Malvern Panalytical
a spectris company

AERIS
MINERALS EDITION

OUTPERFORMING EXPECTATIONS... **SURPRISINGLY INTUITIVE**

The Minerals editions of Aeris is Malvern Panalytical's X-ray diffractometer for everyone in the mining industry. Ease of use and maximum benefit are the key aspects. Experience for yourself how the operation of the Minerals edition of Aeris is just a breeze with its intuitive user interface on the built-in touch screen where all results you need are directly displayed.

At the same time, the Minerals edition of Aeris is designed for low cost of ownership. With its low power consumption, virtually unlimited lifetime of the tube and limited infrastructural requirements it guarantees low running costs.

Malvern Panalytical's engineers with their continuous drive to innovate have been able to outperform typical benchtop X-ray diffractometer performance. Aeris incorporates many technologies that were introduced on our high-end systems and have proven their benefits. The data quality and speed of analysis delivered by Aeris have previously only been seen on full-power systems.

Additionally, Aeris is the first benchtop X-ray diffraction (XRD) system that is fully automatable and can easily be incorporated in industrial production control.

Excellent X-ray diffraction for everyone indeed!

EFFICIENT PROCESSING OF ORES AND MINERALS

Configured for mining applications

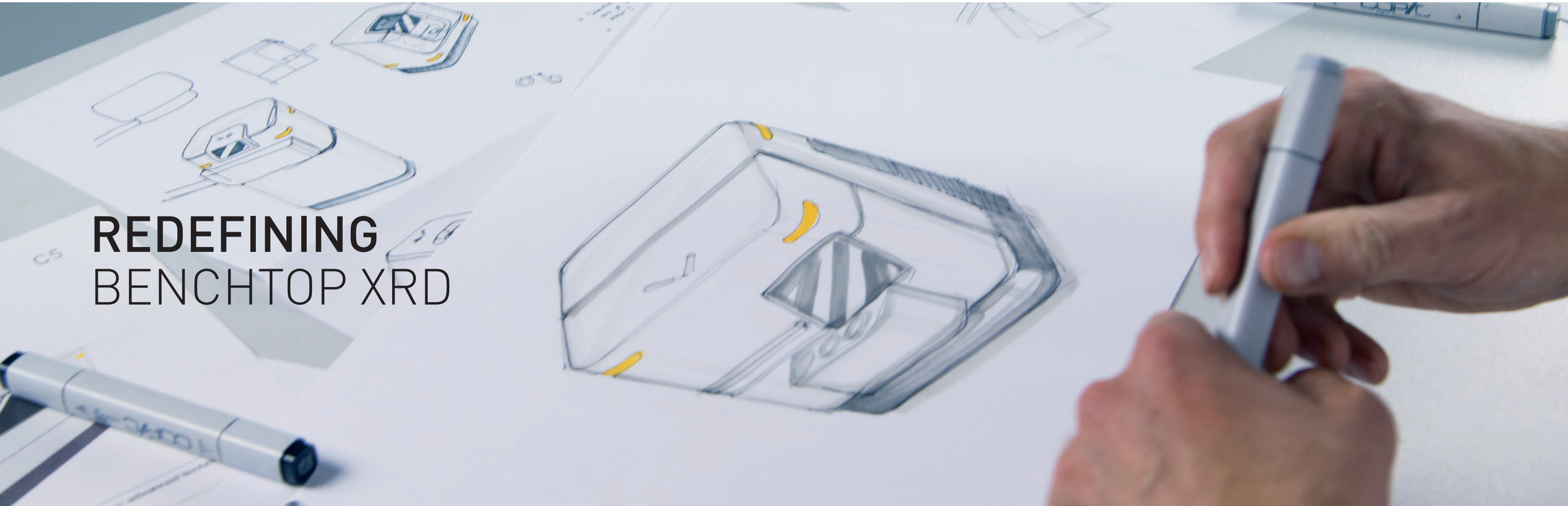
XRD can provide accurate mineral monitoring and input for hydrometallurgical models to obtain the most economic processing conditions.

Exploration	Greenfield	Brownfield
Determination of all existing minerals for resource estimation	Mineralogy defines the most suitable process for an ore type.	Investigate poor metallurgical performance.
Tracking of ore deposits and alteration zones	Knowledge of mineralogy helps to achieve optimal recoveries.	Enhance efficiency of the beneficiation process.
Modeling of shapes and types of ore bodies	Mineralogy information ensures the required product quality.	Increase recovery of ore minerals.

Where can mining companies benefit from X-ray diffraction ?

XRD for the mining industry

- Efficient method for directly obtaining information about the mineralogy of ores, concentrates and industrial residues
- Partner at every stage of the of the production process, from raw material to the final product
- Rapid analysis minimizing feedback loops and allows early intervention for process optimization
- Safe and non-destructive analysis tool

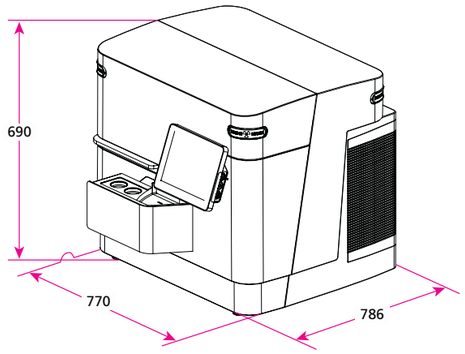


REDEFINING BENCHTOP XRD

PROCESS MONITORING IN MINING **MADE EASY**

Aeris can be used by everyone and everywhere. With its small footprint the instrument can be placed wherever you want it to work for you. Put it for example in a container laboratory directly in the mine or processing plant and get fast analyses of your material on-site. Sample preparation is easy and safe and does not require additional chemicals.

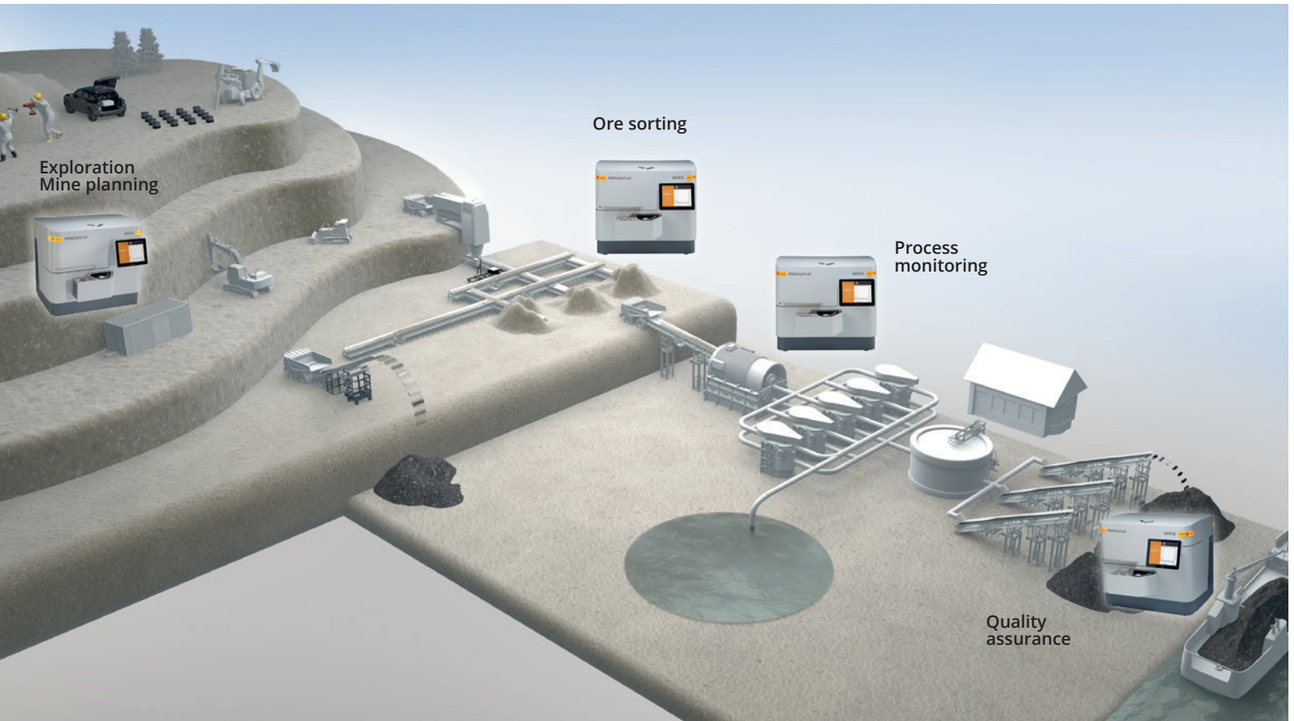
Aeris' low cost of ownership delivers maximum return on investment: it has very limited infrastructural requirements with its small footprint and it has no need for compressed air or cooling water. Aeris has a much lower power consumption compared to floorstanding X-ray diffraction systems and its X-ray tube has a virtually unlimited lifetime.



SEAMLESS INTEGRATION IN **AUTOMATION**

The only automatable benchtop diffractometer for high sample throughput
Aeris can be connected with belt for fast and automated sample processing.

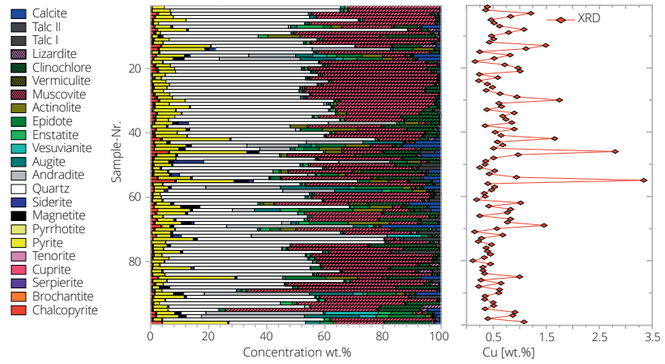
The power of combining technologies
The twin solution, Aeris and Zetium, provides full material characterization by adding elemental composition information from Zetium to the phase composition by Aeris.



VERSATILE ANALYSIS OF ORES

Analysis of copper ores with complex mineralogical composition

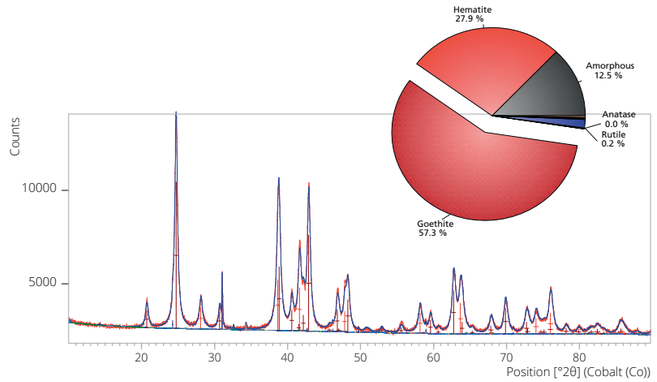
Aeris needs only 10 minutes to deliver an accurate analysis of a complex ore sample containing more than 20 different mineral phases.



Mineralogy of 100 copper ore samples (left), total copper content calculated from the mineralogy

Crystalline and amorphous content in iron ores

Aeris in combination with Malvern Panalytical's software module HighScore is also capable to quantify the amorphous content of rocks and ores besides their mineral composition.

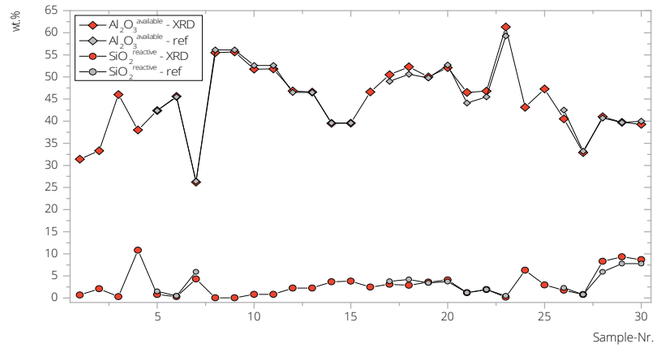


Quantitative analysis of minerals and amorphous content in iron ore

Direct monitoring of process parameters in bauxite

Aeris is the only benchtop diffractometer that allows the direct monitoring of process parameters such as the available alumina or reactive silica in bauxites.

PLSR (partial least squares regression) as part of the HighScore software module makes Aeris a unique tool for process monitoring.



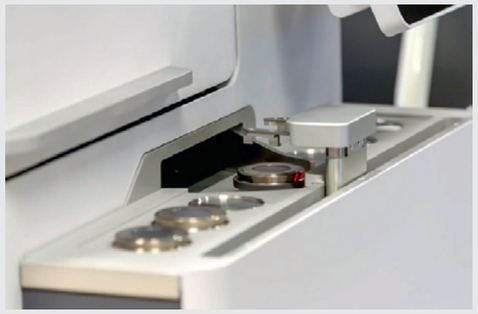
Comparison of XRD/PLSR results and wet chemistry for the available alumina and reactive silica content in bauxite

STRONG **AND** ROBUST

Fast and reliable feedback into the process is paramount for producing good-quality ore concentrates and metals efficiently. Uptime of the analytical equipment is therefore key. From the ground up, Aeris has been designed for maximum uptime. This is additionally backed by Malvern Panalytical's global network of customer support and application specialists.
Aeris is the first benchtop XRD, providing seamless integration in any industry standard automation system with a belt or a robot. Also Aeris complies with the most stringent safety standards.

Rugged design
The only benchtop XRD with external sample loading for ultimate dust protection of the heart of the instrument.

Minimum of infrastructural requirements
No cooling water, no chiller, no compressed air - the only thing you need is a single-phase power socket.



Industry-ready
Compatible with all common industry standards; from LIMS interfacing protocols to various industry-standard sample holders.

External sample changer
Easy-to-use sample changer with a continuous sample flow compatible with industry standard sample holders.

Fully automatable
Aeris can be connected to a belt. Data transfer is provided with industry standard LIMS protocols.

Easy operation
Intuitive operation via on-board high-resolution (1024 x 768) 10.4" LCD touch screen.

Speed and sensitivity pack
Even faster analysis and improved detection of minor phases.

Safety guaranteed
Aeris complies with the most stringent safety requirements. No chemicals are needed for sample preparation.

AN **EASY** TOUCH

Accurate and reliable results in just a few steps

Place sample and enter sample information

Select measurement program and hit start

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WHY CHOOSE **MALVERN PANALYTICAL**?

We are global leaders in materials characterization, creating superior, customer-focused solutions and services which supply tangible economic impact through chemical, physical and structural analysis.

Our aim is to help you develop better quality products and get them to market faster. Our solutions support excellence in research, and help maximize productivity and process efficiency.

Malvern Panalytical is part of Spectris, the productivity-enhancing instrumentation and controls company.

www.spectris.com

SERVICE & **SUPPORT**

Malvern Panalytical provides the global training, service and support you need to continuously drive your analytical processes at the highest level. We help you increase the return on your investment with us, and ensure that as your laboratory and analytical needs grow, we are there to support you.

Our worldwide team of specialists adds value to your business processes by ensuring applications expertise, rapid response and maximum instrument uptime.

- Local and remote support
- Full and flexible range of support agreements
- Compliance and validation support
- Onsite or classroom-based training courses
- e-Learning training courses and web seminars
- Sample and application consultancy

www.malvernpanalytical.com/aeris

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