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YXLON CHEETAH EVO

THE CUSTOMIZED STANDARD 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
- Optional high load capacity (< 20 kg)

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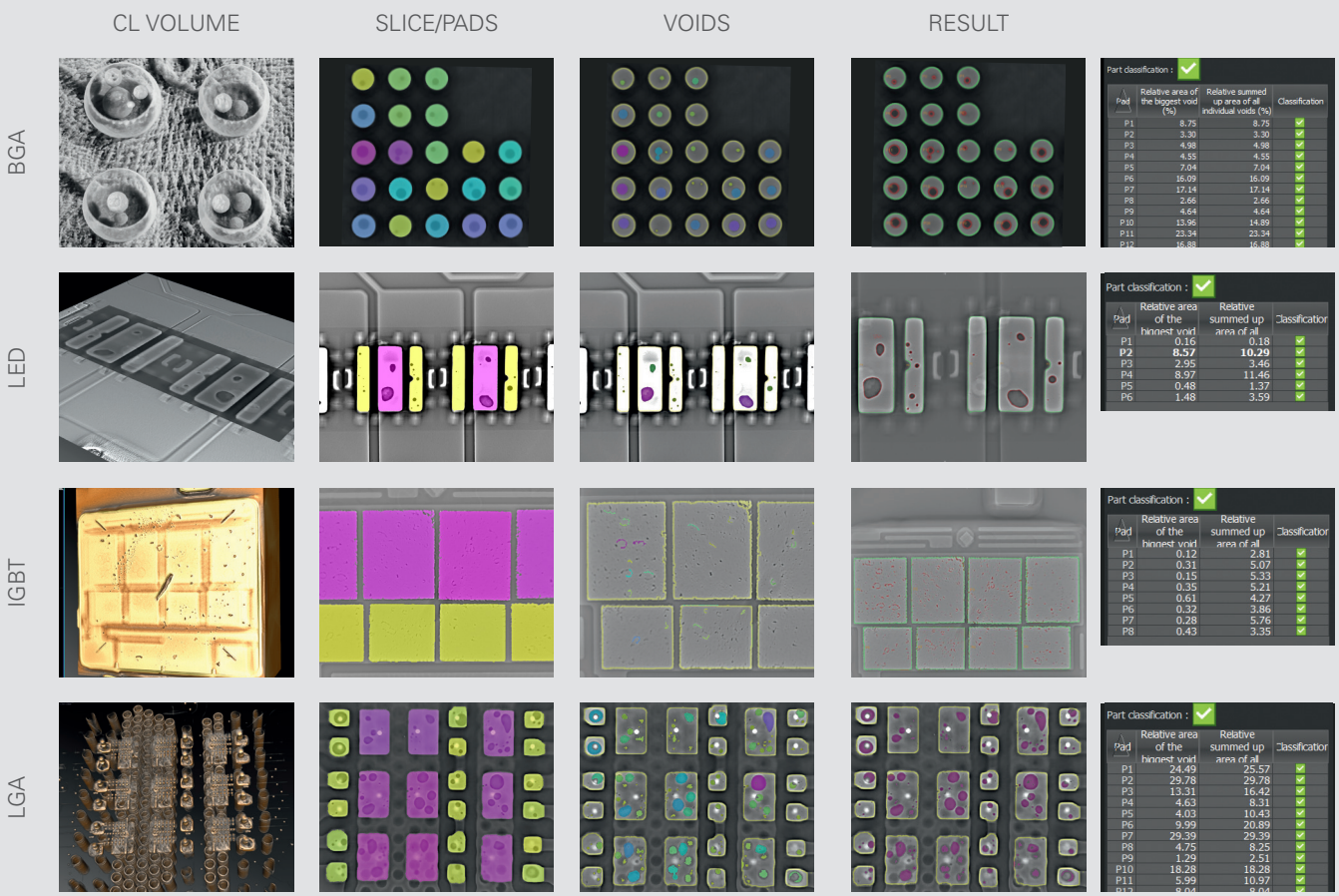
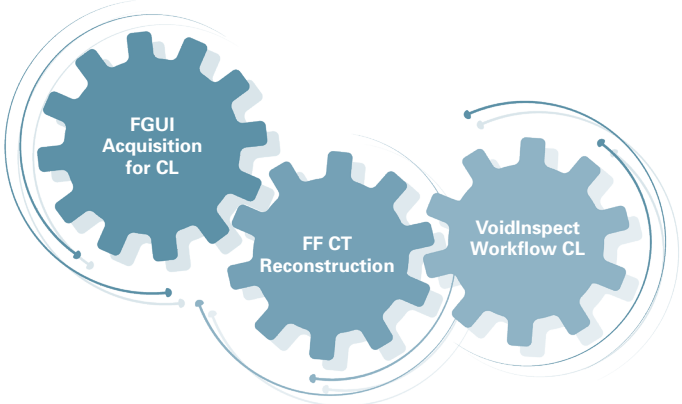


VoidInspect – automatic void calculation in SMT production

(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

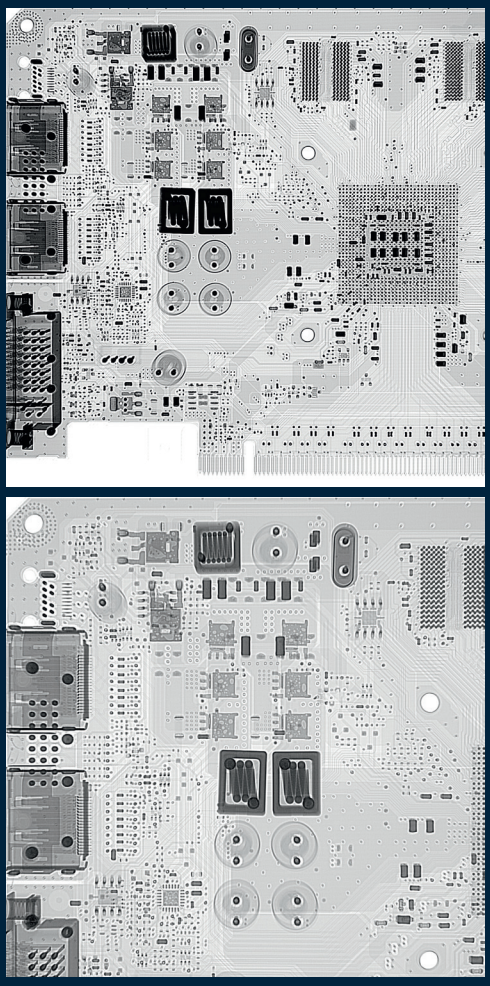
INTEGRATION IN PRODUCTION LINE
- Direct communication with inline AOI / AXI inspection systems thanks to YXLON ProLoop

HIGH LOAD CAPACITY*
- Reinforced mechanics and sample table suitable for components up to 20 kg
- Time saver: test several parts at the same time

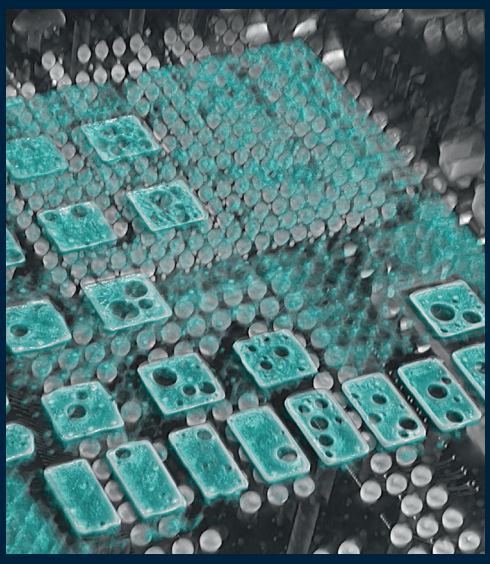
ADDITIONAL PROS
- VGSTUDIO MAX*

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

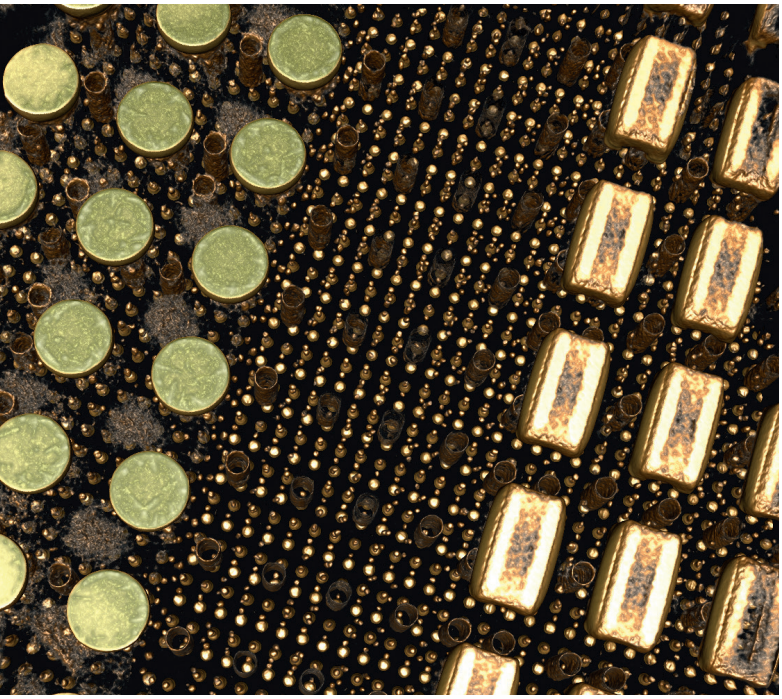
*optional



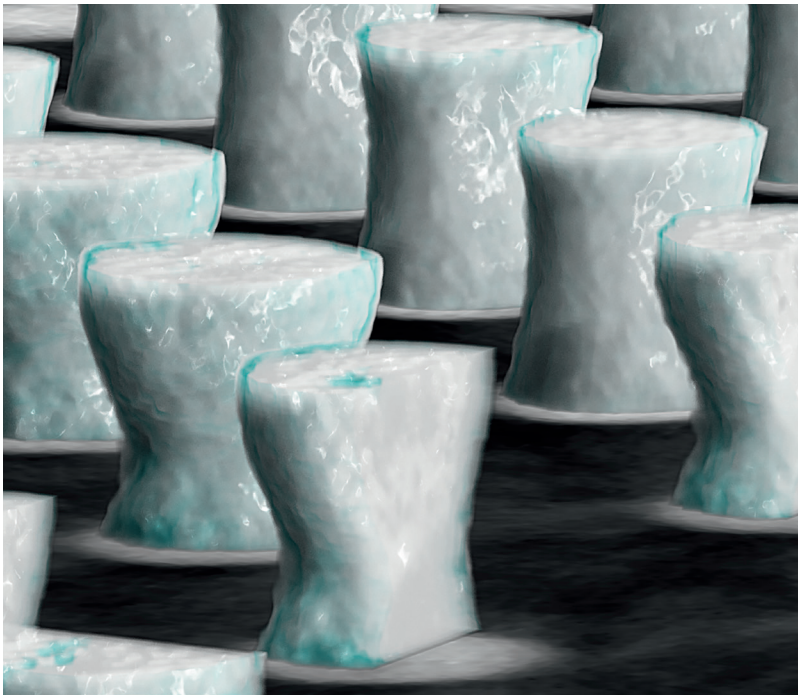
Extended field of view with new Panel 1616 (top) compared to Y.Panel 1313 (bottom)



Computed Laminography of PCB, Clipping Plane



Overview of BGA and bumps with laminography



CL analysis of micro-bumps, defects on 60 µm 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

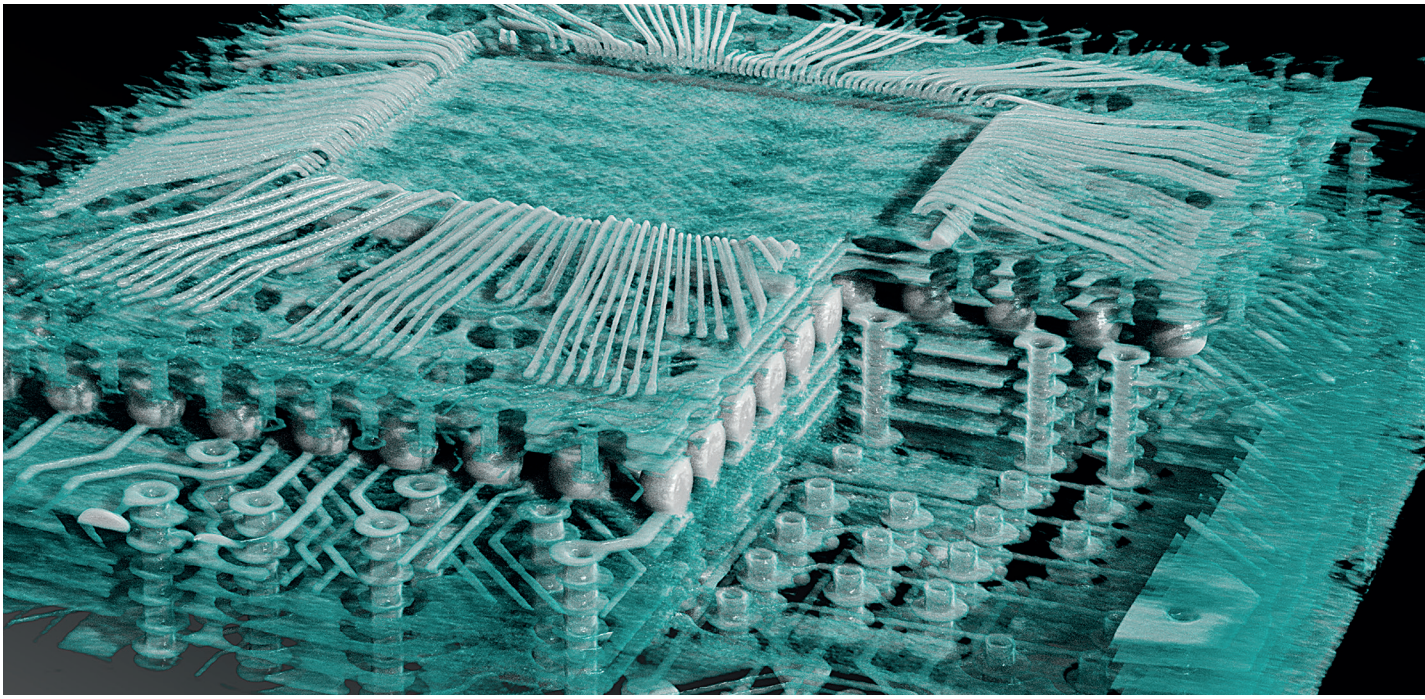
HIGH DETAIL RECOGNITION
- Operators enable the detection of the finest details through an integrated image chain

AUTOMATIC ERROR DETECTION
- Integrated error detection in FGUI (BUMPS, VOID)
- ProInsight 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 visualization of a multi-layer board, using "Inverted Clipping-Box"

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 Cheetah 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

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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.

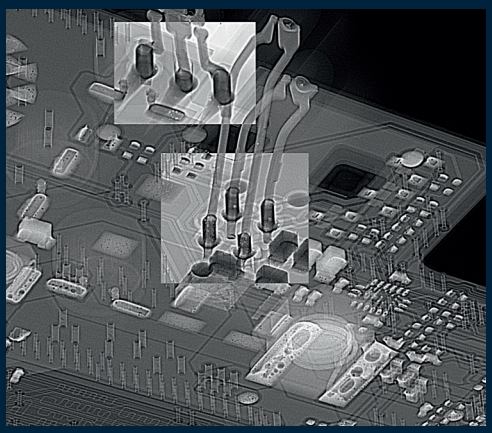
EXTENDED BGA INSPECTION
With Cheetah EVO, you can quickly select and index individual balls, either manually or using automatic grid detection. A wizard guides you step-by-step through the workflow and ensures perfect accurate and repeatable results. Plus, the feature allows multiple operators to run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

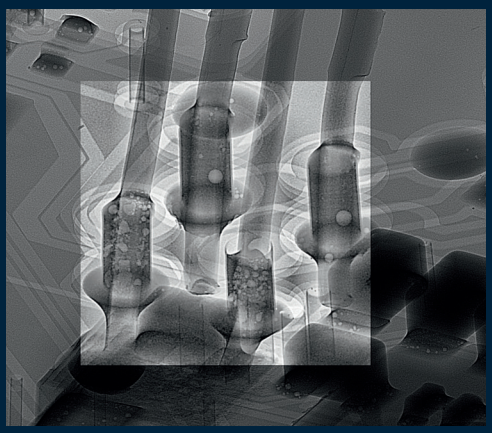
EXTENDED ADR INTERFACE
Cheetah EVO software can be tailored to individual requirements, with operators free to define their own specific analysis. This also includes customized algorithms.

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.

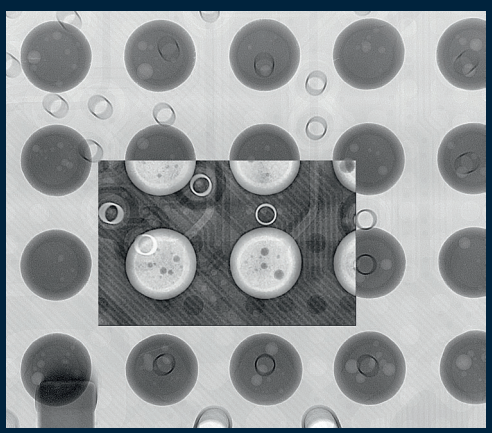
2D MULTI AREA VOID CALCULATION (MAVC)
QFNs and other bottom-terminated devices without overlapping can also be inspected with 2D digital radioscopy. Faulty or missing solder joints and large areas of voiding are reliably detected, and MAVC helps analyze voids in complex soldering designs. With just four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

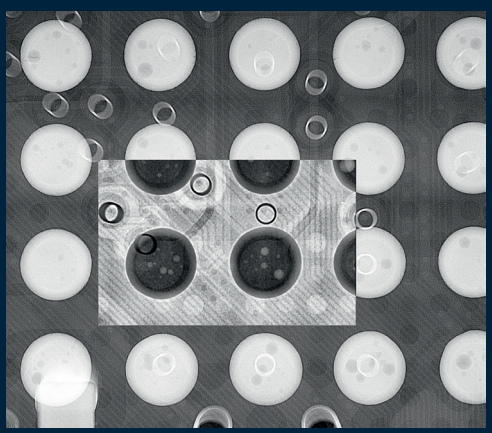
Using eHDR for Regions of Interest





THT with voiding





ROI with details (voiding in a BGA ball)

Check out these facts

YXLON CHEETAH EVO

X-ray inspection system	
Dimensions (w x d x h)	1,650 x 1,400 x 2,050 mm
Weight	2,200 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*	< 1µSv/h

* at 100 mm distance to the cabinet surface

Inspection parts	
Max. part size	800 x 500 mm (31“ x 19“)
Max. radiographic area	460 x 410 mm (18“ x 16“)
Max. part weight (standard)	5 kg
Max. part weight rotation	2 kg
Max. part weight (high load capacity)	20 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 (micro3Dslice Semicon) for 120 projections	~ 1.45 min
Reconstruction time (micro3Dslice Semicon) for 120 projections	~ 0.30 min
Access for sample loading	large automated door (690 x 650 mm)
Cabinet window	520 x 370 mm
Monitor	27” Ultrasharp, wide viewing angles
Zoom+	yes
PowerDrive	yes
Image stabilization	air suspension

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

* Manipulation options for horizontal and vertical rotation 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	~ 3,000 x	
Total magnification	~ 384,000 x	
Spatial Resolution	1.5 µm	0.6 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 µm²		
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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