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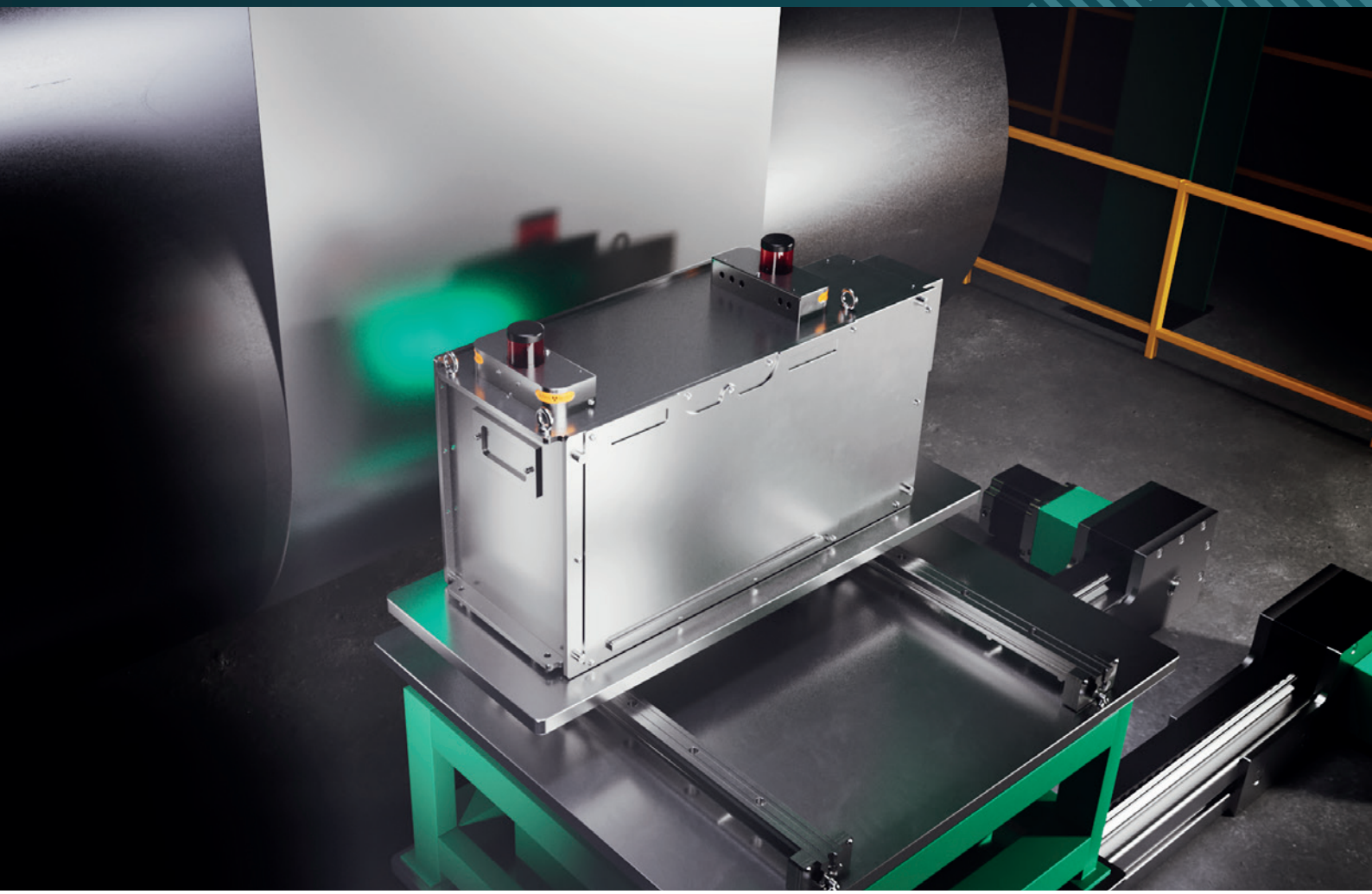
On-line XRD

Monitoring galvannealed steel with on-line XRD



Monitoring galvannealed steel with on-line XRD

Seeking real-time galvannealing monitoring

From sustainability to costs, process control is increasingly important for the metals industry as a lever to optimize all kinds of efficiencies. And galvannealing – where steel is galvanized with a protective zinc coating and then annealed using heat to create an alloy – is no exception.

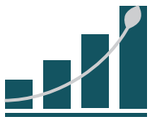
Galvannealing provides excellent corrosion resistance and surface quality and is especially useful for automotive applications such as welding. But, to ensure the galvannealed steel has strong paint adhesion, forming, and corrosion resistance, manufacturers need to monitor the process carefully. Especially since errors can mean re-melting the steel coil or selling it for a lower price.

Thanks to the crystallographic data it provides, X-ray diffraction (XRD) is ideal for this kind of monitoring. But, until recently, most galvannealing monitoring solutions provided only off-line analysis, often taking up to 8 hours for a single sample. Avoiding this downtime while still achieving consistent monitoring has traditionally been a major challenge for steel production managers.

Reliable measurements

Real time defect detection

Smooth and simple installation

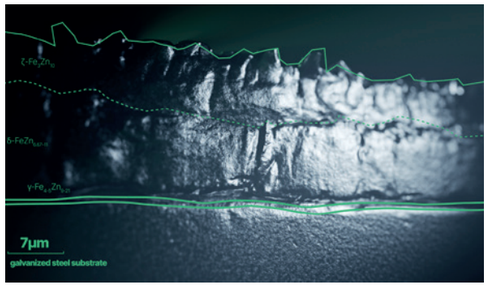


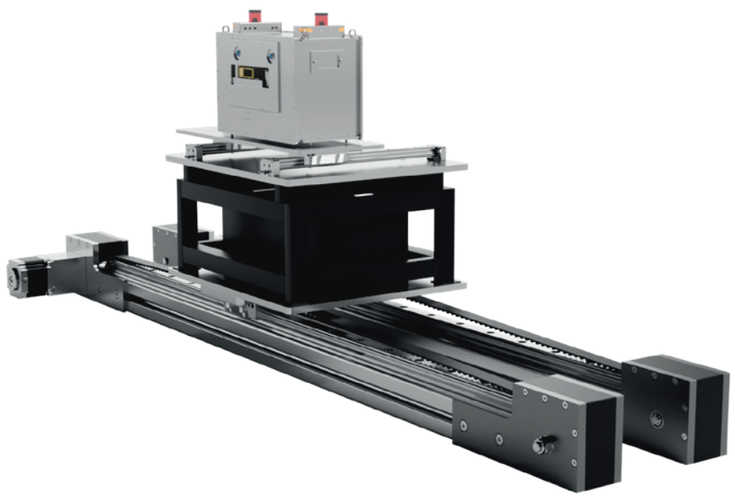
Improved environmental impact

Introducing industry-first on-line XRD solution

At Malvern Panalytical, we wanted to provide a solution to this challenge. That's why we teamed up with one of the leading steel manufacturer to create an industry-first solution: an on-line XRD monitoring instrument.

This game-changing solution provides continuous on-line monitoring during steel galvannealing. Its first-class tube, detector, and software use XRD to provide real-time feedback. You can use data generated from on-line XRD to monitor critical process parameters, such as crystallographic phase composition and layer thickness, and achieve measurements close to the quality of those from a lab sensor.





Key benefits

- Real-time, on-line analysis to maximize your uptime
- Reduced process errors and waste
- Direct feedback and fast counteractions
- Reliable measurements close to lab quality
- Better cost efficiency
- Improved environmental impact
- Quick, easy setup

A solution you can rely on

Monitoring with on-line XRD not only reduces production errors, but also lowers the associated waste and energy usage. Instead, you can use only the necessary amount of raw materials, helping you to improve your cost efficiency and prevent over-alloying. And of course, these savings also help you to meet the growing demand for a lower environmental impact.

Most importantly, these improvements don't come at the cost of increased downtime. By providing continuous insight into your galvannealing performance, the on-line XRD instrument enables you to keep production running and free up time for lab staff to focus on other tasks.

Smooth, simple installation

The on-line XRD instrument can be set up safely and easily within just one day, and we can install it whenever you have your next preventive or industrial maintenance planned. No need for downtime or disruption! And it doesn't stop there: once you're up and running, you can also count on our expertise and application support.

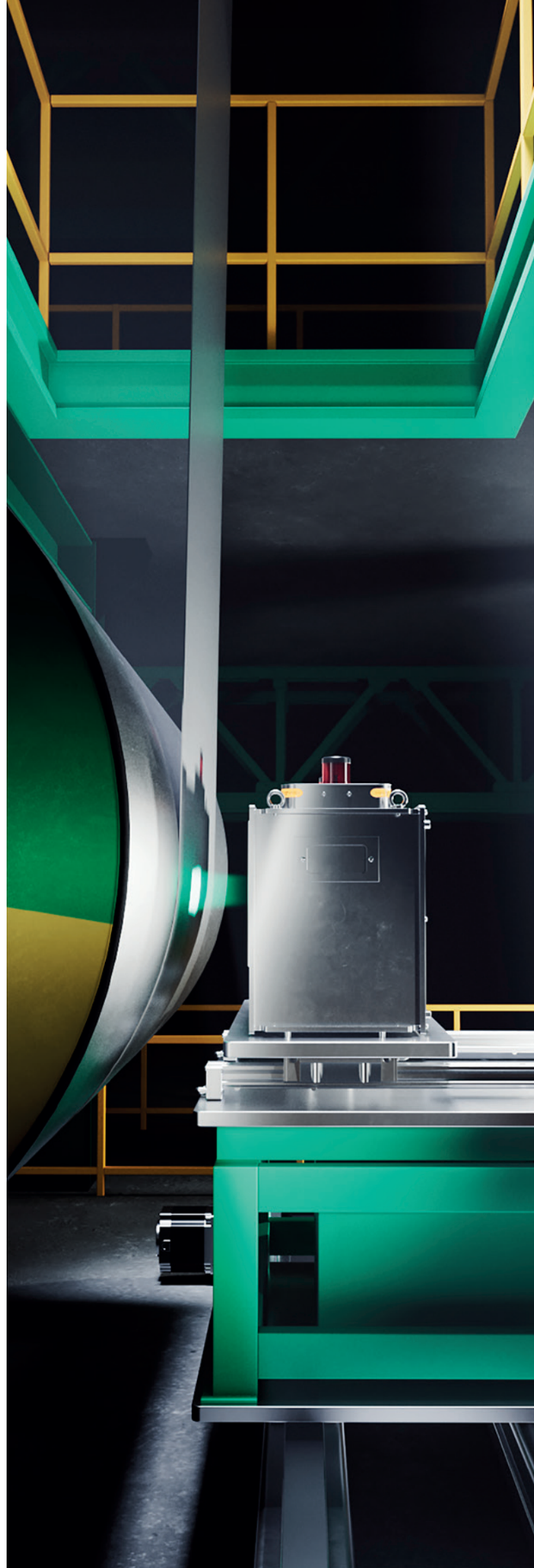
Looking ahead…

This is just the start: on-line XRD can support the metals industry even further in the years to come. If combined with an XRF system, for instance, the tool could also measure elemental concentration alongside thickness and phase composition. Further ahead, these technologies could be combined with digital solutions, such as artificial intelligence or machine learning, for even better process parameters.

Count on us for support

Of course, our solutions are backed by the highest levels of customer service. As well as our service engineers, our global customer support network is always on hand with support and advice – so don't hesitate to reach out to us!

Scan the QR code to watch the on-line XRD video



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About Malvern Panalytical

We draw on the power of our analytical instruments and services to make the invisible visible and the impossible possible.

Through the chemical, physical and structural analysis of materials, our high precision analytical systems and top-notch services support our customers in creating a better world. We help them improve everything from the energies that power us and the materials we build with, to the medicines that cure us and the foods we enjoy.

We partner with many of the world's biggest companies, universities and research organizations. They value us not only for the power of our solutions, but also for the depth of our expertise, collaboration and integrity.

We are committed to Net Zero in our own operations by 2030 and in our total value chain by 2040. This is woven into the fabric of our business, and we help our employees and customers think about their part in creating a healthier, cleaner, and more productive world.

With over 2300 employees, we serve the world, and we are part of Spectris plc, the world-leading precision measurement group.

Malvern Panalytical. We're BIG on small™

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

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