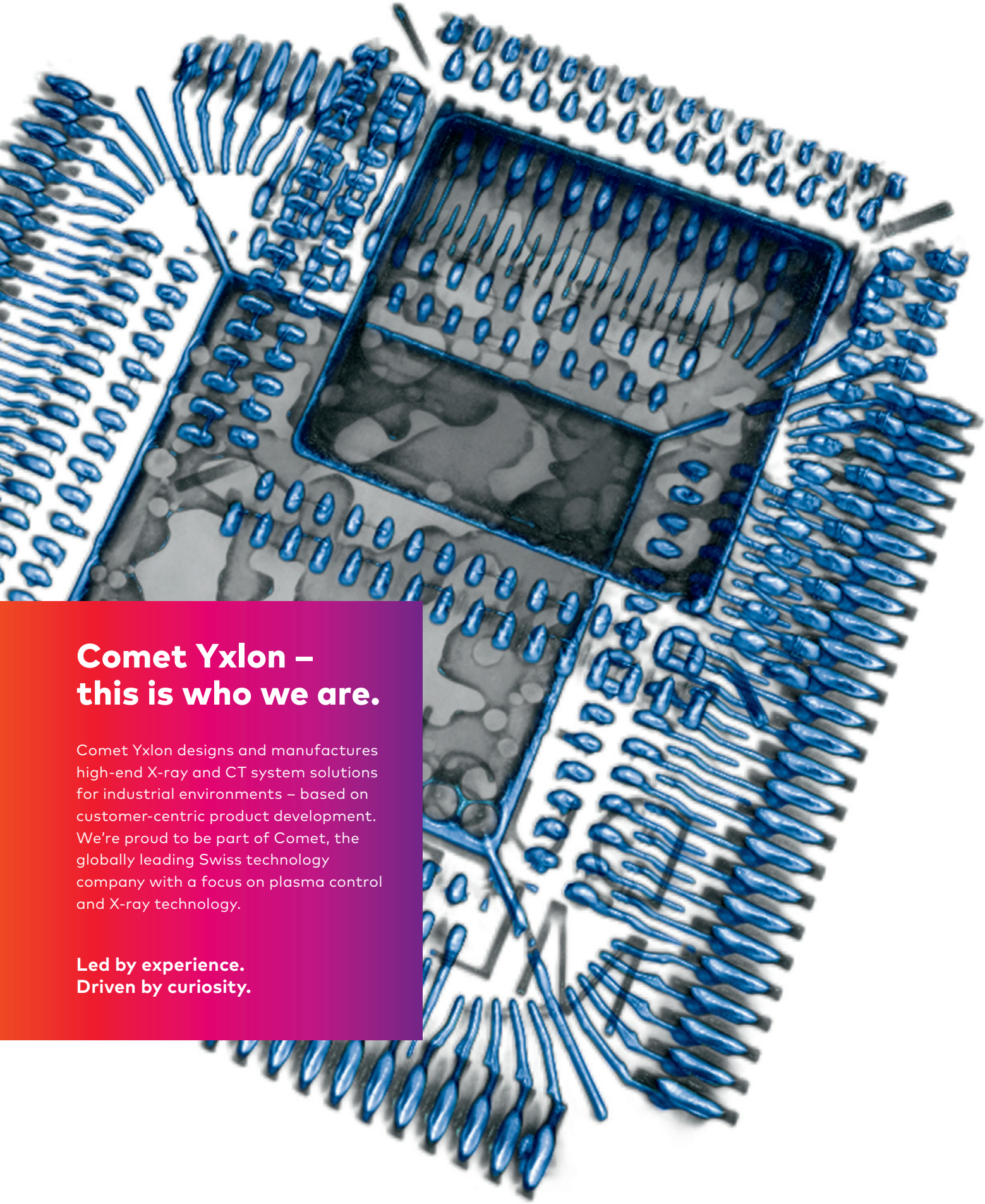
Led by experience. Driven by curiosity.

Cougar EVO

The efficient, small-footprint inspection system for SMT, semiconductors and labs.



comet
yxlon



Comet Yxlon – this is who we are.

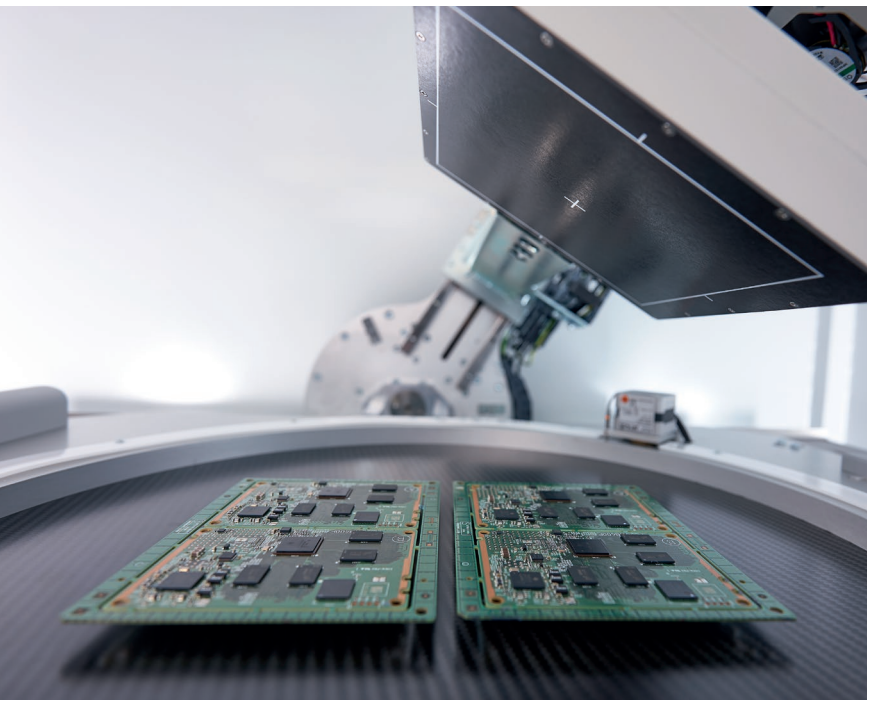
Comet Yxlon designs and manufactures high-end X-ray and CT system solutions for industrial environments – based on customer-centric product development. We're proud to be part of Comet, the globally leading Swiss technology company with a focus on plasma control and X-ray technology.

Led by experience.
Driven by curiosity.

Deeper insights.

Looking beyond the surface is our core competency at Comet Yxlon – but not only in a technical way.

Zooming in on your industry, applications and business challenges allows us to develop innovative and relevant solutions that help you shape future markets. Faster time to market? Avoiding production downtimes? The perfect image with the highest resolution, as fast and easy as possible? Whatever your goal – let's talk about it!



Automated 2D and laminography inspection for maximum productivity.

Your benefits with the Cougar EVO:

- Reliable, fast and repeatable inspections – manually and automatically
- Increased efficiency through automated inspection and software-assisted image review
- Easy-to-use dynamic image enhancement filters, e.g. eHDR
- Best available laminography
- Dose monitoring for sensitive parts
- Smallest footprint available on the market

Small footprint. Smart capabilities.

Connectivity, self-optimizing processes, automation – Industry 4.0 demands new solutions. Challenge accepted: The Cougar EVO helps increase speed, image quality, and efficiency in the SMT and semiconductor industry as well as in laboratories.

Increase yield

Deeper insights from repeatable scan results keep your production on target.

Improve your efficiency

Faster results due to dedicated inspection workflows boost your productivity.

Enhance your quality

Precise image details reveal process trends.

Already Aristotle realized: "The whole is greater than the sum of its parts". With the Cougar EVO it's the combination of innovative visualization software, smart workflows like VoidInspect, and an astounding compactness that makes this system stand out.

Footprint: only one sqm

Minimum size meets maximum performance: With its compact dimensions, the Cougar EVO is the perfect choice for facilities with space limitations. The weight of the Cougar EVO makes it suitable for many standard building floors. In addition, its size and weight enable a quick and hassle-free transport into the location – in many cases, the existing elevators can be used.

Cougar ECO

Are you looking for an inexpensive entry-level solution? You'll find more information on the ECO version of our Cougar on page 8.

Smart workflows and visualization

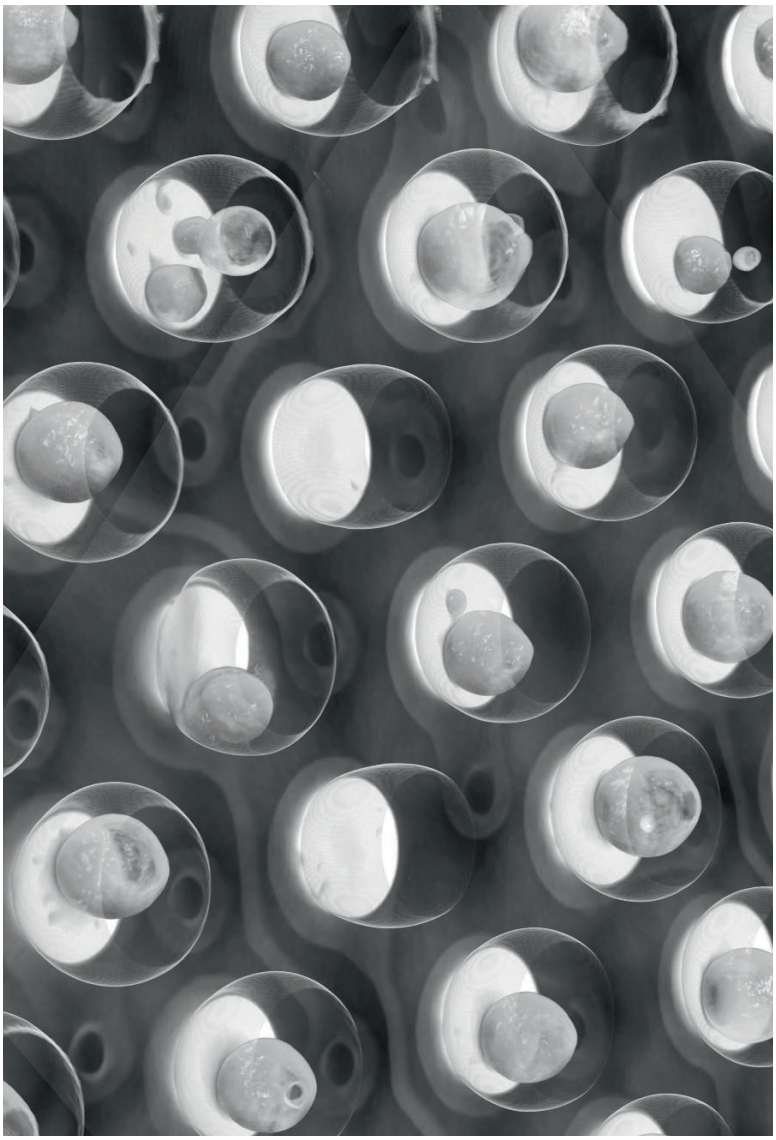
The Cougar EVO responds to the need for improved, automated operation with integrated workflows in the FGUI operating software. Once images are captured, the Comet Yxlon FF CT software automatically performs a fast reconstruction of outstanding quality and, finally, offers brilliant visualization. It has a unique ability to render 3D cinematic images with a preset selection of transfer functions (TF), resulting in the most realistic, vivid visualization.

Large flat-panel detectors

The Cougar's large flat-panel detectors offer an up to 50 % larger field of view for a better overview. Manufacturers benefit from faster working processes due to the reduced number of steps in automated processes.

Production line integration with ProLoop

The Cougar EVO supports ProLoop, Comet Yxlon's smart factory solution for the optimization of production processes. It enables direct communication with the inline AOI / AXI inspection systems and thus helps achieve maximum yield performance.

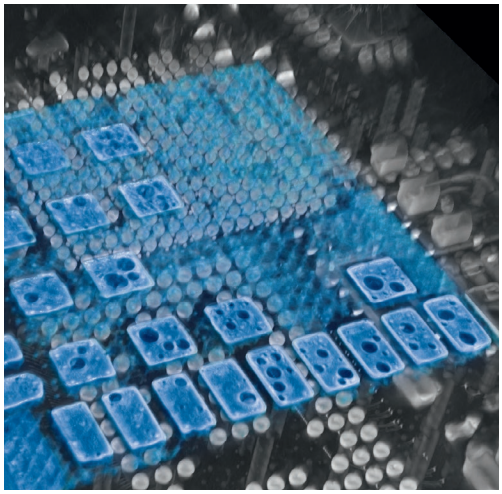


Voiding in BGA balls detected with laminography scan.

Different applications. Same great quality.

SMT inspections: grand performance for small devices

Due to the miniaturization and performance increase of more and more features must fit in an ever-smaller area. Cougar enables accurate, repeatable inspection routines with void compilations, including multi-area voiding. It does not only provide high performance and resolution, but is also equipped with enhancement filters and powerful automation tools.



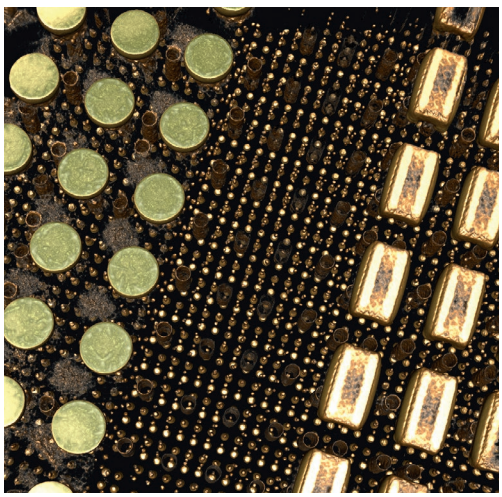
Computed laminography of PCB, clipping plane.

SMT applications

PCB (BTC, BGA, LGA, QFN / QFP, THT)
IGBT
LED

Semiconductor inspections: maximum resolution at minimum voltage

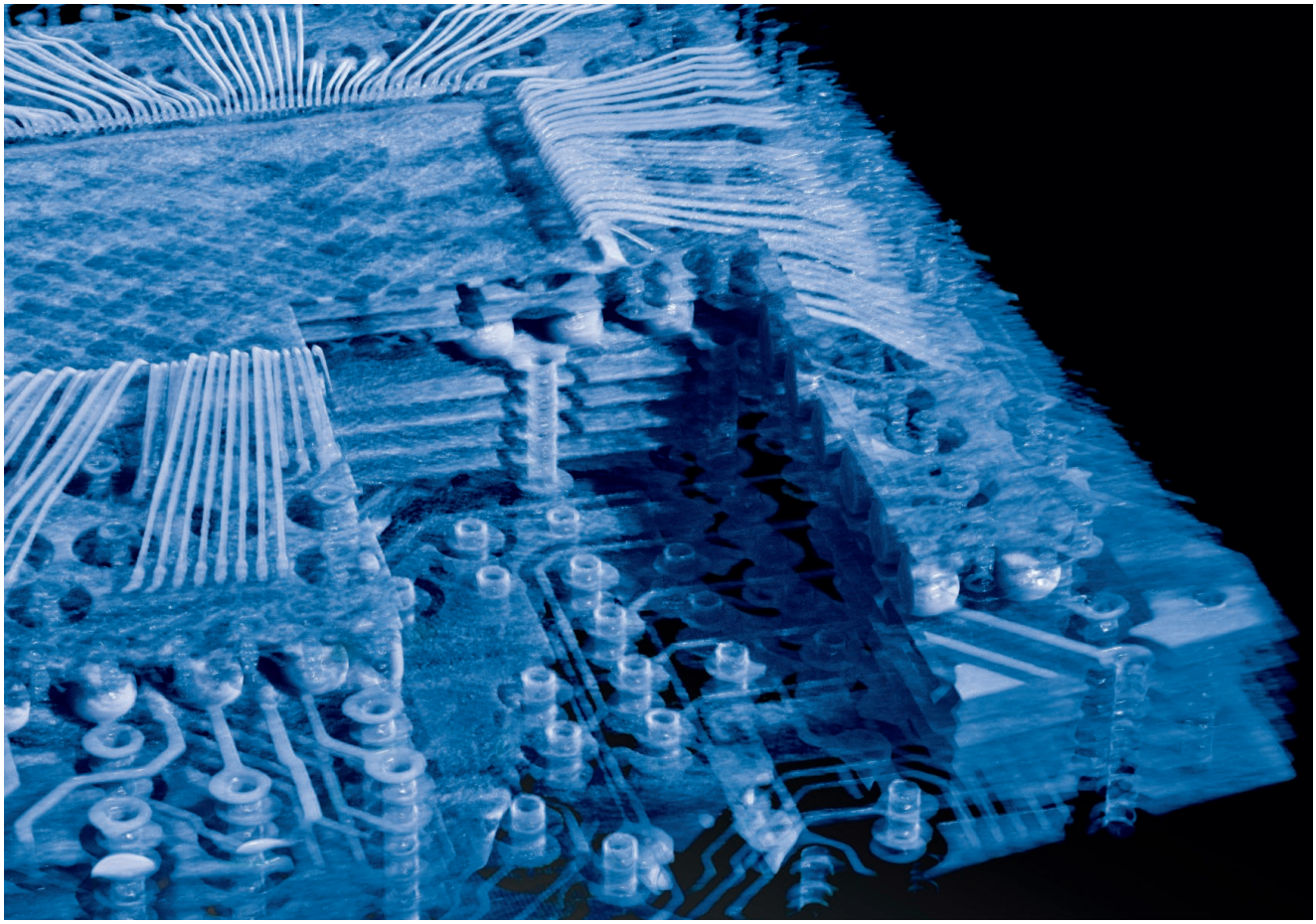
Cougar enables accurate, repeatable inspection routines with void compilations, including multi-area voiding. Its high detail resolution laminography is key for inspecting the internal connections of state-of-the-art advanced packaging IC devices.



Overview of BGA and bumps with laminography.

Semiconductor applications

Wafers and integrated circuits (die attach connections, 3D IC joints, TSV)
Sensors
MEMS and MOEMS



3D visualization of a multi-layer board, using the Comet Yxlon FF CT Software.

Laboratory inspections: leading technology for precise analysis

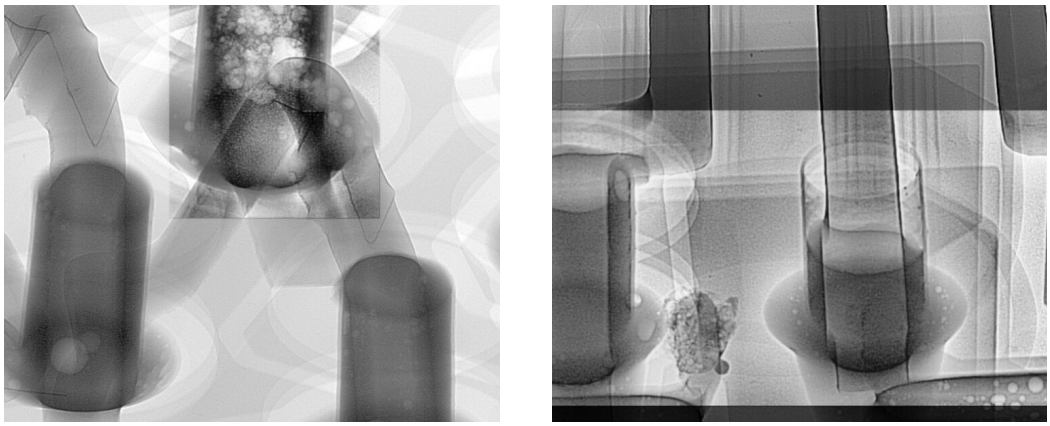
The inspection of electronic components during research and development is highly complex and requires a broad range of features. Computed tomography with the Comet Yxlon Cougar EVO is the technology of choice for detailed analyses of micro components such as those used in batteries, connectors, and medical devices.

Lab applications

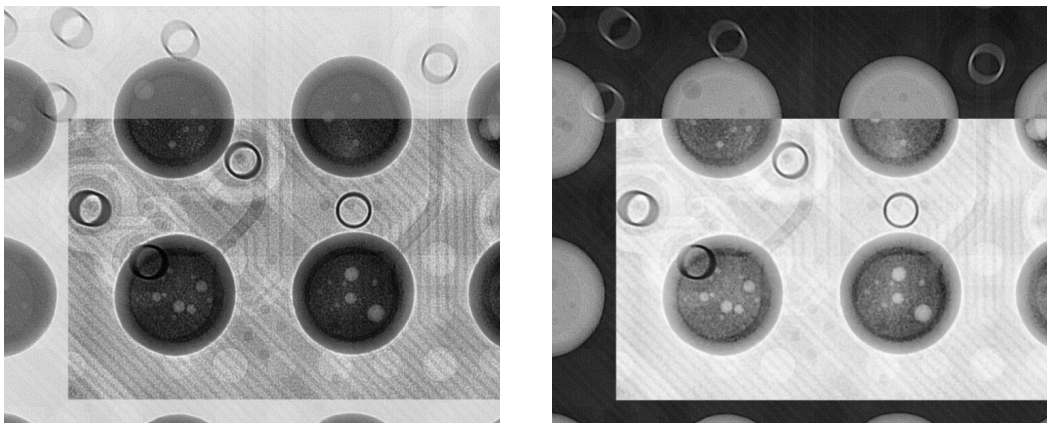
Batteries
Connectors and other electronics components
Medical material
Military and space electronics

Software solutions for accurate, repeatable, fast results.

From image acquisition with the FGUI user interface, to the reconstruction of the volume with FF CT software, to image analysis and evaluation: the Cougar offers a wide range of integrated software features. They help increase the efficiency of manual labor – and save inspection cost per part.



THT with voiding.



Voiding with BGA balls.

THTInspect DR

THTInspect DR is the semi-automated defect analysis for fill level inspections on THT-based components in 2D. It enables an assisted inspection routine for quantitative analysis, in both sampling and batch testing and works with plated and non-plated pin holes. The evaluation results according to specification are visualized in green and red.

VoidInspect CL and DR

VoidInspect facilitates best-in-class analysis of solder shapes and related cavity defects based on computed laminography (CL) or digital radiography (DR) technology. It is an automated inspection routine for quantitative analysis, with very high accuracy and repeatability, that helps save time and minimize error. It is qualified for the inspection of electronic components like BGA, LGA, BTC and QFN Central Pads, LED, IGBT and DPAK.

2D multi area void calculation (MAVC)

QFNs and other bottom-terminated devices without overlapping can also be inspected with 2D digital radioscopy. Faulty or missing solder joints and large areas of voiding are reliably detected, and MAVC helps analyze voids in complex soldering designs. With just four parameters to adjust, setup is quick, simple, and costefficient. Precise void analysis of multi-layer components needs computed laminography and VoidInspect.

Extended BGA inspection

Cougar allows to quickly select and index individual balls, either manually or using automatic grid detection. A wizard guides the operator through the workflow step-by-step and ensures perfectly accurate and repeatable results.

Automated sequences

The productivity of working with the Cheetah EVO on recurring test tasks can be significantly increased by automating and customizing test sequences via the scripting interface.

eHDR

To ensure highest product quality, the eHDR filter highlights complex structures with just one click. Thanks to our advanced software and enhanced 16-bit gray scale values, it detects even the slightest variances in gray scale, so that no defect will be missed. This allows operators to easily see faults that were invisible before.

Artifact reduction

Powerful image quality optimizations help improve the quality of the scan data, e.g. through BHR / BHC Beam Hardening Reduction / Correction, Ring Artifact Reduction or Noise Reduction.

Dose Monitoring

The Cougar's Dose Monitoring technology prevents damaging X-ray sensitive electronics during the inspection process. The absorbed X-ray dose is automatically monitored – when a critical threshold is reached, the operator is informed and the scan is aborted.

Our supportive Life Cycle Service.

At Comet Yxlon, service is not an add-on, but an integral part of every product. We support you through the entire life cycle of your system – for easy operation and extended product life.

1. Getting you started

Our professional Comet Yxlon field service technicians or certified service providers will ease your way into working with your new inspection system.

- Bringing the system to life: installation & commissioning
- Power on: introductory training by Comet Yxlon Academy
- Correct measurements from the start: SmartCalibration
- Cost transparency from the beginning: flat fee service rates

2. Running things smoothly

Is there an issue? No problem. Our skilled service technician team helps with troubleshooting, maintenance, and part exchange for easy operation.

- High efficiency thanks to remote control and VisualAssist
- Professional phone support and on-site visits
- Preventive maintenance and SmartExchange
- High-end system monitoring with SmartCalibration

3. Enhancing performance

With our upgrades and conversion kits, your Comet Yxlon system remains in top-notch condition and keeps its value as market demands change.

- System release upgrades, feature & performance upgrades
- Component upgrades
- System software upgrades
- Advanced Academy training

Tailor-made Service Level Agreements

Our Service Level Agreements are based on different performance factors, e.g.

ServicePass – for fast reaction times and seamless maintenance

SmartPass – focusing on the highest possible system availability

LifeCyclePass – the all-inclusive premium contract for guaranteed life-cycle-costs

Please contact us to learn more about the specifics of our different service contracts!

Cougar ECO: The market's best entry-level system.

Our advanced X-ray inspection solution sounds good, but at this point in time you are looking for an entry-level system? Then our Cougar ECO version is the perfect match for you – with state-of-the-art technology at a reasonable price!

Cougar ECO version

FXT-160.50 Microfocus tube
High-resolution detector
High-resolution target
FGUI Frame and Zoom
FGUI Map and Report
FGUI MAVC Inspection
FGUI BGA Inspection
FGUI Extended
FGUI Traceability
FGUI AXI Traceability
Optional CT capability

Cougar EVO in numbers.

Inspection parts

Max. part size	440 x 550 mm (17″ x 21″)
Max. inspection envelope 2D	310 x 310 mm (12″ x 12″)
Max. part weight	5 kg
Max. part weight rotation	2 kg

X-ray source

	FXT-160.50	FXT-160.51
Tube type	microfocus, open	
Energy range	20 - 160 kV	
Max. power	64 W	
Max. target power	15 W	
Spatial resolution[1)]	2.0 µm	0.8 µm
Features	TXI[2)]	TXI[2)], multifocus

Detector

	1308	1313	1515	1616
Active area	128 x 79 mm	128 x 128 mm	152 x 152 mm	162 x 162 mm
Pixel matrix	1,004 x 620 px	1,004 x 1,004 px	1,256 x 1,256 px	1,276 x 1,276 px
Pixel pitch	127 µm	127 µm	119 µm	127 µm
Max. frame rate	48 Hz	48 Hz	60 Hz	48 Hz

Manipulation

Focus-detector distance (FDD)	52 - 322 mm
Oblique viewing	+/- 70° (140°)
Turntable (Ø)	290 mm

Cabinet / System

Dimensions (W x D x H)	1,000 x 1,050 x 2,200 mm
Weight	~ 1,450 kg
Loading door clearance (W x H)	404 x 660 mm
Mains connection	230 V ±10 % AC, 50 / 60 Hz, 1 phase, neutral and ground conductor
Max. power consumption	2.5 kVA

[1)] Measured with JIMA RT RC-02B or HiCo micro-chart test specimen. Acceptance criteria CNR*MTF > 5 %; MTF > 5 %; CNR > 0.5. [2)] TXI = true X-ray intensity – controls real output dose for constant intensity.

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