

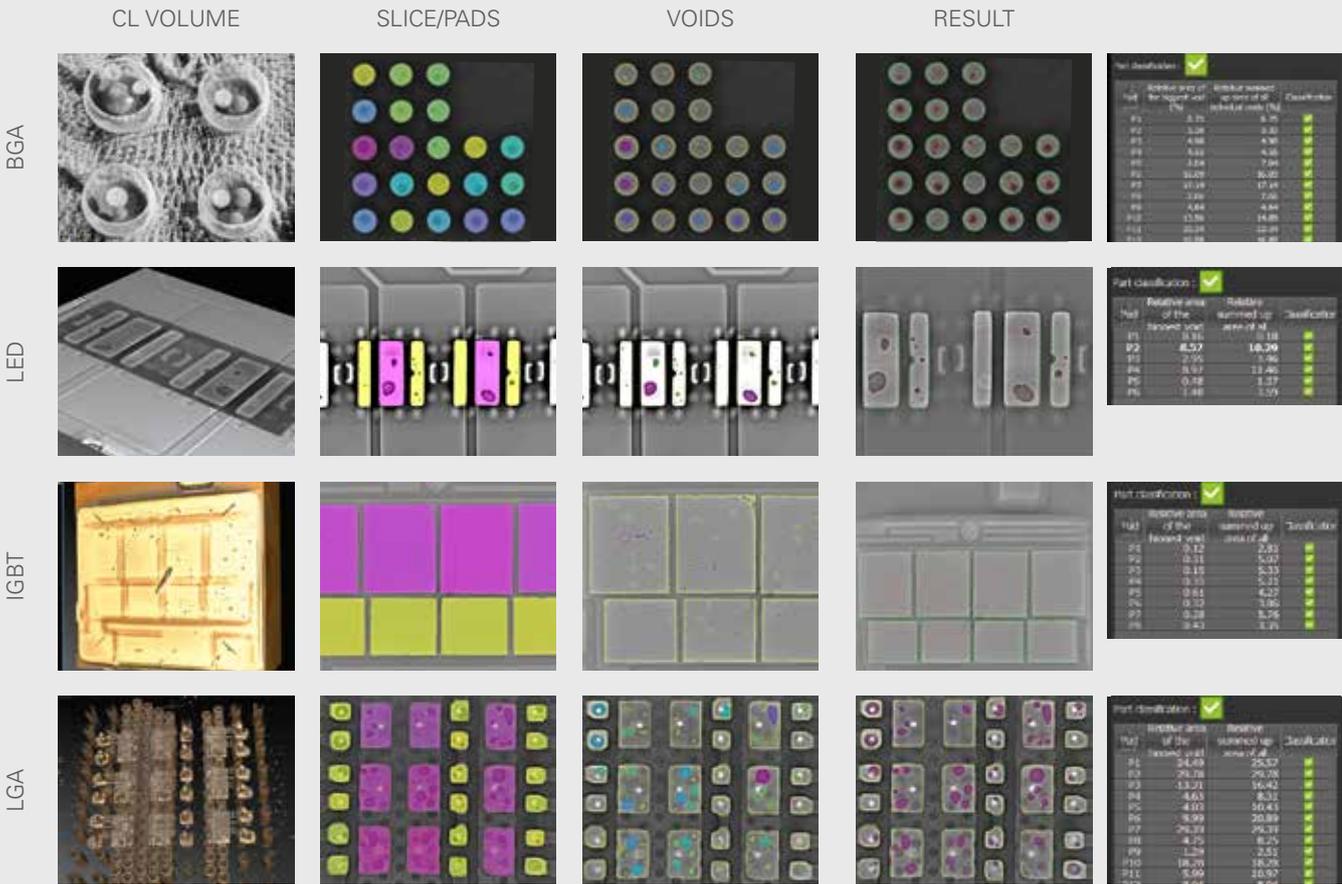


THE SYSTEM WITH THE  
SMALLEST FOOTPRINT  
FOR YOUR EMPOWERMENT

## YXLON COUGAR EVO

THE CUSTOMIZED STANDARD WITH THE SMALLEST FOOTPRINT  
FOR X-RAY INSPECTION IN SMT, SEMICON AND LABORATORIES

- Automatic void calculation with VoidInspect
- Best-in-class laminography with micro3Dslice and FF CT software
- Dosage mode for sensitive components

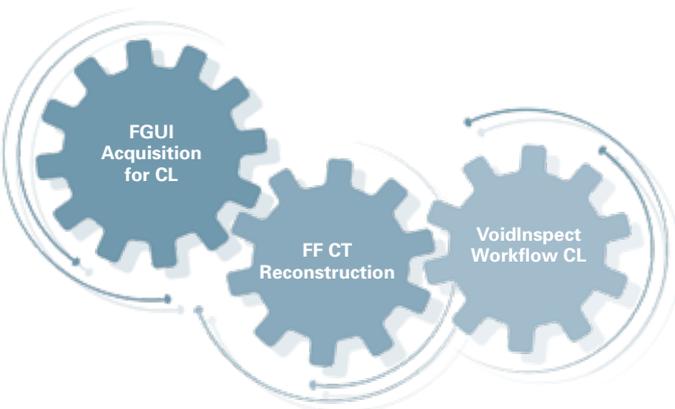


## VoidInspect – automatic void calculation in SMT production

(DEVELOPED BY YXLON – POWERED BY ORS)

Three unrivalled tools going hand in hand for reliable, repeatable, and quick results.

- Acquisition of a computed laminography scan (CL) with FGUI user interface.
- Reconstruction of the CL volume with FF CT software.
- Void calculation with VoidInspect ensures highest product quality.



**SPEED:** Up to 5x faster than comparable software in the market

**FLEXIBILITY:** Applicable for a wide range of components

**QUALITY:** Best computed laminography in the market means best results

**REPEATABILITY:** 0% deviation in one volume, measured several times; <1% deviation in different volumes, several acquisitions of the same component

# SMT inspections: grand performance for small devices

Surface-mounted devices are very small and often tightly fitted to a given area. That is why in order to get the most accurate and repeatable test results the inspection system must provide not only high performance and resolution but also be equipped with dynamic image enhancing filters.

The new Cheetah EVO SMT offers the right kind of optimization for inspecting SMT devices in addition to other empowering pros:

## LARGE FLAT-PANEL DETECTOR PANEL 1616

- Expanded field of view (1280 x 1280 pixel size), 50% larger compared to the previous version
- Better overview and faster working processes due to reduced steps in automated processes

## BEST LAMINOGRAPHY (micro3Dslice)

- Detailed 3D visualization for quick and easy failure analysis
- Optimally suited for large PCBs
- Results on layer level
- Non-destructive inspection of large areas
- Substantial cost savings compared to micro sectioning

## AUTOMATIC VOID CALCULATION WITH VOIDINSPECT

## INTEGRATION IN PRODUCTION LINE

- Direct communication with inline AOI / AXI inspection systems thanks to YXLON ProLoop

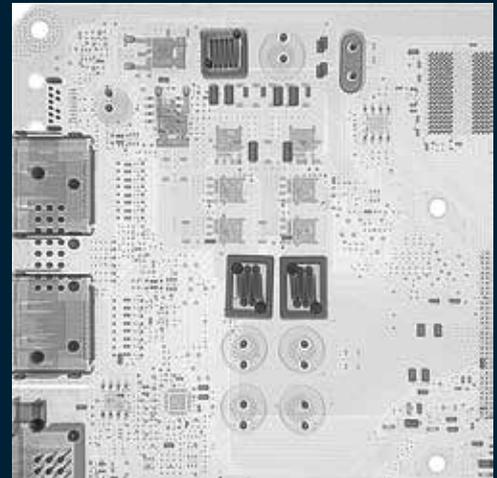
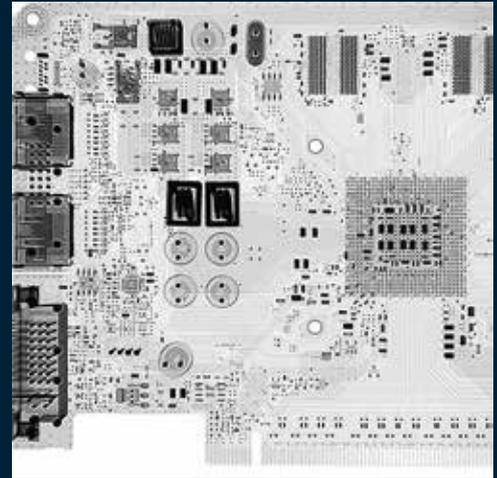
## ADDITIONAL PROS

- VGSTUDIO MAX\*

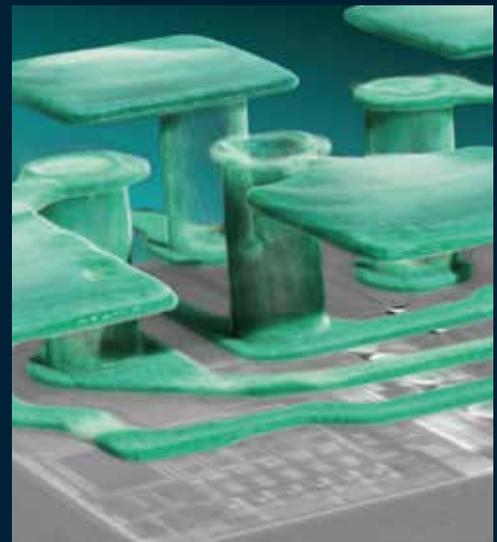
### APPLICATIONS

- |       |              |
|-------|--------------|
| - PCB | - LGA        |
| - LED | - IGBT       |
| - BTC | - QFN/QFP    |
| - BGA | - Die Attach |

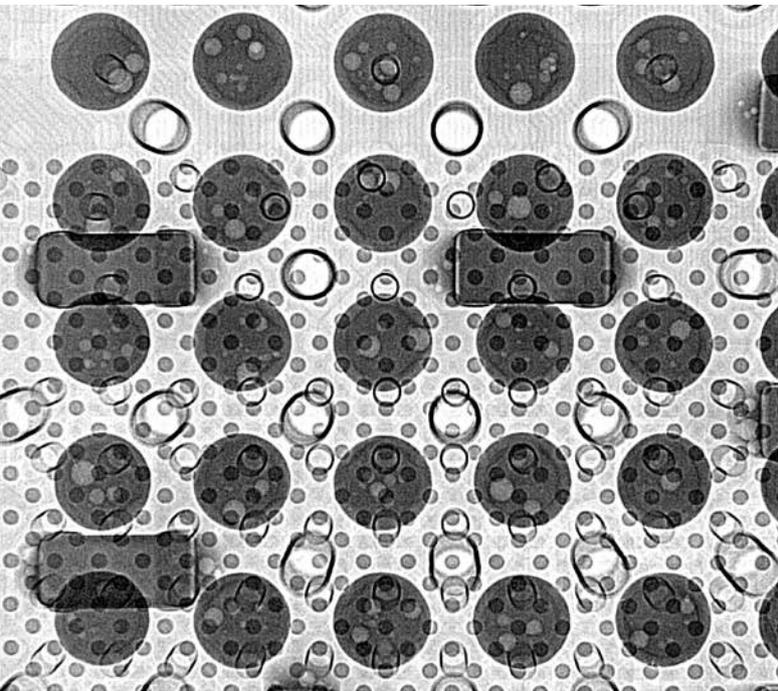
\*optional



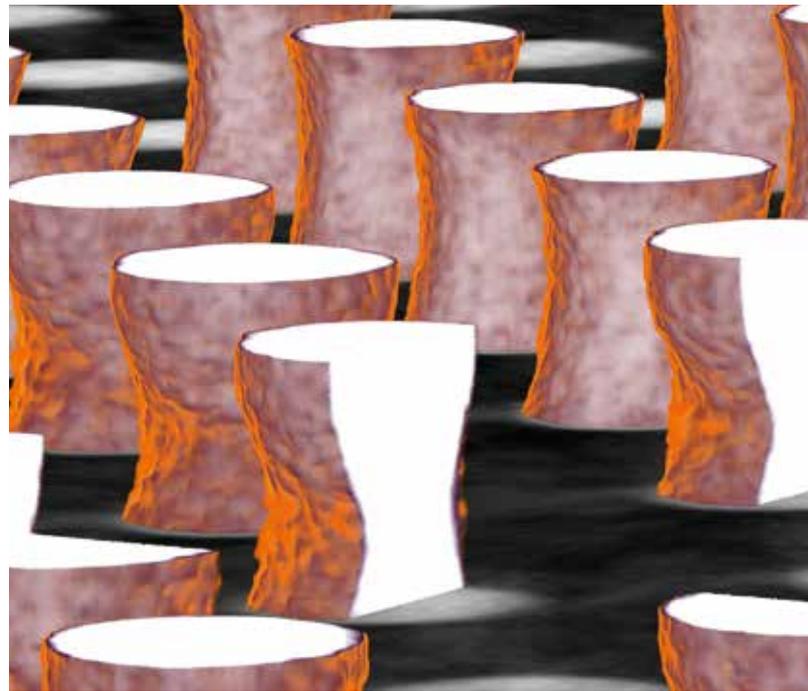
Extended field of view with new Panel 1616 (top) compared to Y.Panel 1313 (bottom)



PCB, bottom side shown as MPR view to highlight structures on a Die



2D x-ray image of BGA with 60 μ bumps



3D CL image showing 60 μ Bumps, open and soldered

## Semicon inspections: maximum resolution at minimum voltage

As electronic components, semiconductor devices are the key elements of the majority of electronic systems. Due to their compactness and density, their testing requires maximal image resolution at low power and low voltage. Void compilations, including multi-area voiding, need accurate, repeatable inspection routines.

The new Cheetah EVO Semi offers excellent inspection results at low power and low kV in addition to other empowering pros:

### HIGHLY SENSITIVE DETECTOR & DOSE REDUCTION

- The detector's high sensitivity enables operations with reduced dose
- With the optional dose reduction kit the dose rate on sensitive components can be additionally reduced, by using filters and a collimator
- Optimized electronics for high speed and long-term stability at 24/7 operations
- Long detector lifetime due to radiation resistance

### HIGH DETAIL RECOGNITION

- Operators enable the detection of the finest details through an integrated image chain

### AUTOMATIC ERROR DETECTION

- Integrated error detection in FGUI (BUMPS, VOID)
- Prolsight ready (possibility of developing and integrating individual algorithms)

### ADDITIONAL PROS

- VGSTUDIO MAX\*
- Highly stable components

\*optional

### APPLICATIONS

- Wafer inspection
- 3D integrated circuit joints
- Micro-bumps
- Sensors
- MEMS and MOEMS
- TSVs



3D Laminography image Ball escaped in Via

## Laboratory inspections: leading technology for precise analysis

The inspection of electronic components during research and development are complex and need the broadest range of features and state-of-the-art technology. Computed Tomography is a must for detailed analyses of micro components such as those which are used in batteries, connectors and medical devices.

The new Cougar EVO Plus offers ultimate image resolution and highest industry CT reconstructions in addition to other empowering pros:

### EXCEPTIONAL CT QUALITY

- The new Panel 1616 detector enables CT volumes of the highest quality
- Excellent contrast-to-noise ratio
- Highly sensitive detector

### VISUALIZATION BY YXLON FF CT SOFTWARE

- Integrated workflow in the FGUI user interface
- Realistic, vivid visualization due to individual 3D cinematic renderers and a preset selection of transfer functions (TF)
- The visualization of laminographic volumes have the same high quality as CT volumes, which are much more complex

- Artifact reduction such as BHR Beam Hardening Reduction, BHC Beam Hardening Correction, Ring Artifact Reduction, Noise Reduction Volume, etc.
- Clear visual fault detection

### ADDITIONAL PROS

Available as an option

- New detector Panel 1616:
  - High speed
  - Consistent image quality thanks to the stable detector temperature
  - No impact of radiation on lifetime (radiation resistant)

### APPLICATIONS

- Batteries
- Connectors
- Various hard-to-see electronics components
- Medical material
- Military and space electronics

## Functions that bring you forward

### ONE CLICK PHILOSOPHY

One-click solutions make it easy to perform the advanced manipulations required for fast and reliable X-ray inspection. Such as:

- Click & Center
- Frame & Zoom
- PowerDrive
- Zoom+

These functions guarantee constant-intensity magnification without tube adjustments or software interpolation, and can be carried out with one simple click.

### EXTENDED BGA INSPECTION

With Cougar EVO, you can quickly select and index individual balls, either manually or using automatic grid detection. A wizard guides you step-by-step through the workflow and ensures perfect accurate and repeatable results. Plus, the feature allows multiple operators to run the same inspection routines.

### EXTENDED ADR INTERFACE

Cougar EVO software can be tailored to individual requirements, with operators free to define their own specific analysis. This also includes customized algorithms.

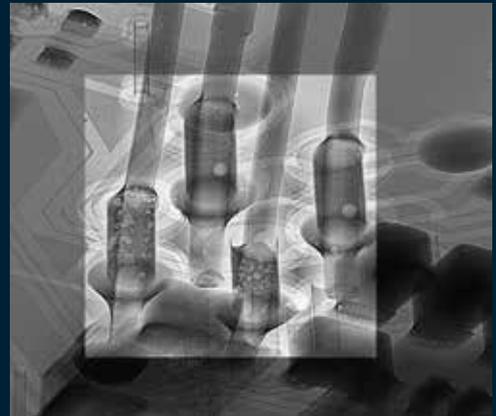
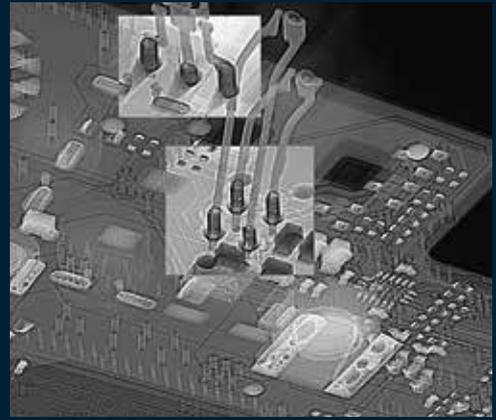
### eHDR-INSPECT

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 you to easily see faults that were invisible before.

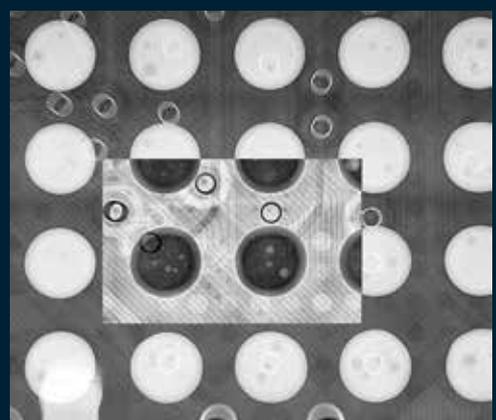
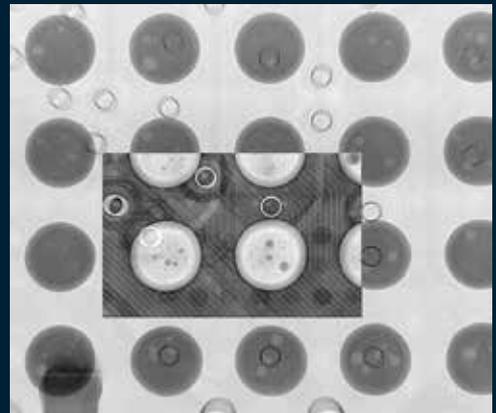
### 2D MULTI AREA VOID CALCULATION (MAVC)

QFNs and other bottom-terminated devices without overlapping can also be inspected with 2D digital radiography. 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 cost-efficient. Precise void analysis of multi-layer components needs computed laminography and VoidInspect.

Using eHDR for Regions of Interest



THT with voiding



ROI with details (voiding in a BGA ball)

# Check out these facts

## YXLON COUGAR EVO

### X-ray inspection system

<b>Dimensions (w x d x h)</b>	1,000 x 1,050 x 2,200 mm
<b>Weight</b>	1,450 kg
<b>Mains connections</b>	230 V ± 10% AC, 50/60 Hz, 1 Phase, neutral and ground conductor
<b>Fuse protection</b>	16 A
<b>Max. power consumption</b>	2.5 kVA
<b>Max. dose rate*</b>	< 1 µSv/h

\* at 100 mm distance to the cabinet surface

### Inspection parts

<b>Max. part size</b>	440 mm x 550 mm (17" x 21")
<b>Max. radiographic area</b>	310 mm x 310 mm (12" x 12")
<b>Max. part weight (standard)</b>	5 kg
<b>Max. part weight rotation and tilt</b>	2 kg

### General Product Features

<b>Time to first image (typ.)</b>	~ 10 s
<b>Reconfiguration time (typ.)</b>	< 60 s
<b>Acquisition time (Quick Scan) for 2000 projections</b>	~ 3.15 min
<b>Reconstruction time (Quick Scan) for 2000 projections</b>	~ 1.55 min
<b>Acquisition time (micro3Dslicing Semicon) for 120 projections</b>	~ 1.45 min
<b>Reconstruction time (micro3Dslicing Semicon) for 120 projections</b>	~ 0.30 min
<b>Access for sample loading</b>	manual
<b>Cabinet window</b>	380 mm x 200 mm
<b>Monitor</b>	27" Ultrasharp, wide viewing angles
<b>Zoom+</b>	yes

### Manipulation

<b>Manipulation control</b>	via mouse or joystick
<b>Manipulation axes</b>	X, Y, Z(D)*
<b>Oblique viewing</b>	+/-70° (140°)

\* Manipulation options for horizontal and vertical rotation and tilting available

### X-ray source

	FXT-160.50 Microfocus	FXT-160.51 Multifocus
<b>Target</b>		transmission
<b>Voltage range</b>		20 – 160 kV
<b>Current range</b>		0.001 – 1.0 mA
<b>Tube power</b>		max. 64 W
<b>Target power</b>		max. 15 W
<b>Target material</b>		Tungsten
<b>Detail detectability</b>	0.75 µm	< 0.3 µm
<b>X-ray intensity control</b>		TXI

### Image Chain

<b>Geometric magnification</b>	~ 2,000 x
<b>Total magnification</b>	~ 256,000 x
<b>Spatial Resolution</b>	1.5 µm

### Detector

	Y.Panel 1308	Y.Panel 1313	ORYX 1616
<b>Max. resolution Pixel</b>	1004 x 620	1004 x 1004	1276 x 1276
<b>Pixel size</b>		127 µm <sup>2</sup>	
<b>Pixel area</b>	128 mm x 79 mm	128 mm x 128 mm	162 mm x 162 mm
<b>A/D transformer</b>		16 bit	

Please note that not all components and features described in this brochure belong to the standard configurations but are part of an optional selection.

# YXLON Service Engine 4.0

To support our customers' success, we created our Service Engine 4.0: first-class technical problem solver combined with high economic efficiency. This engine drives our service, our processes and our partners to detect and correct failures quickly and reliably by remote access and during on-site visits. Our service centers and our service partners worldwide are at your disposal and can be contacted by phone, e-mail or via our website.

## BENEFIT FROM:

- Guaranteed operational safety
- Maximized system availability
- Minimized repair times
- Full cost control of life cycle costs
- Extended product lifetime

Our module-based approach, such as performance and feature upgrades, enable you to adapt to future requirements and safeguard your initial investment by extending the product's lifetime. With our Service Engine 4.0, fast support is provided by the way we network all service activities with our organization. We do not only see your immediate need but are predictive of your future needs.

## YXLON LIFECYCLE SERVICES

<b>Academy</b>	full performance from day one through tailored training solutions
<b>SmartExchange</b>	direct replacement of defective or worn-out components to minimize unscheduled system downtime
<b>SpareParts</b>	100% compatibility and safety through Yxlon qualified spare parts
<b>WarrantyPass</b>	full cost control through our customizable warranty extension program
<b>ServicePass</b>	predictive maintenance and servicing, tailored to your requirements
<b>SmartPass</b>	maximum system uptime for customers with particularly high demands
<b>LifeCyclePass</b>	all-inclusive concept for full cost control over the entire product lifetime
<b>Support</b>	fully digitalized 1st-line support organized in a worldwide expert network, available remote or on-site
<b>Upgrades</b>	performance increase and new features for your Yxlon system portfolio



Would you like to learn more about our systems? Interested in a test inspection? Please contact us by phone or e-mail. We look forward to hearing from you.

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