HITACHI
Inspire the Next

Detect contaminants. Avoid disaster.

ANALYZERS FOR PRODUCTION, RESEARCH AND DEVELOPMENT OF BATTERIES

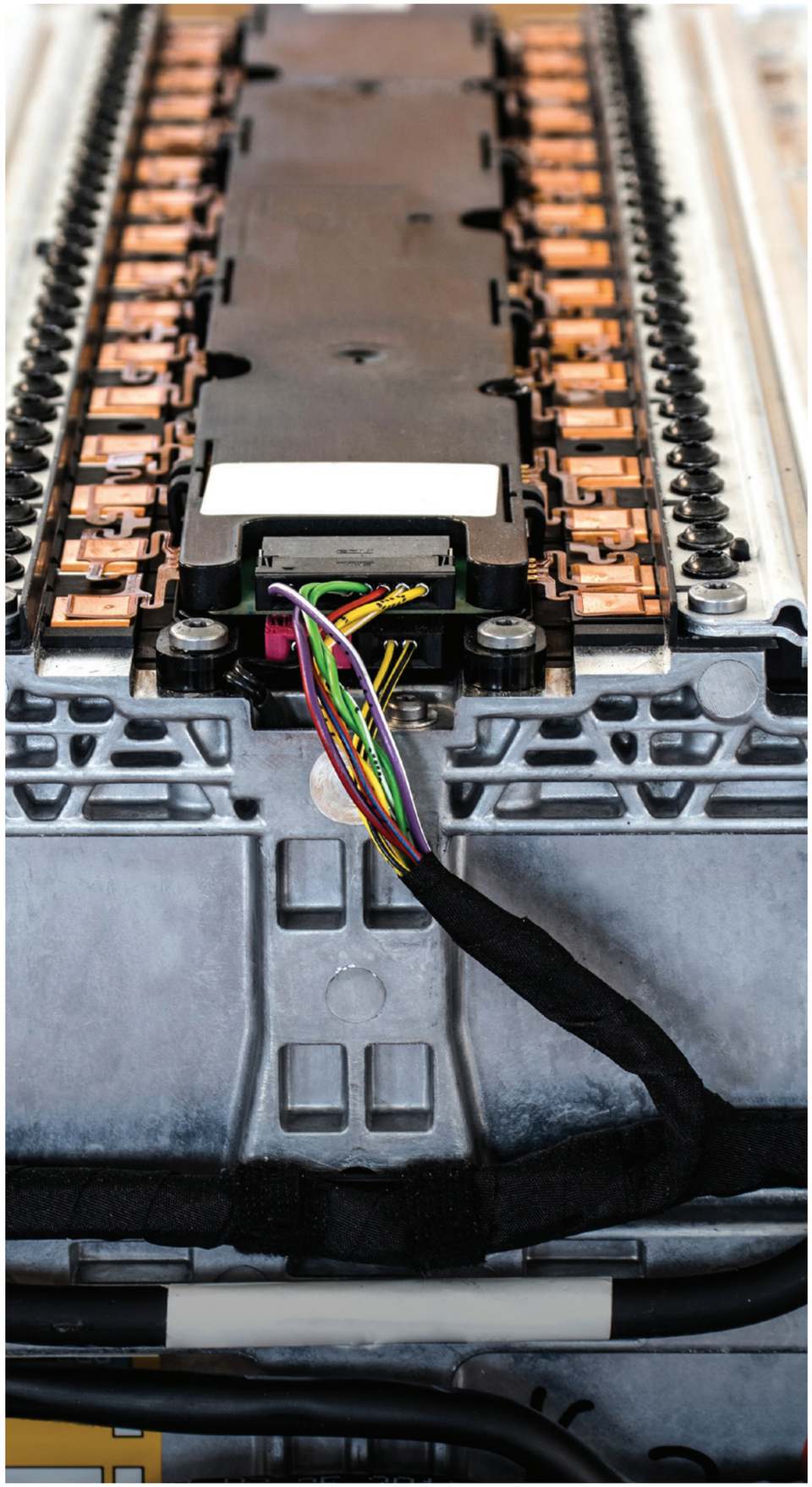
Detect Contaminants. Avoid disaster.

Today's rapidly increasing demand for electric vehicles and mobile consumer electronics mean that lithium ion battery demand is growing. Battery manufacturers are under pressure to deliver high quality batteries to demanding production targets. And research facilities need to increase energy densities with the use of novel materials and design, without increasing the risk of thermal runway when in operation.

Hitachi's range of Analyzers for LIB production and development contain powerful detection technology supported by automated features that make it easy to identify metal contaminants that could be missed with a visual inspection. Raw materials, electrodes and separators can all be verified and, as analysis is fast, checks can be made at several points throughout production.

Our products can help with research and development too. Thermal stability analysis of newly developed materials can be done with precise temperature control with our thermal analyzer range that puts usability and accuracy at the center.

Whether in the lab or within a busy production environment, our analyzers slot easily into your quality control process, ensuring that LIB production of today – and tomorrow – meets the highest safety standards.



Supporting LIB production and development

POWERFUL X-RAY TECHNOLOGY

Reliable detection of minute contaminants over a large area is made feasible through state-of-the-art X-ray and detection technology backed up by automated features.

ACCURATE THERMAL EVALUATION

World-class baseline performance for high accuracy evaluation of battery electrodes and electrolyte materials in development.

SIMPLE OPERATION

Intuitive software interface with easy sample loading make life easier and reduce mistakes so our equipment can be used by anyone with just a little training.

DURABILITY

Our analyzers are designed to withstand busy production environments where they are in use round the clock.

CLEAR REPORTING

Analysis results are presented in a clear format and esults can be exported for later review or for quality control purposes.

EXTENDED WARRANTIES

Giving you extra peace of mind and helping to avoid unplanned costs.

TECHNICAL SUPPORT

Online diagnostics, telephone support and a fast and efficient repair service help keep you running when you need it.

EA8000A X-ray Analyzer for failure risk analysis of LIBs

The ability to detect metal contaminants beneath the surface makes the EA8000A ideal for manufacturers of high-performance lithium ion batteries where rapid analysis is essential to meet demand

Designed for LIB quality control, the EA8000A rapidly detects metal particle contaminants within lithium ion batteries, helping to prevent the catastrophic failures that occur if these particles are present.

The EA8000A combines two powerful X-ray detection technologies that locate and identify damaging metal particles within the battery - from 20µm in size, delivering a comprehensive analysis of the size, distribution and particle type that's so crucial when controlling battery quality. Fast analysis, ease of use and automation support high volume production helping you meet delivery targets.

With the versatility to analyze anode plates, cathode plates, powders like carbon black and other active materials as well as separators, the EA8000A supports 100% quality control with incoming material testing, process control and failure analysis.

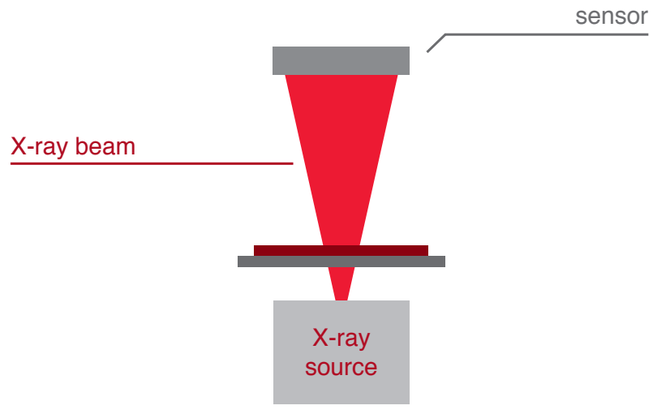
Two powerful X-ray technologies. One complete picture.

Within the EA8000A are two advanced X-ray analytical instruments. These combine to give you a uniquely comprehensive picture of the size, distribution and type of metal particles present within critical areas of the lithium ion battery. This gives you the information you need to determine whether each battery will work as expected once in operation.

TRANSMISSION X-RAY IMAGING

The EA8000A locates metal particles within the cell using transmission X-ray imaging. This performs a rapid scan of the whole area and as the X-rays pass through the sample to the detector, it detects metal particles throughout the entire volume of component.

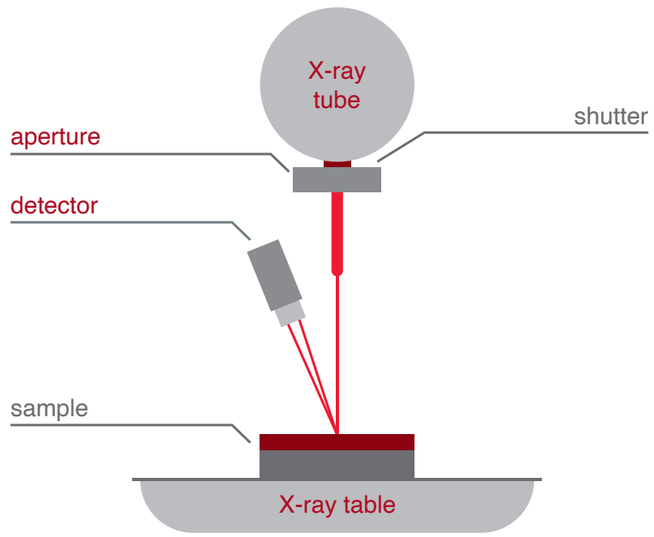
This gives you critical information about the size and distribution of the particles within the battery – few large particles will behave differently to many small ones, and this distribution information is essential for quality control and failure analysis.



X-RAY FLUORESCENCE SPECTROSCOPY

At each metal particle found by the transmission X-ray imaging, the EA8000A automatically brings advanced XRF analysis into play. Using powerful polycapillary optics, the XRF system can analyze the composition of metal particles beneath the surface in electrode plates and organic films.

The two technologies working in tandem gives you rapid results while ensuring all contaminant sites are located and analyzed.



Thermal Analyzers for thermal stability testing of LIBs components

Hitachi's TA range of DSC, STA, DMA and TMA instruments let you check the thermal stability of new and innovative materials you have in development – or double check the temperature dependent behavior of materials for quality control in production.

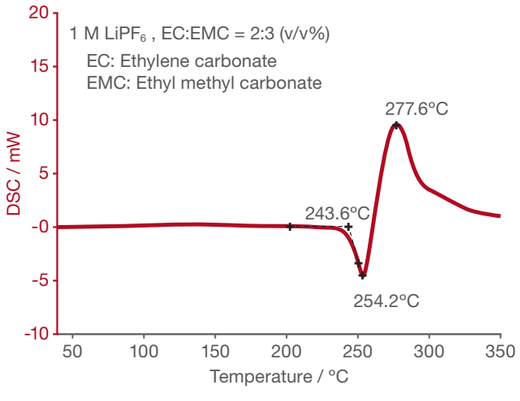
NEXTA DSC DIFFERENTIAL SCANNING CALORIMETER

The NEXTA DSC range is purpose designed to meet the most advanced DSC applications, particularly within applied research. Offering world-class sensitivity and baseline flatness, the NEXTA DSC enables you to test the thermal stability of materials for use in LIBs.

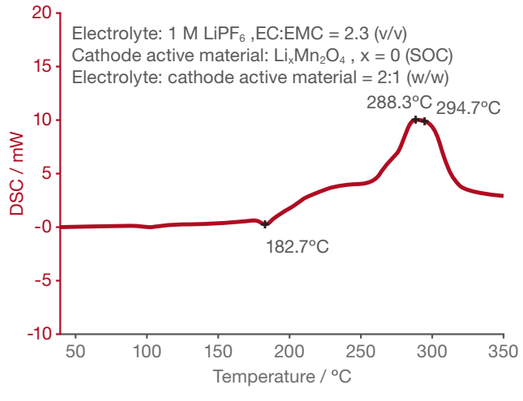
- Evaluate exothermic behavior of electrolyte and cathode materials
- Auto-sampler testing and auto analysis function for fast and simple evaluation of materials
- High sensitivity and baseline performance with high-accuracy furnace design for reliable results even on the weakest thermal event
- Wide range of cooling devices with possibility to have both electrical and liquid nitrogen cooling connected at the same time for ease of use.

EXOTHERMIC BEHAVIOR OF ELECTROLYTE AND CATHODE

(1) Electrolyte



(2) Electrolyte + Cathode



NEXTA STA SIMULTANEOUS THERMOGRAVIMETRIC ANALYZER

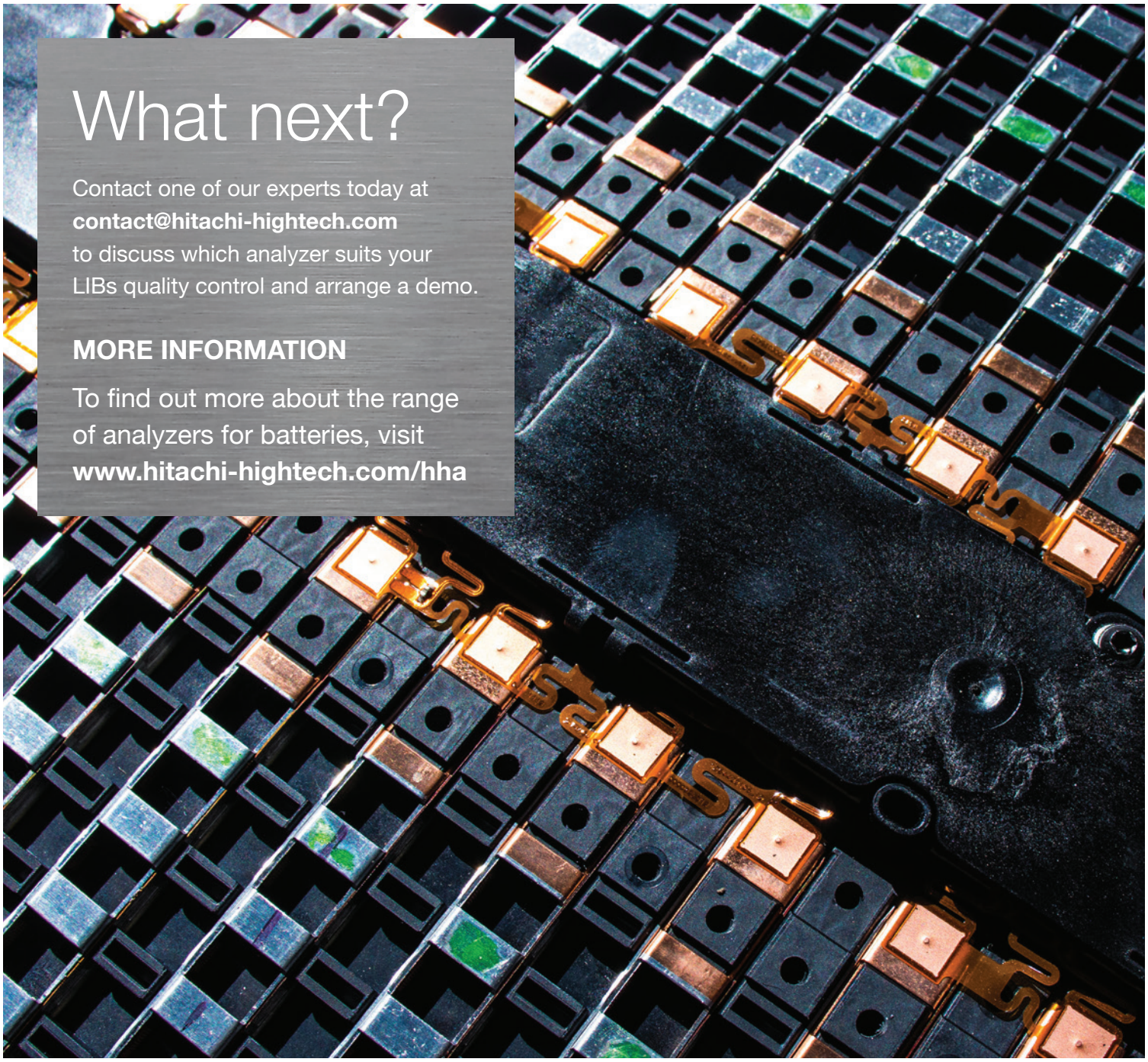
The NEXTA STA offers world-class baseline performance, giving you accurate and precise results when evaluating the thermal behavior of materials developed for use as electrolytes, electrodes and separators. In addition to TGA measurements, the NEXTA STA gives you DSC results which can be used for measuring heat capacity, temperature stability in different environments, decomposition temperature and quantitative analysis of battery component materials.

- Efficient and easy to use with intuitive software and an auto-sampler feature
- The RealView camera system lets you see the material behavior live on screen and recorded with your thermograms
- Fine control heating system allows accurate and precise TGA measurements
- Easy report creation, even for non-expert users, allowing for more detailed review of results at a later time.

TMA 7000 RANGE THERMOMECHANICAL ANALYZER

The Hitachi TMA (Thermo Mechanical Analyzer) is used for evaluating expansion or shrinkage of samples across a wide temperature range. These parameters are essential to design engineers, and our TMA analyzers are also used for quality assurance or outgoing inspection to ensure a customer's product is precisely to specification. Hitachi's versatile TMA can also perform other analytical tasks, such as creep measurement, stress relaxation measurement, heat shrinkage-stress measurement, stress-strain curve as well as DMA measurement in a single instrument.

- High reliability measurement with high sensitivity sensor
- Multiple applications in a single unit thanks to superior load control technology
- High accuracy with superior temperature control.



What next?

Contact one of our experts today at **contact@hitachi-hightech.com** to discuss which analyzer suits your LIBs quality control and arrange a demo.

MORE INFORMATION

To find out more about the range of analyzers for batteries, visit **www.hitachi-hightech.com/hha**

Other products

We have been providing production analysis products to a wide range of industries for over 45 years.

- **Micro spot XRF:** for precise analysis of the smallest samples and features.
- **RoHS Screening:** dedicated solutions for ensuring you meet current RoHS directives, including phthalates.
- **Handheld XRF:** for portable analysis of parts to large or heavy to fit in a benchtop system.

Browse our full range of products online at **www.hitachi-hightech.com/hha**

Hitachi High-Tech Analytical Science

Part number: 10027382

Science for a better tomorrow