



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

- Next step in computed tomography and automated inspection
- Large flat-panel detector for utmost flexibility
- Best-in-class laminography with micro3Dslices and FF CT software
- Dosage mode for sensitive components
- Optimized according to customer's requirements

**INNOVATION
IS KEY TO**

EVOLUTION

**EMPOWERS
YOU**

Evolution is the process of change

It is the will and ability to move forward, overcome new challenges and evolve accordingly.

With today's technology progressing ever more, where does evolution lead us?

The future of production is Industry 4.0: smart factories based on digitally networked systems that allow automated production processes. In order to adjust to future requirements and fit the industry standard ambition, X-ray and CT quality inspection systems need to be upgraded and automation plays a major role in this transformation. In today's electronic manufacturing the amount of structures per area and their complexity is increasing and with it the need for more sophisticated software, which can process more complex images. Consequently, automated inspection and holistic data analysis is the next essential step

Future smart factories are all about connectivity and self-optimizing processes. Therefore, the most valuable quality control systems are the ones that offer improved automated inspections and can become an integral part of the production line. The new Cougar EVO system is smartly designed to meet the demands of Industry 4.0, guaranteeing efficient and reliable zero fault production. It is equipped with dosage mode for especially sensitive components and a larger detector size for utmost flexibility. With the new FF CT Software it enables optimized automated X-ray and CT industrial quality inspections, delivering even more accurate results. It is the outcome of Yxlon's constant need for innovation and it is here to empower you today and in the future.

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

LARGE FLAT-PANEL DETECTOR ORYX 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
- Optimized electronics for high speed and long-term stability at 24/7 operations
- Long detector lifetime due to radiation resistance

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
- Quick and easy automated analyses of voiding at connections for reliable results

INTEGRATION IN PRODUCTION LINE

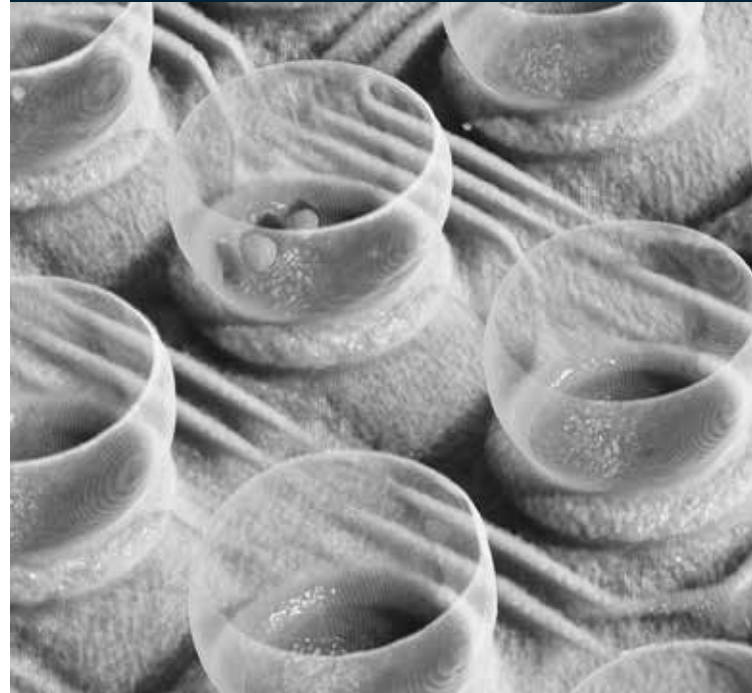
- Direct communication with inline AOI / AXI inspection systems thanks to YXLON ProLoop

ADDITIONAL PROS

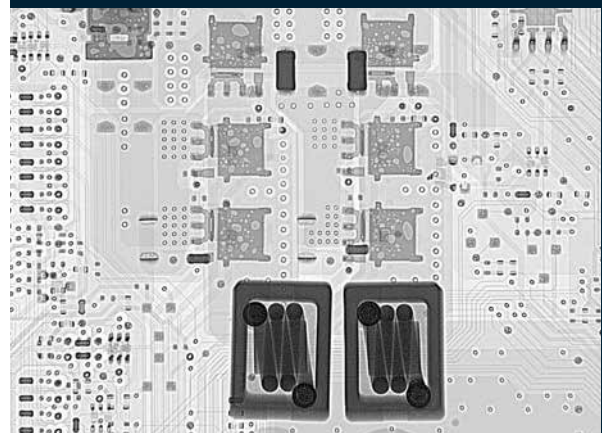
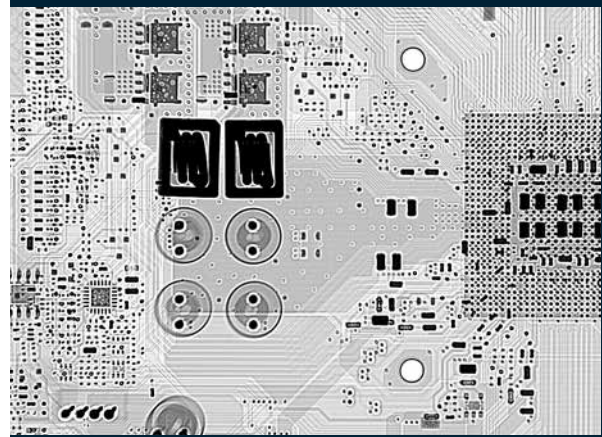
- Compatible with Volume Graphics

APPLICATIONS

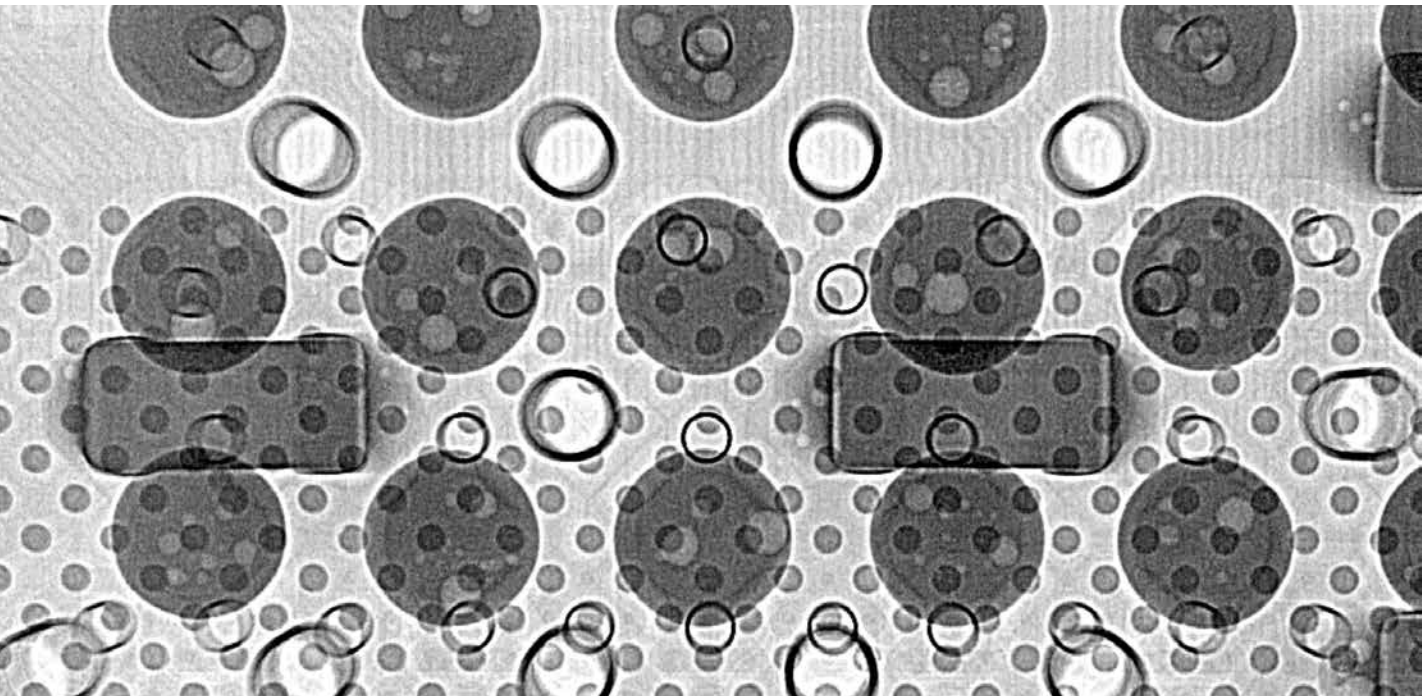
- PCBs
- SMT and PTH assemblies
- IGBTs



Best available laminography scan of a BGA



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



2D overview of BGA and bumps

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

- Compatible with Volume Graphics
- Highly stable components

APPLICATIONS

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



Track to pad from a BGA ball with a big void

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 ORYX 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

- Compatibility with Volume Graphics
- New detector ORYX 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

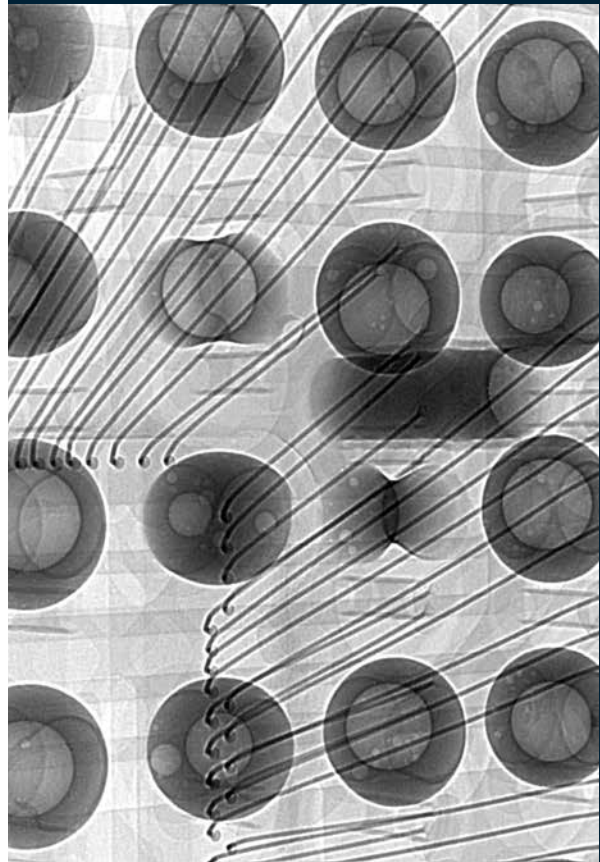
Cougar EVO software can be tailored to individual requirements, with operators free to define their own specific analysis. This also includes customized algorithms.

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.

MULTI AREA VOID CALCULATION (MAVC)

Today's soldering connections are getting more and more complex. QFNs and other bottom-terminated devices can only be inspected using x-ray. 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. Results are consistent, repeatable, and accurate.



Ball escaped in via - 2D and 3D representation

Check out these facts

YXLON COUGAR EVO

X-ray inspection system

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

* at 100 mm distance to the cabinet surface

Inspection parts

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

General Product Features

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

Manipulation

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

* Manipulation options for horizontal and vertical rotation and tilting available

X-ray source

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

Image Chain

| | |
|--------------------------------|-------------|
| Geometric magnification | ~ 2,000 x |
| Total magnification | ~ 256,000 x |
| Spatial Resolution | 1.5 µm |

Detector

| | Y.Panel 1308 | Y.Panel 1313 | ORYX 1616 |
|------------------------------|----------------|---------------------|-----------------|
| Max. resolution Pixel | 1004 x 620 | 1004 x 1004 | 1276 x 1276 |
| Pixel size | | 127 µm ² | |
| Pixel area | 128 mm x 79 mm | 128 mm x 128 mm | 162 mm x 162 mm |
| A/D transformer | | 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

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