Thermo Scientific OES and XRF Automation

Total Solutions for Ultimate Productivity

Metals

Mining

Cement

Thermo Scientific
XRF and OES Automation

A Pioneer in Automated Analysis Systems

Our company was first to recognize the opportunities in the metals and mining industries for automated sample preparation and analysis as part of quality control processes. Since the mid 1980s, this has led to the design and development of a range of flexible automation systems integrating the most advanced technologies and productivity enhancement tools such as robots.

We have continued to enhance our automation solutions for optical emission (OES) spectrometers and X-Ray fluorescence (XRF) spectrometers to meet the stringent needs of the industry and offer even better reliability and improved performance while remaining cost effective.

Today, Thermo Scientific series of SMS automation systems span the entire industry spectrum, from large aluminum smelters to modern steel works, including foundries and metals processors with varied capacities and needs.

Choice and flexibility – A solution tailored to your specific needs

Thermo Scientific series of SMS automation products range from the entry level systems ARL SMS-Omega and SMS-XY manipulator-based system for XRF applications through to the ARL SMS-3000 advanced twin OES and XRF robotized automation solutions. The range also includes the very popular ARL SMS-2000 system, a third generation product which has set new quality standards for automated sample preparation and analysis.

If you are eager to achieve more in less time, meet tighter and tighter product specifications and time schedules without increasing overhead costs, then our automation solutions will help you to:

- Increase analysis dependability by eliminating human involvement and improving the reproducibility and accuracy of results
- Eliminate difference between operators and subjective factors that might influence results
- Increase productivity
- Shorten response time leading to increased production turnover and capacity at reduced cost
- Increase sample cadence to process more samples
- Reduce the costs of sample analysis by eliminating labor

More than just instrumentation – complete systems

Our automation solutions are not merely limited to instrument automation but also include comprehensive analytical data management tools with the ARL ARMS system. Large laboratory automation systems using third party air tubes for sample transport and multiple lines sample preparation and distribution systems are also available.

The lab in a box for in-situ analysis

Automated OES and XRF spectrometers can also be installed on the production floor to provide measurement and control right at the point of manufacture with minimum infrastructure costs. When no protected room is available, the system is supplied in a transportable, air-conditioned and reinforced container especially designed to operate like a process sensor or on-stream analyzer. Once registered and introduced via a feed box fitted to the outside wall of the shelter, samples are processed fully automatically at each stage of the analysis including preparation as an option, evaluation of the analysis surface quality, analysis, result distribution to the required destinations, result storage, sample labeling and filing.

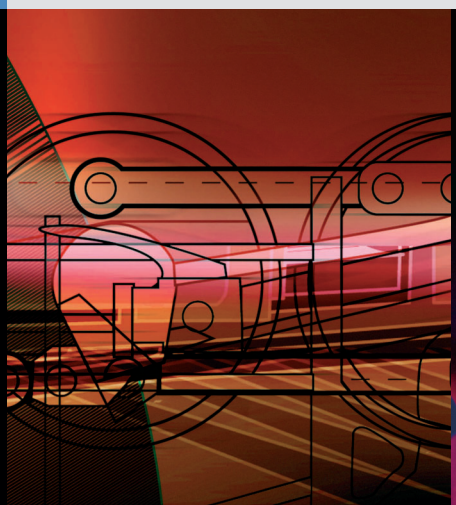
An undisputed reputation for excellence

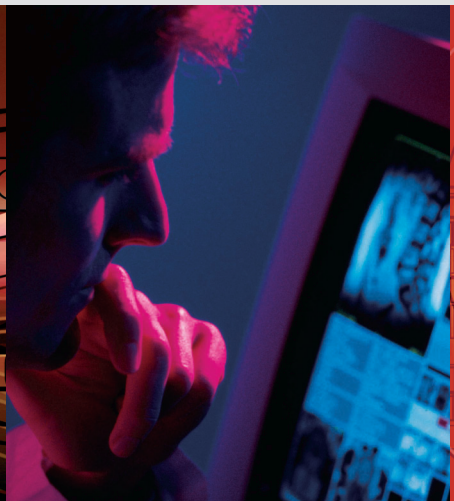
With nearly 400 robotized OES and XRF spectrometers in operation around the world, our company is definitively the preferred supplier for automated spectrometer analysis. All of these installations have set a high standard of reliability and durability worldwide.

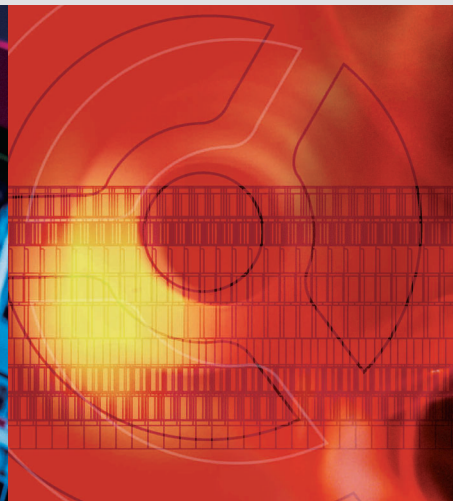
Major performance gains and better reproducibility/traceability

With Thermo Scientific SMS automation systems, samples can be prepared and analyzed simultaneously. This multi-tasking operation is impossible to achieve with a manually operated system. The traceability of the quality control activities is improved as all significant events can be recorded with appropriate time stamps for archiving purposes.

Procedures to ensure that the automatic spectrometers permanently deliver quality results are applied systematically and independently of the operator's skills and motivation. Corrective actions are immediately triggered by the system when necessary to prevent scrap and rework in production.







The influences of different operators' practices are eliminated (e.g., experience, educated guessing, specific working habits). Dead times are eliminated as well, which increases the spectrometer's availability for sample analysis.

If time is critical to your application with every second lost resulting in a loss of revenue, then automation is the ideal solution to fully exploit the potential of your OES and XRF spectrometers.

Synergy and reduced automation complexity

Thermo Scientific SMS automation systems and ARMS laboratory management system share the same core software. They also incorporate many common features which reduce the complexity of a large automated laboratory. This also facilitates new developments, greatly simplifies software testing and industrialization and enables us to provide uniform and harmonized laboratory automation tools.

A unique product offering backed by worldwide expert service and support

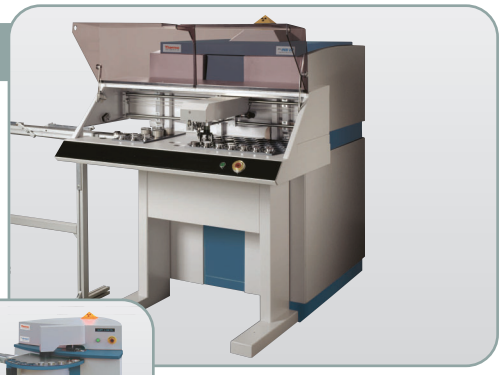
Our company is unique in designing and manufacturing X-ray fluorescence (XRF) and optical emission (OES) spectrometers with their automation including the ARL SMS-3000 Thermo Scientific robot.

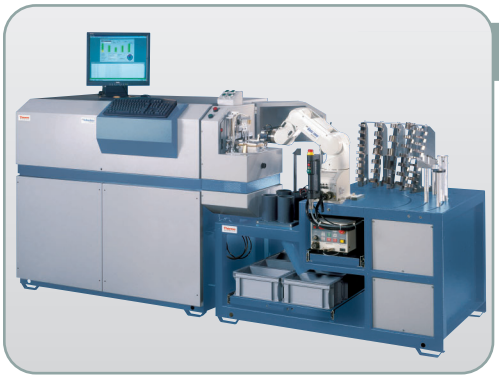
With more than 20 years' experience in the analysis, planning and implementation of automation systems, our company is a leader in this field. Our consultancy services are available worldwide to help you evaluate the best solutions for your application and our highly experienced engineers will make sure that you get all the support you need during the implementation stage of your project and during the system's lifetime.

Simple, affordable and highly reliable

The ARL SMS-Omega and SMS-XY for simultaneous and/or sequential XRF

- Circular Omega magazine or large XY magazine for sample handling
- Oxide and metals/oxide versions
- Sample registration via terminal and/or network
- Fully unattended instrument operation
- Control of sample preparation
- Built-in automated procedures for spectrometer performance verification and fine-tuning
- Easy introduction of manual samples via the circular Omega or the XY magazine
- Sample labeling and radioactivity measurement options





An undisputed reputation for excellence

The ARL SMS-2000 OES version

- Very fast and fully reproducible sample processing speed
- Compatible with the most complex analytical applications
- High sample cadences (up to 600 samples per day)
- Integrated automatic sample preparation
- Vision system to investigate the quality of prepared sample surfaces before analysis
- Low maintenance, high availability
- Entirely customizable to cover the most varied applications
- Large installed base with proven performance leading to a short payback

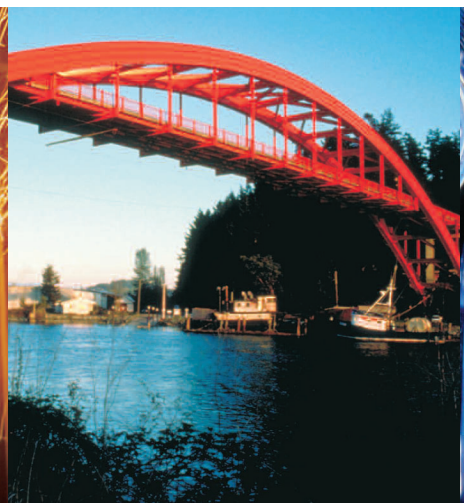
The ARL SMS-2000 EL Entry Level version for OES

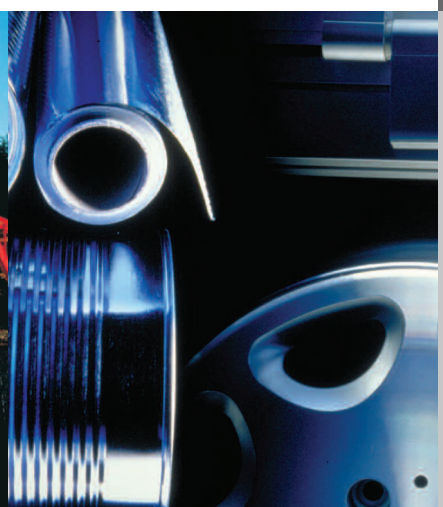
- Specifically designed for foundries and other small to mid-sized metals producers who do not necessarily need the full range of SMS-2000 capabilities including automatic sample preparation
- Releases production personnel from the most delicate task, the analysis
- Affordable and expandable

At the cutting edge of technology

The ARL SMS-2000 XRF version

- High speed of operation
- XRF analysis without the need for cassettes
- Total sample handling flexibility
- Re-preparation of difficult metals production samples
- Large magazine for standards (up to 90 samples)
- Labeling of production samples and detection of radioactivity
- Full compatibility with OES version





Double your analytical power

The ARL SMS-3000

- Fast and integrated XRF and OES analysis
- Double OES version
- Up to two sample preparation machines
- Single source supply
- Flexible instrument integration and operational modes
- Heavier sample workloads easily accommodated
- Simplified operation (single system monitoring screen)
- More comprehensive and integrated automation solution
- Stationary and linear track versions
- Reduced sample analysis cost

The lab in a box for in-situ analysis

The ARL QuantoShelter

- OES and XRF versions
- Choice of sample preparation technique
- Response time of less than 2 minutes
- Minimum maintenance
- Remote control capability

A specialized laboratory management system

ARMS

- Designed specifically for high speed metals production control labs
- Result acquisition, merging, transmission, storage in less than 1s
- Adapts to your instruments and working habits
- Choice of automation level (operator driven system or unattended operation)
- Facilitates compliance with laboratory quality system
- Powerful result database with multi-user access option
- Full range of result processing functions

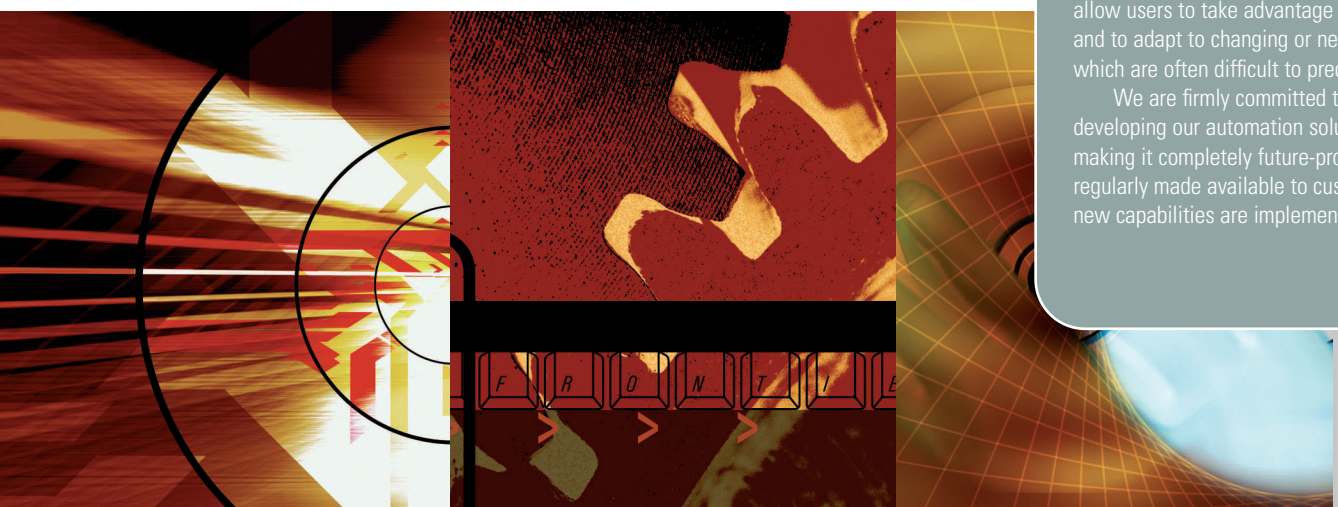
An open and evolving automation platform

Thermo Scientific SMS automation systems are the first generic automated spectrometer solutions designed, industrialized, documented, tested, manufactured and maintained according to ISO 9001:2000 procedures.

They benefit from a single software platform that covers all applications. This allows releasing the most thoroughly verified functionality ever produced for all system components to achieve both high availability and uptime.

Furthermore, our SMS and ARMS automation solutions are designed as standard products with very comprehensive functionality and total operational flexibility. Easy system fine-tuning and customization before, during and after installation allow users to take advantage of their experience and to adapt to changing or new requirements which are often difficult to predict and anticipate.

We are firmly committed to further developing our automation solutions thereby making it completely future-proof. Updates are regularly made available to customers whenever new capabilities are implemented.



Thermo Scientific spectrometers which can be automated

Our company provides a full range of optical emission spectrometers (OES), X-ray fluorescence (WDXRF, EDXRF, XRF with full XRD) and X-ray diffraction instrumentation (XRD) that cover every aspect of materials analysis from routine process control to highly specialized research applications. Among them, the following models can be fully automated with Thermo Scientific automation systems described in this brochure.

ARL 3460 Metals Analyzer

Flexible, multi-base spectrometer using optical emission technique

ARL 4460 Metals Analyzer

High performance, optical emission spectrometer including determination of inclusions

ARL Fire Assay Analyzer

Fast analysis of fire assay lead buttons by optical emission with ultimate performance

ARL OPTIM'X XRF spectrometer

Unique WDXRF platform with sequential and/or simultaneous capabilities

ARL ADVANT'X XRF series

High performance WDXRF sequential systems for almost any material

ARL 9900 XRF with full XRD series

Simultaneous speed and sequential flexibility for process and quality control by X-ray fluorescence and X-ray diffraction in the same instrument

In addition to these offices, Thermo Fisher Scientific maintains a network of representative organizations throughout the world.

Africa
+43 1 333 5034 127 • analyze.emea@thermo.com
Australia
+61 2 8844 9500 • analyze.au@thermo.com
Austria
+43 1 333 50340 • analyze.at@thermo.com
Belgium
+32 2 482 30 30 • analyze.be@thermo.com
Canada
+1 800 530 8447 • analyze.ca@thermo.com
China
+86 10 5850 3588 • analyze.cn@thermo.com
Denmark
+45 70 23 62 60 • analyze.dk@thermo.com
Europe-Other
+43 1 333 5034 127 • analyze.emea@thermo.com
France
+33 1 60 92 48 00 • analyze.fr@thermo.com
Germany
+49 6103 408 1014 • analyze.de@thermo.com
India
+91 22 6742 9434 • analyze.in@thermo.com
Italy
+39 02 950 591 • analyze.it@thermo.com
Japan
+81 45 453 9100 • analyze.jp@thermo.com
Latin America
+1 608 276 5659 • analyze.la@thermo.com
Middle East
+43 1 333 5034 127 • analyze.emea@thermo.com
Netherlands
+31 76 587 98 88 • analyze.nl@thermo.com
South Africa
+27 11 570 1840 • analyze.sa@thermo.com
Spain
+34 914 845 965 • analyze.es@thermo.com
Sweden / Norway / Finland
+46 8 556 468 00 • analyze.se@thermo.com
Switzerland
+41 21 694 71 11 • analyze.ch@thermo.com
UK
+44 1442 233555 • analyze.uk@thermo.com
USA
+1 800 532 4752 • analyze.us@thermo.com

www.thermo.com

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