



[www.qa-group.com](http://www.qa-group.com)

# QUALITY ASSURANCE DOWN TO THE SMALLEST DETAIL.

That something special about Quality Analysis: in our organisation you will find the right experts and the right analysis methods for all materials and every requirement.

## Our service areas:

- Industrial computed tomography
- Industrial metrology
- Technical cleanliness verification
- Materialography
- Chemical analytics



# INDUSTRIAL COMPUTED TOMOGRAPHY

# A NON-DESTRUCTIVE LOOK INSIDE THE COMPONENT.

With the aid of industrial computed tomography, we measure and analyse the internal and external characteristics of your components and provide information about porosities, defects, cracks, wall thicknesses, assembly states or make nominal-actual comparisons.

- Fast, reliable measurement results thanks to high machine capacity and extensive human resources
- Accredited measuring rooms with more than 1,000 m<sup>2</sup>
- Modern, flexible range of equipment: Varian, Zeiss and GE
- Data evaluation using VG StudioMax 3.2 and GOM Inspect Professional
- Very small and large components in all materials

With extensive experience and sound expertise, our experts obtain the best from every analysis so that you can rely on excellent measurement results.



# WHAT'S NEW?

## Non-destructive measurement and testing of electrostatic sensitive components (ESDS parts) in ESD protection zone

- ESD protection zone (EPA, electrostatic protected area)
- Device complies with the requirements of the standard DIN EN 61340-5-1 (VDE 0300-5-1), which describes the general requirements for the protection of electronic components
- ESD control elements, such as work surface, LED magnifier light, wristband, floor covering, chair and clothing have been qualified by an external test laboratory
- Regular internal verification with own calibrated measuring instrument
- Trained and instructed personnel
- Continuous environmental monitoring (temperature und relative humidity)
- Personnel access to ESD protection zone only after discharge capability test (PGT, personnel grounding tester)





# WHAT'S NEW?

With our new high-resolution 3D X-ray microscope **GE nantom m** we can now undertake CT scans in the micrometre and nanometre range.

With a minimum resolution of 0.2  $\mu\text{m}$  we can depict material and component characteristics with even higher resolution and close the gap to materials microscopy.

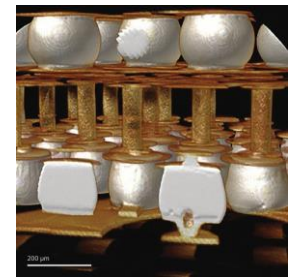
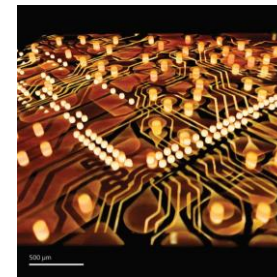
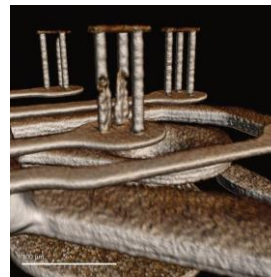
## Application examples:

- High-resolution safety and quality checks on **lithium-ion batteries**
- Analysis of **coatings** and **material characteristics**
- Structure and damage analysis on **electronic components** and **semiconductors**
- Detailed analysis of shape, size and volume of powder particles from **additive manufacturing**



### + TECHNICAL DATA VERSA 520 +

- Minimum achievable voxel size: <300 nm
- Voltage: 180 kV
- Maximum electron source power: 15 W
- Sample size:  $\varnothing$  240 mm, Height: 250 mm
- Sample weight: 3 kg
- 5-axis technology with 360° round table



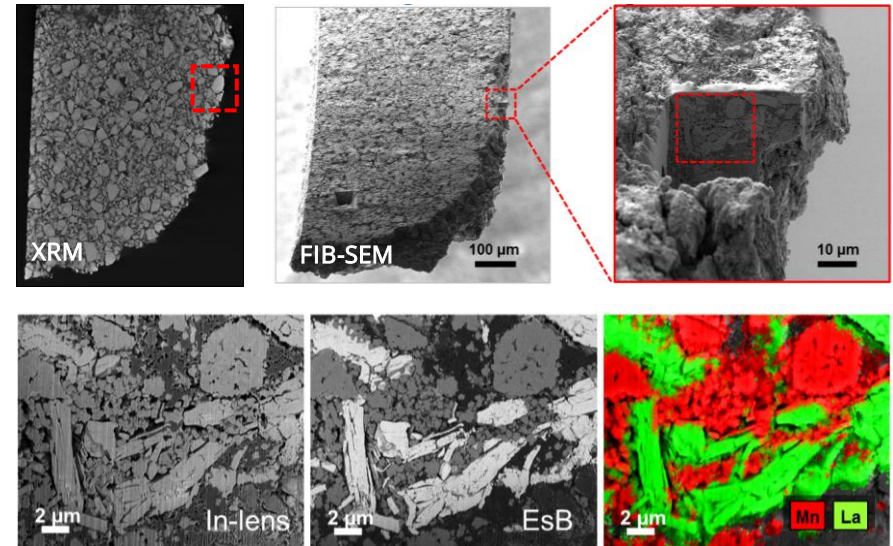
Source: Carl Zeiss AG

# WHAT'S NEW?

## Correlative workflow: NANO-CT and FIB-SEM

Material research increasingly requires multi-stage analyses or the combination of various analysis methods from the same field of interest.

Let us take the example of a **lithium-ion battery**: in the X-ray microscope (XRM) we obtain various 2D and 3D views of the battery and can non-destructively investigate the distribution of the active cathode material at the particle level. The distribution, homogeneity and density of the active material are important parameters for determining the performance of the battery. In the correlative workflow we now have the possibility of further analysing conspicuous areas with even higher resolution. In the crossbeam, we can specifically prepare and analyse the areas detected. By means of various detectors we can also, for instance, depict material contrasts and analyse them using qualitative mapping.



Source: Carl Zeiss AG; General Electric Deutschland Holding GmbH Hochschule Aalen, Institut für Materialforschung; Christian Weisenberger, Andreas Kopp, Timo Bernthaler, Gerhard Schneider

# WHAT'S NEW?

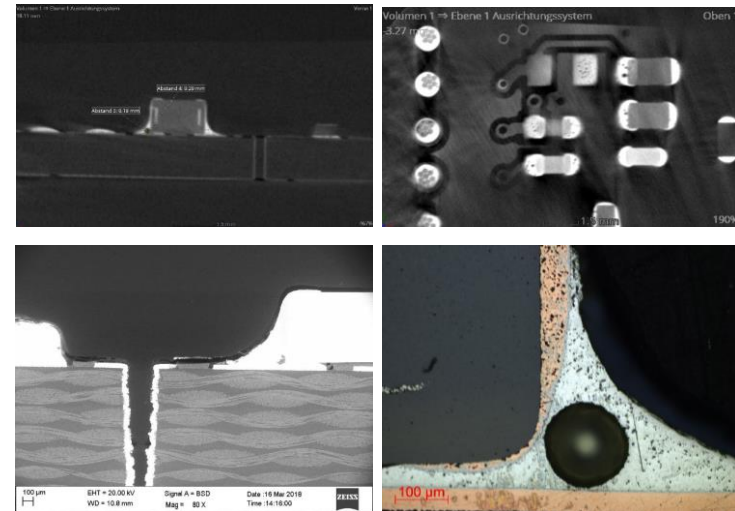
## Stress Testing & Analytics

Detection and analysis of material change and component behavior through targeted stress simulations, such as.

- Thermal stress: thermal shock, climate change or temperature change
- Stressing under defined environmental conditions (environmental simulation)
- Corrosion change test
- Salt spray test

Through the targeted application of component stress simulations, we can detect and analyse changes in the shape of components or defect patterns such as cracks, fractures, inclusions or assembly conditions in downstream analysis. We offer a **wide range of non-destructive and destructive analysis options** for this purpose.

Especially for electronic components, such as printed circuit boards, but also plastic or ceramic components, the comprehensive analysis offers a better understanding of the damage processes and the damage behavior on the component.



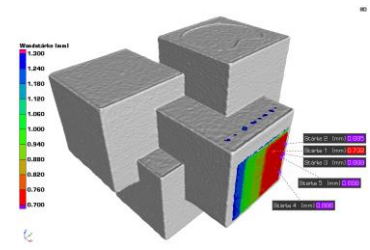
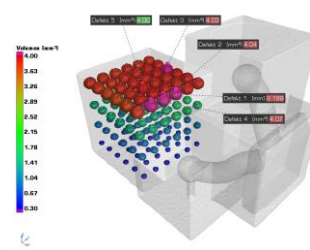
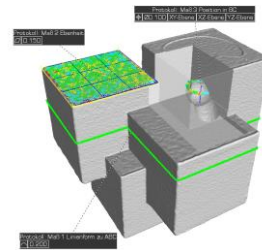
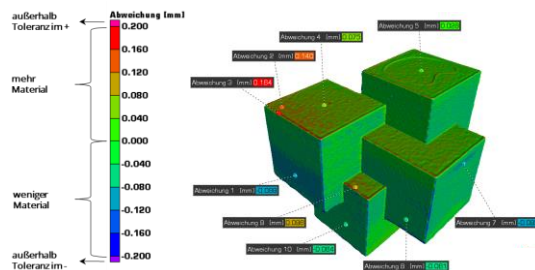




# 3D COMPUTED TOMOGRAPHY.

## Non-destructive analysis of complex internal and external geometries

- High-resolution depiction of the 3D volume with the ability to detect detail down to 0.3  $\mu\text{m}$
- Metrological evaluation of standard geometries and freeform surfaces
- Geometry comparison, e.g. nominal-actual comparison
- Versatile volume-based analysis options, e.g. defect analysis, porosity and inclusion analysis, assembly checking, foam structure analysis
- Components made of various materials with diameter of up to 550 mm and height of up to 1200 mm

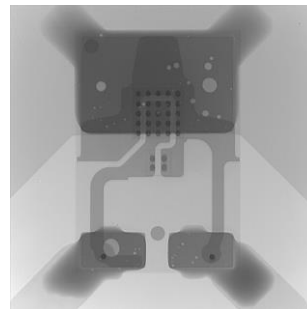
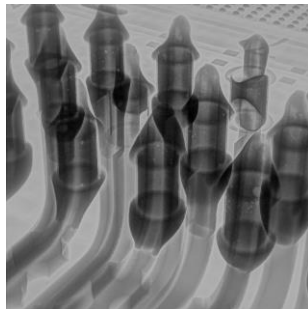
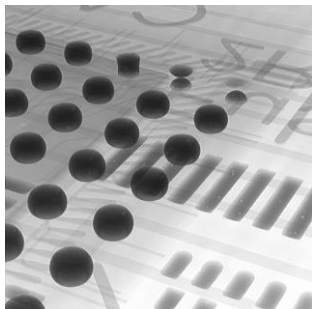


# 2D X-RAY INSPECTION.

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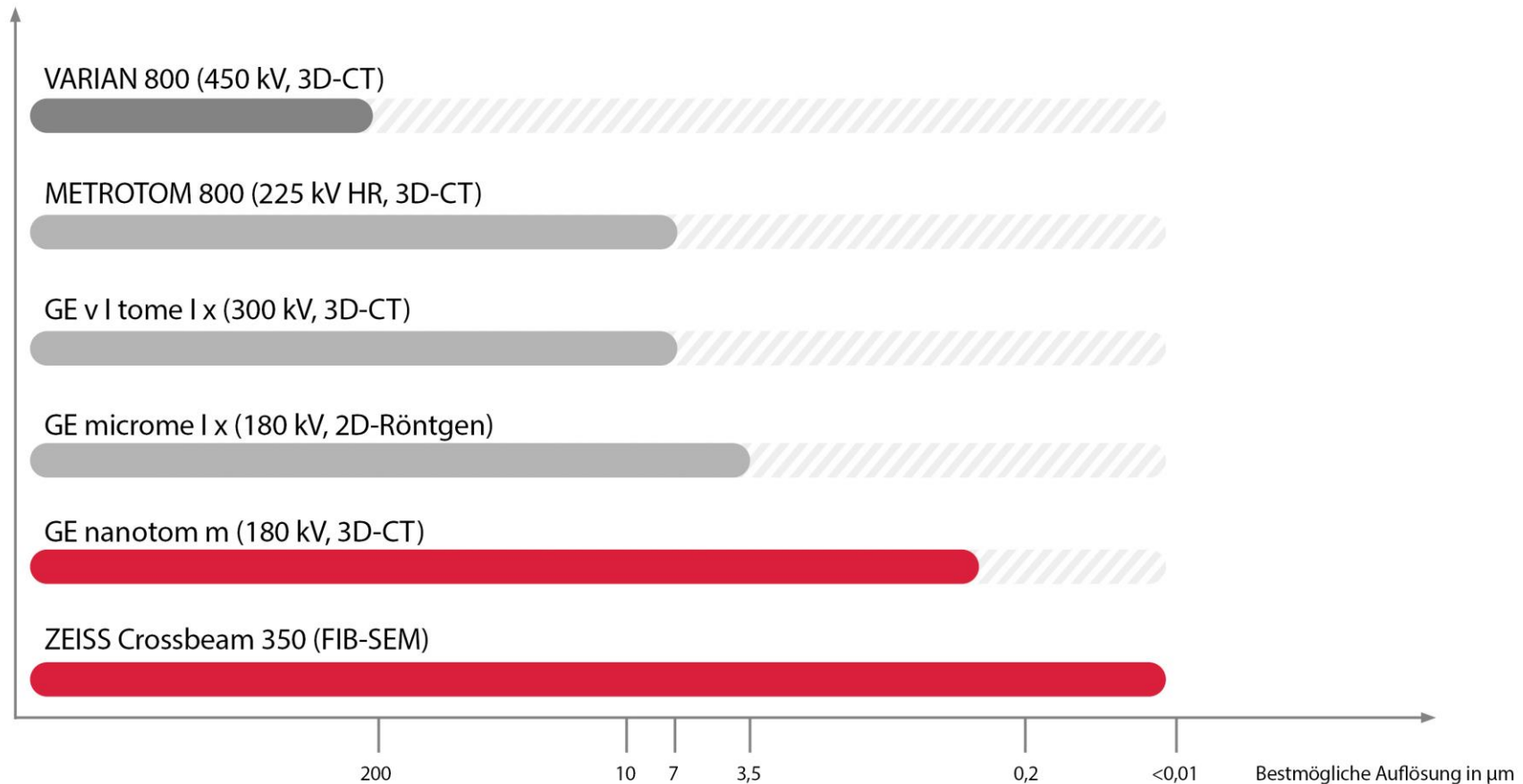
2D X-ray inspection for accurate detection of defects in realtime

- High-resolution 2D X-ray images with the ability to detect detail down to  $0.5\ \mu\text{m}$
- Qualified, certified personnel in accordance with DIN EN ISO 9712 as well as IPC-A 600 and IPC-A 610
- Area-based analysis options by means of planar CT
- Preliminary inspection for 3D computed tomography and microscopic material analyses
- Non-destructive inspection of high-quality integrated circuit packaging, for example for the inspection of soldered joints or semiconductors



# TECHNICAL EQUIPMENT.

With our versatile CT systems, we have the ability to perform CT examinations down to the micro- and nanometer range.





# TECHNICAL EQUIPMENT.

Broad range of services for widely varying customer requirements

Comprehensive analysis options in the area of 2D X-ray inspection and 3D computed tomography independent of the component size and material



GE nanotom m

180 kV



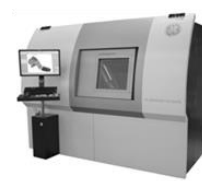
GE microme|x

180 kV  
(2D-Röntgen)



ZEISS Metrotom 800

225 kV



GE v|tome|x

300 kV



Varian Actis 800

450 kV



©RORA MOTION



Quelle: Carl Zeiss AG, General Electric Deutschland Holding GmbH

# STANDARDISED TEST METHODS. ACCLAIMED QUALITY ASSURANCE.

Accredited test laboratory in accordance with DIN EN ISO/IEC 17025:2018

Our accreditation means for you one thing above all else: certainty. You can rely on high standards, excellent services and guaranteed quality standards. As your partner, we accompany you during product development, innovations and safeguard product quality together with you.

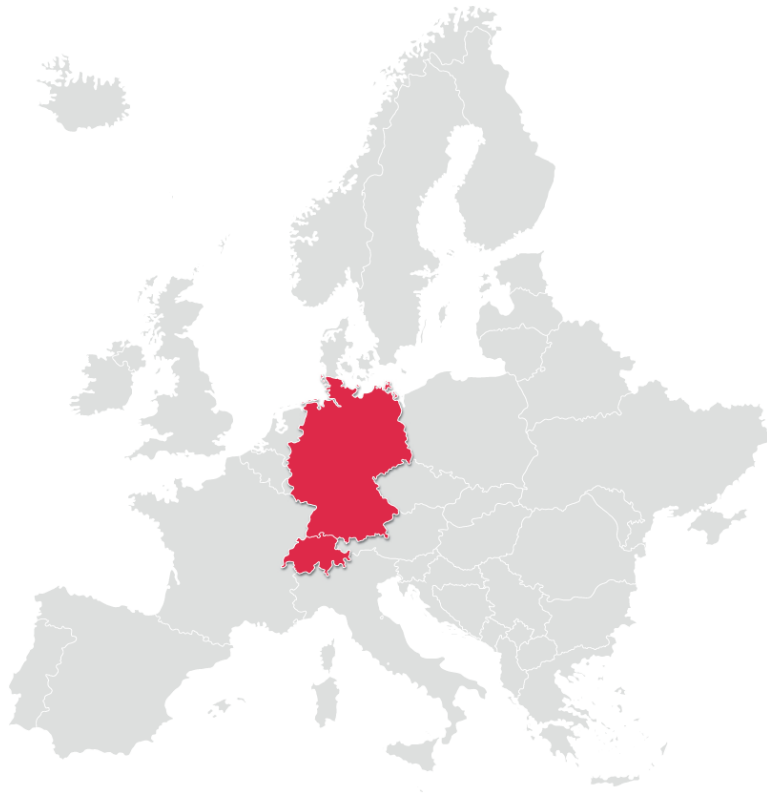
## Advantages of our accreditation:

- Impartiality and confidentiality
- International validity (ILAC)
- Dependability due to conformity assessment
- Reproducibility and comparability
- Standardised measurement and analysis methods
- Highest requirements on the technical standard
- Monitoring of the management system and the competence of the specialist personnel



# QUALITY ASSURANCE IN NUERTINGEN AND SWITZERLAND.

It is possible to implement your projects worldwide from our sites.



## GERMANY

Grosser Forst 1  
D-72622 Nuertingen  
[www.qa-group.com](http://www.qa-group.com)



## SWITZERLAND

Badenerstrasse 13  
CH-5200 Brugg  
[www.qa-group.com](http://www.qa-group.com)



# CONTACT PERSON.

## GERMANY



**Peter Ernst**  
General Manager  
COO

Phone +49 (0) 7022 2796-620  
Mobile +49 (0) 152 299 289 70  
Email [p.ernst@qa-group.com](mailto:p.ernst@qa-group.com)



**Sascha Raschinsky**  
Sales Manager

Phone +49 (0) 7022 2796-623  
Mobile +49 (0) 176 403 646 37  
Email [s.raschinsky@qa-group.com](mailto:s.raschinsky@qa-group.com)



**Peter Mohl**  
Sales Manager

Phone +49 (0) 7022 2796-622  
Mobile +49 (0) 173 947 932 7  
Email [p.mohl@qa-group.com](mailto:p.mohl@qa-group.com)



# CONTACT PERSON.

## SWITZERLAND



**Sascha Raschinsky**  
COO  
Technology and Sales

Phone +41 (0) 56 223 954 6  
Mobile +41 (0) 79 155 108 7  
Email [s.raschinsky@qa-group.com](mailto:s.raschinsky@qa-group.com)