, alarms and warnings can also be sorted, printed and distributed to other computers. The integrated audit trail function ensures increased traceability of production control, facilitating the implementation of a laboratory quality system in compliance with ISO standards. The audit trail can also be used to record system activities for diagnostics purposes and identification of eventual causes of problems.

Open system with easy customization

Every Thermo Scientific SMS system is configured and customized in the factory according to your particular needs before delivery.

Additionally, the system can be further fine-tuned following installation to take advantage of your experience in using the system and to handle changing or new requirements which are difficult to anticipate.

A wide choice of automation solutions

The new automated ARL OPTIM'X with SMS-Omega demonstrates our commitment to offering automated, simple and dedicated process control lines as well as higher performing and more sophisticated systems. Please contact your nearest Thermo Fisher Scientific office or consult our web site at **www.thermo.com/oes** or **www.thermo.com/xray** for more information about the other OES and XRF automation solutions available.

Thermo Electron SA, Ecublens, Switzerland is ISO certified.

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