



**Malvern
Panalytical**
a spectris company

AERIS CEMENT EDITION



OUTPERFORMING EXPECTATIONS... SURPRISINGLY INTUITIVE

The Cement edition of Aeris is Malvern Panalytical's X-ray diffractometer for everyone in the cement industry. Ease of use and maximum benefit are the key aspects. Experience for yourself how the operation of the Aeris Cement edition 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 Cement 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 the Aeris Cement edition have previously only been seen on full-power systems.

Additionally, the Cement edition of 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!

PRODUCE GREENER AND MORE EFFICIENT WITH XRD

Configured for cement applications

XRD provides mineralogical information that is directly linked to physical properties of cement and its intermediate products. This information facilitates more efficient and greener production control.

Strength, setting properties, hydration properties and chemical resistance are directly linked to the mineralogy of cement (see table below). XRD is the method for direct probing of these minerals allowing better judgment of the physical properties already in the production phase.

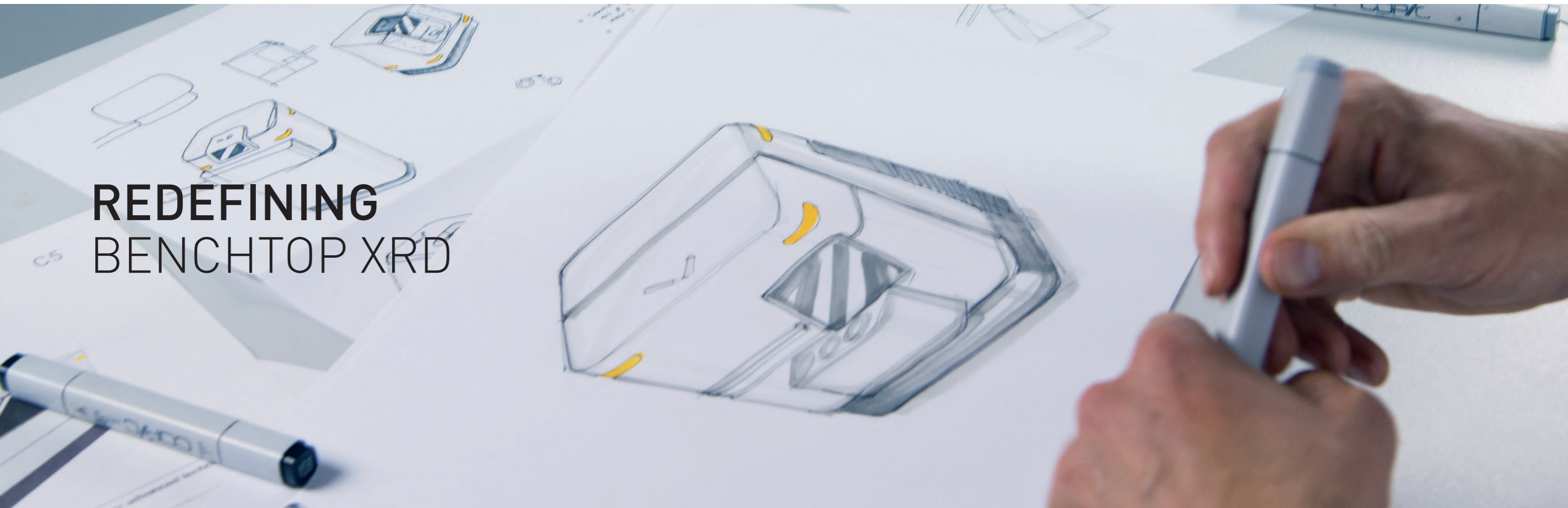
Physical property	Compound
Initial strength	Alite (C ₃ S)
28 day strength	Belite (C ₂ S)
Setting time	Aluminate (C ₃ A)
Sulfate attack	Ferrite (C ₄ AF)
Expansive hydration Measure for burning conditions	Free lime (CaO)
Expansive hydration	Periclase (MgO)
Setting retarder	Gypsum (CaSO ₄ •2H ₂ O)
False setting	Bassanite (CaSO ₄ •1/2H ₂ O)
Slow setting	Anhydrite (CaSO ₄)

What X-ray diffraction can tell about your cement

XRD for the cement industry

- Efficient method for directly obtaining information about the quality of (blended) cements. Compliancy with the norms for modern cements is guaranteed.
- Partner at every stage of the cement production process, from raw meal, clinker and (blended) cement to the final product
- Rapid analysis minimizes feedback loops and allows early intervention for process optimization.
- Safe and non-destructive analysis tool

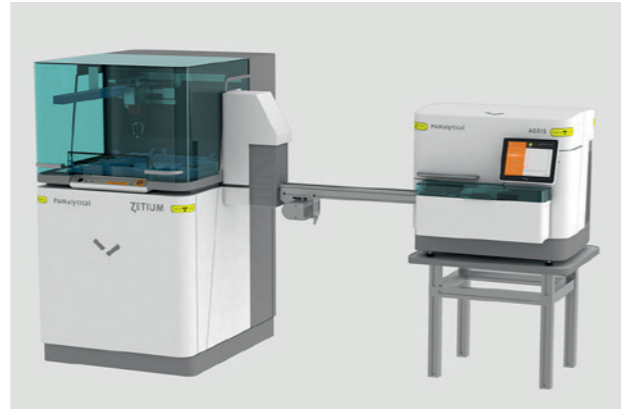
REDEFINING BENCHTOP XRD



PRODUCE GREENER AND MORE EFFICIENT

Do you want to analyze raw materials, raw meal, hot meal, clinker, additives or cement? Aeris is the turn-key solution and ready for reliable mineralogical feedback to the process the moment you start up the system. With its intuitive touch screen Aeris is very easy to use and with an analysis time of just 5 minutes for clinker or cement it is fast.

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

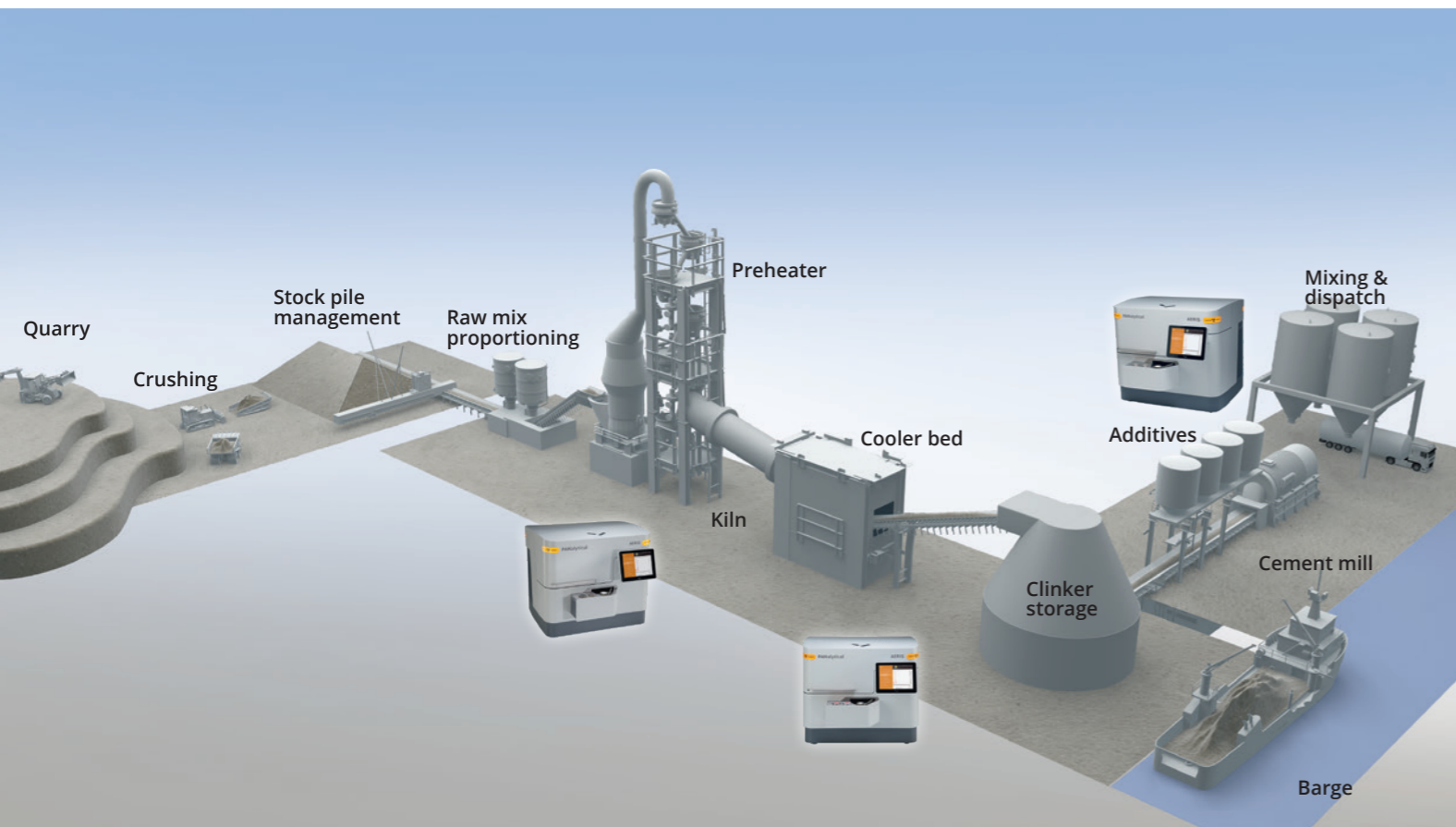
Aeris can be connected with a belt for fast and automated sample processing.

The power of combining technologies

With automation, one can combine Aeris, Zetium and/or sample preparation equipment to create an automated laboratory, capable of both mineralogical and elemental analysis. Ask your Malvern Panalytical contact for a tailored quotation for a turn-key solution.

Industry standard sample holders tailored to your needs

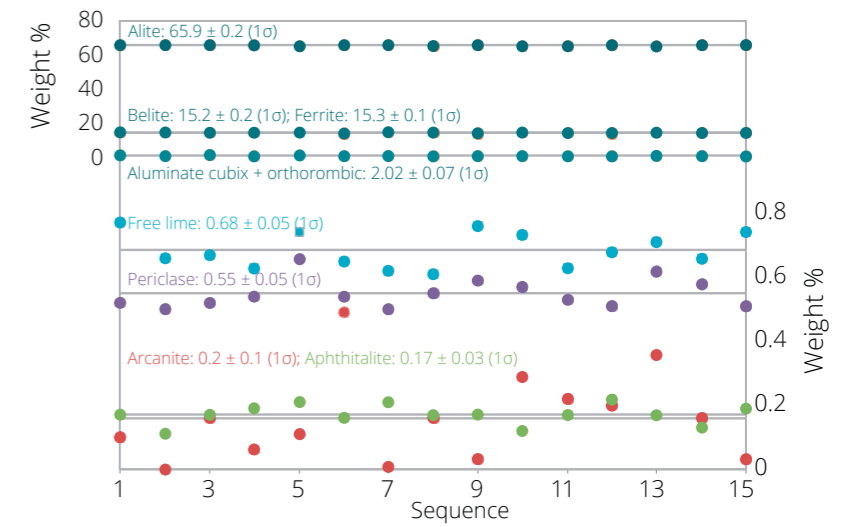
Either collection of 51.5 mm sample holders or 40 mm sample holders



EASY AND FLEXIBLE ANALYSIS

Accurate and reliable process control

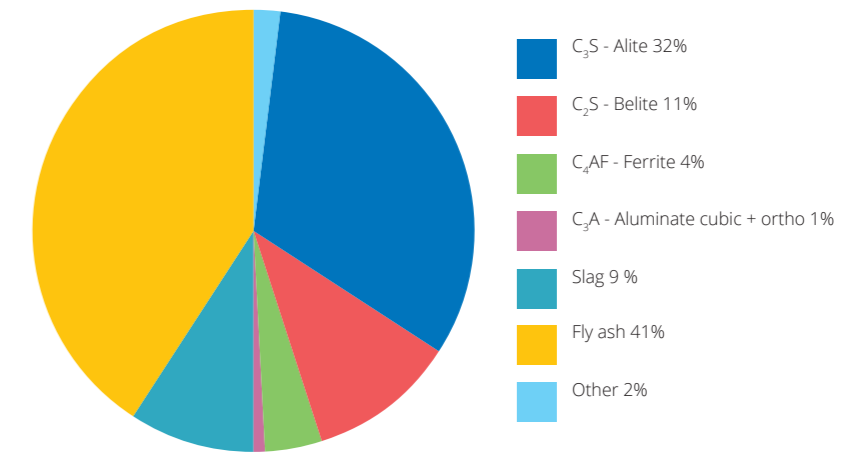
Control of the pyroprocessing with Aeris is very reliable with its high degree of repeatability.



Repeatability of the mineralogical quantification in a clinker

Accurate and reliable quality assurance of (blended) cements

The advanced calculation routines of Aeris allow precise and reliable quality assurance of your final (blended) cement and accurately benchmark against cement classification norms like EN-197 or ASTM C150.



Mineralogical quantification in a blended cement containing both slag and fly ash

STRONG AND ROBUST

Fast and reliable feedback into the process is paramount for producing good-quality cement 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

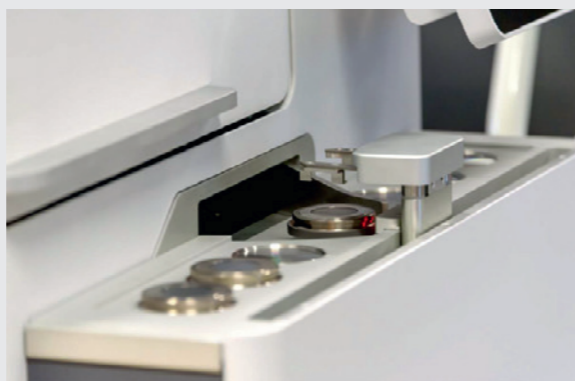
Intuitive operation via on-board high-resolution (1024 x 768) 10.4" LCD touch screen.

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





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

www.spectris.com

SERVICE & SUPPORT

Malvern Analytical 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



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