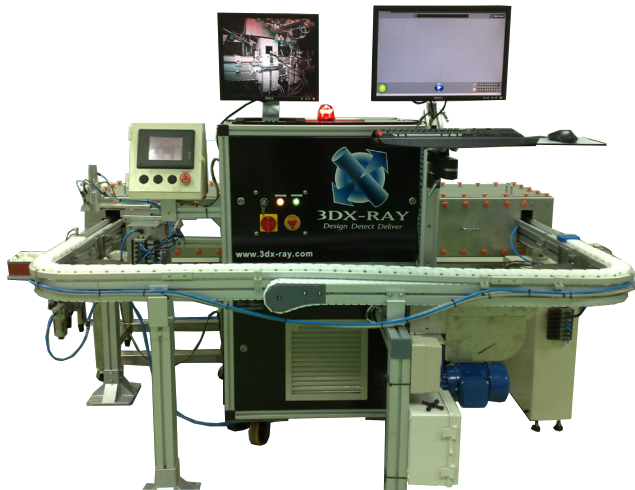


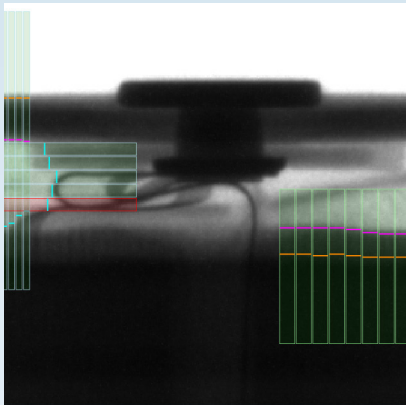
3DX-RAY



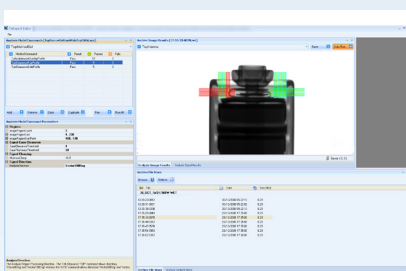
CASE STUDY

Battery x-ray inspection

Cutting edge x-ray inspection system on next generation battery line



Battery tab analysis



Software operating environment



Real time pass/fail display

Boston Power: a case study in guaranteeing manufacturing integrity

The Client

Boston Power is a leading manufacturer of next generation lithium batteries.

The Challenge

A complex manufacturing process means that safety testing and quality control is crucial in delivering reliable products.

Declan Shalvey of Boston Power explains how installing a specialised in-line x-ray inspection system has enabled the company to continue to guarantee the safety and reliability of its battery products to its customers.

“There are many things that could go wrong in the manufacture of batteries, a short-circuit in a lithium-ion battery can cause it to ignite or explode. There are over 40 features within the electrical assembly of each battery that need to be checked in order to ensure the absolute safety of each product and in-line testing means that these checks have to be done in real time.

Whilst simple electrical tests can pick up significant faults, latent faults inside the battery such as misaligned elements can be a huge problem and can be very dangerous for users should they develop into actual failures by real-world use.

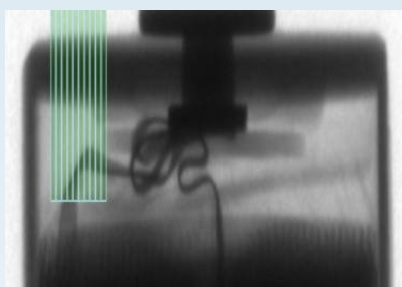
Extensive electrical and mechanical testing is carried out as part of the manufacturing process to ensure that no faults, latent or otherwise, slip through the net, however, these more traditional test techniques can be very inefficient and can fail to see the concealed latent fault.

CASE STUDY

Battery x-ray inspection



Battery inspection installation



Detailed tab analysis

Features

- 100% in-line inspection
- Sub-millimetre inspection of parts in two orientations
- High quality analysis
- Real-time images
- Automatic Pass/Reject
- Integration with factory systems

Benefits

- Guaranteed integrity of all products
- Improved efficiency of inspection
- Improved customer satisfaction
- Prevention of product recalls

What we wanted to do as a company was to introduce a method of testing that provided 100% in-line inspection to not only improve efficiency but also guarantee the manufacturing integrity of each and every product on the production line. Our customers get a three-year guarantee on Boston Power battery products so this necessitated a stringent inspection policy in our manufacturing plants. X-ray scanning is the best and probably the only practical way to see inside the batteries to check on the internal structure and to ensure that there are no problems with each battery.

High resolution x-ray inspection can check the alignment of all parts and that the anode and cathode are far enough from the wall of the battery to ensure safety and on-going performance of the product. Boston Power was looking for the fastest but also the most accurate x-ray system for our production line. We approached 3DX-RAY as they were able to provide an extremely high quality analysis of the process. Moreover, they were also able to provide a system that would be tailored to our specific needs. We tasked 3DX-RAY to install a full in-line inspection system in our facility in Taiwan and their flexible technology and expertise was key to the successful installation of the inspection system.

The Solution

3DX-RAY designed, built, delivered and commissioned a high performance custom x-ray inspection system from scratch within eight weeks for the Taiwan facility. The system not only included bespoke software but was also designed with in-built flexibility. This flexibility was crucial in two respects: the battery inspection can take place at various stages in the production line and we also have a variety of battery shapes with the potential for more variants in the future.

The Result

3DX-RAY's equipment is now running 24 hours a day, seven days a week in our Taiwan facility. We are producing up to 600,000 units per month and every one is screened using our 3DX-RAY in-line inspection system.

Following the installation we have also received ongoing support from 3DX-RAY. This has included use of an in-built remote support system enabling 3DX-RAY to change system parameters remotely as we continually refine our manufacturing processes.

Ultimately 3DX-RAY's equipment has enabled us to continue to guarantee the absolute safety and reliability of our products for our customers. As we grow our company and our production volumes manufacturing integrity simultaneously becomes more important and more challenging to maintain. Having high quality tailored equipment such as 3DX-RAY's means that we can always deliver the highest standards of product reliability."

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