

# YXLON Cheetah **EVO** SEMI

SCALABLE X-RAY INSPECTION SYSTEM  
FOR SEMICONDUCTOR APPLICATIONS

JOIN THE *EVOLUTION*!



**YXLON**

Technology with Passion

# Choose a custom-built EVO solution for premium inspection

**Why compromise? What if everything rEVOLved around you? As technology advances at an ever increasing rate, YXLON has acknowledged that a "one size fits all" X-ray system in advanced electronics no longer delivers the best solution to the customer.**

We have designed a great new range of systems, each purposefully built to become the leader in each of the three major market segments SMT, semiconductors and lab applications. We have optimized both hardware and software to provide "best in class" results for each market sector.

The systems produce higher quality and more consistent results than the current multi-purpose machines and

meet even your most demanding requirements.

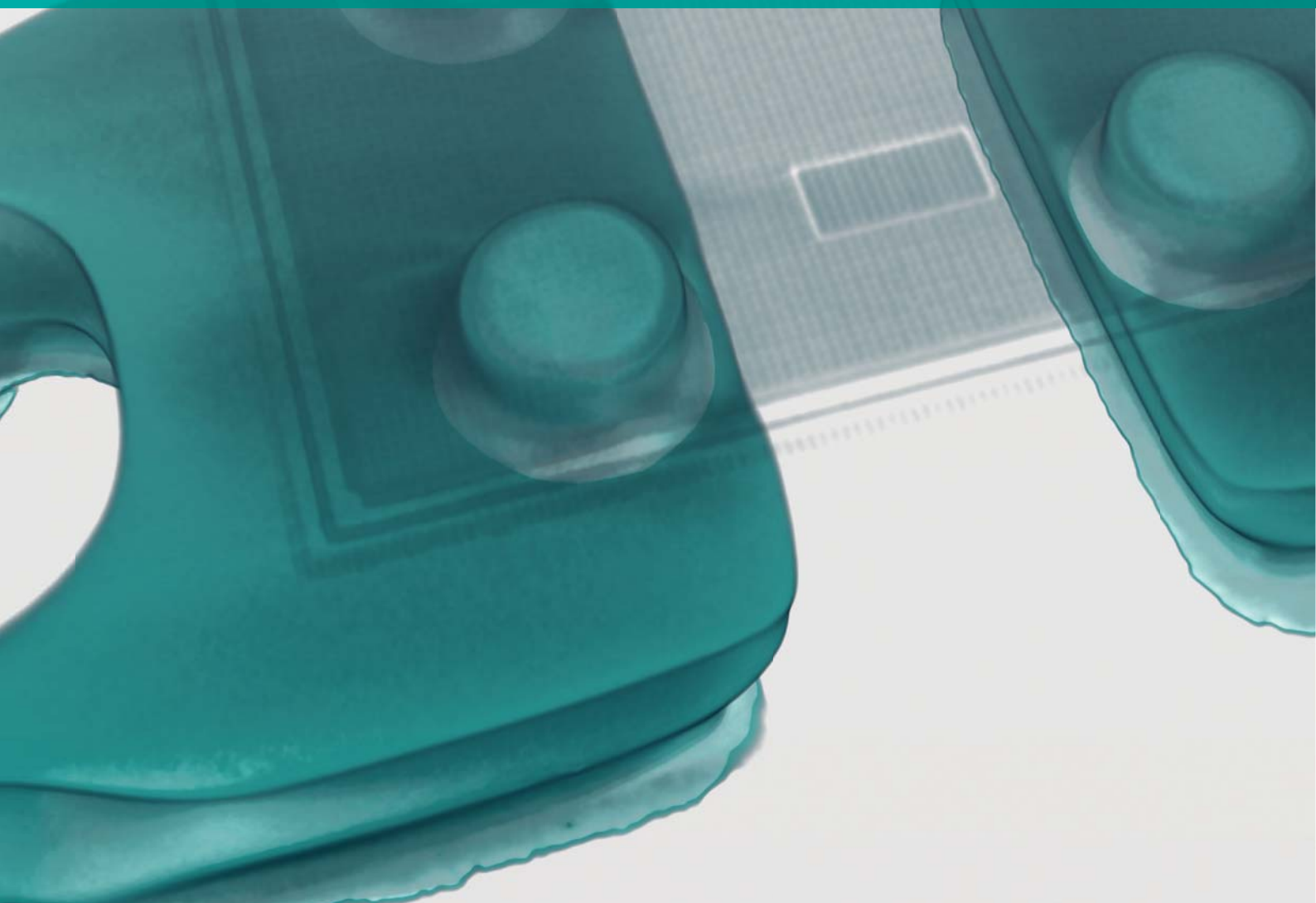
As the market leader in the electronics industry, YXLON continues to innovate where it matters most. Even the most critical observers agree our images, produced by tried-and-tested technologies together with cutting-edge solutions like FeinFocus, are world-class.

A comprehensive global network of no fewer than eight service centers and more than 50 service partners is the foundation of our innovative and modular support solutions.

From Asia to Africa and America to Europe, highly qualified personnel are on call to help you quickly, efficiently, and at minimum cost.

## Applications

- Wafer inspection
- 3D integrated circuit joints
- Microbumps
- Sensors
- MEMS and MOEMS
- TSV's





## Get the right system for demanding semiconductor inspections without compromise

The Cheetah EVO range of X-ray inspection solutions was created to achieve a simple goal: the very best image in the shortest time, in each of the market sectors. The result is sheer visual brilliance. Cheetah EVO systems harness the combined power of several YXLON innovations – FeinFocus X-ray tube technology; high-power target technology; a finely calibrated, long-life flat-panel detector and a state of the art manipulation system. The systems can generate images in extremely high resolution, easily overcoming the unique challenges of the semiconductor application areas.

In addition to imaging excellence, with Cheetah EVO you can look forward to simple, user-friendly controls and intuitive FGUI – Feinfocus Graphical User Interface – software. Not to mention the myriad of benefits of comprehensive automation. One-click solutions make manual inspection effortless and live SMART filters ensure perfect images.

Easy Teach-In makes it simple to program complex automated routines that guide you swiftly through inspection steps and deliver repeatable, reliable results and automated reports.

### Key benefits for semiconductors

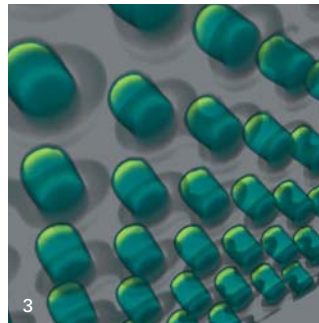
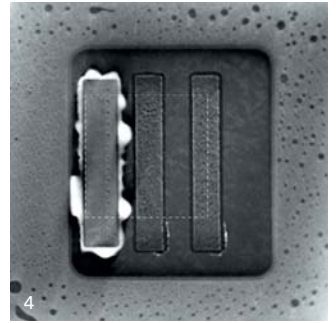
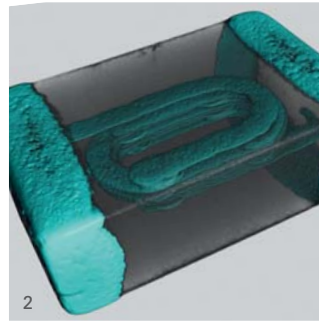
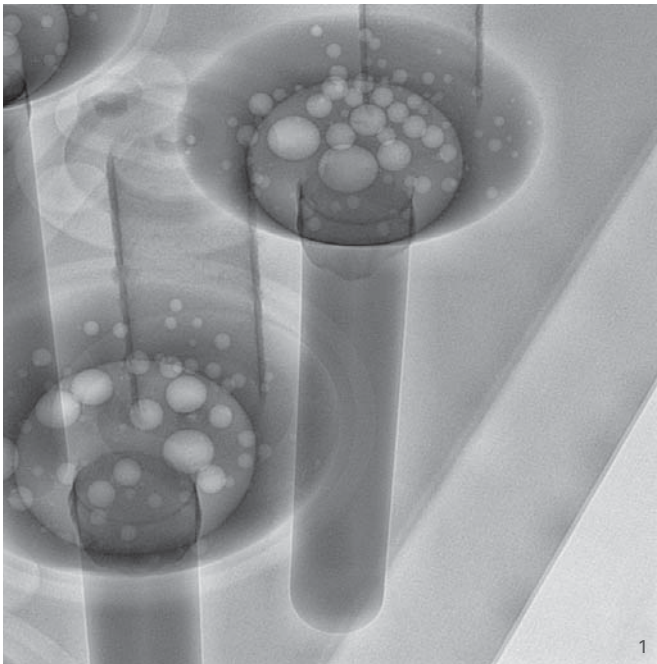
- Accurate, repeatable void compilations including multi-area voiding
- Excellent resolution at low power and low kV
- Fast, automated, easy routines
- Very fast live (on the fly) inspections



## **Connectivity is king: Ready for Industry 4.0**

The Cheetah EVO includes several new and improved features that make the system ready for the paradigm shift to a smart factory.





- 1 Flip-chip pin grid array, FCPGA  
Flip chip bump area voiding
- 2 Capacitor in 3D view
- 3 30µm microbumps in wafer
- 4 power device 3D volume slice

## One click. Multiple effects.

One-click solutions make it easy to perform the advanced manipulations required for fast and reliable X-ray inspection. For example, Click & Center, Frame & Zoom, or PowerDrive. Even Zoom+, which guarantees constant-intensity magnification without tube adjustments or software interpolation, can be carried out with one simple click.

## Upgrade to micro3Dslices.

By using slicing technology, the non-destructive inspection of larger areas is possible and substantial cost savings will be achieved as samples are no longer destroyed by micro sectioning. Even better, these slice-by-slice images can be analyzed automatically as easily and quickly as a 2D image showing voiding at interfaces perfectly clearly, the key to reliability.

## Enhanced technologies.

Easy operation is worth little without quality results that meet the required standard. Which is why YXLON upgraded a number of trademark Cheetah EVO features, while ensuring that it remains the best device in its class:

### ■ 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.

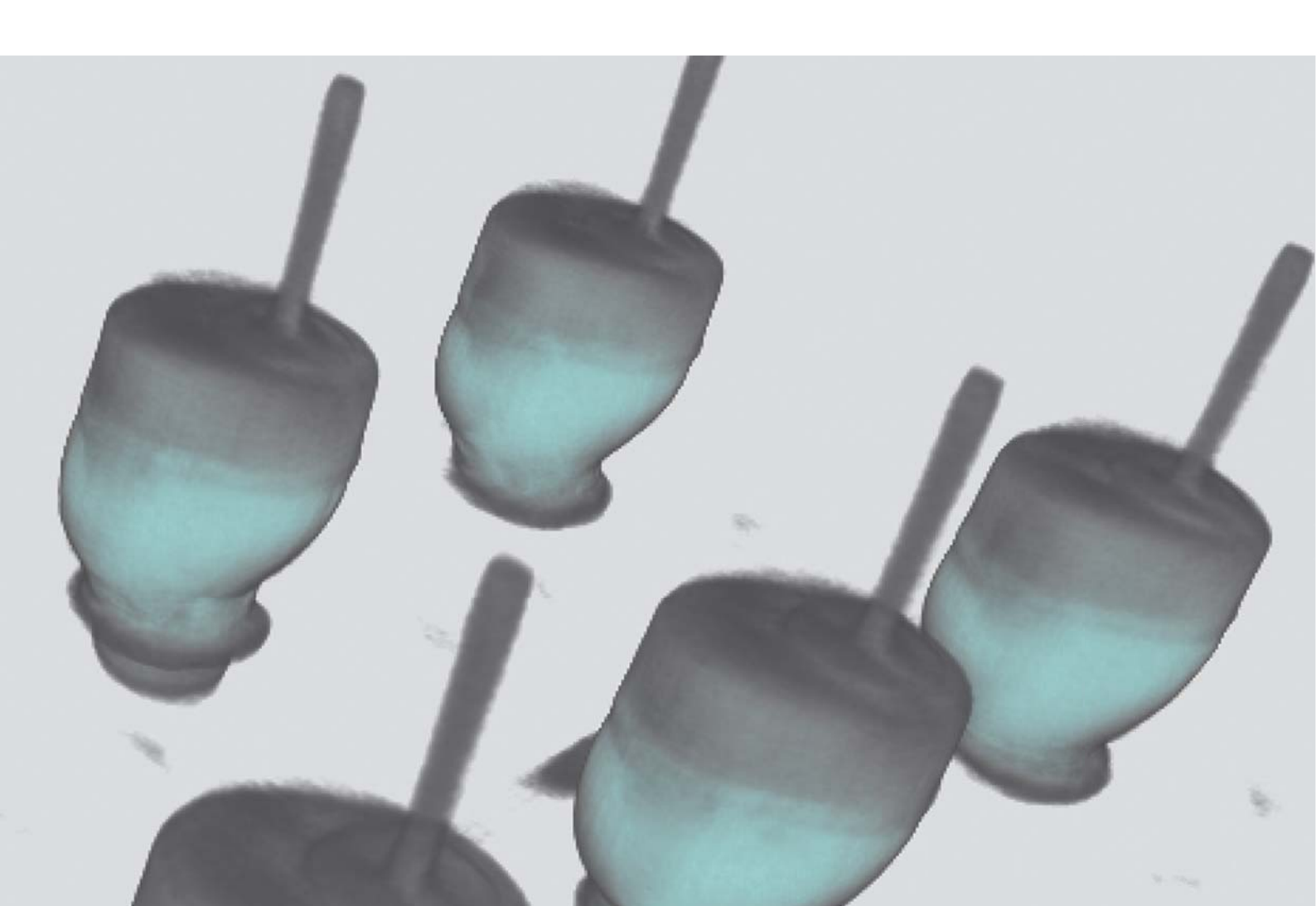
### ■ Upgrade to CT

Cheetah EVO can be upgraded for CT with the optional microCT module. This enables CT to be done easily on the system with in-depth 3D examination of inspection items.

### YXLON Life Cycle Service

What are your specific requirements? YXLON offers a wide range of service modules and packages tailored to your needs. Your benefits include:

- High system availability
- Low operating costs
- Superior inspection results
- Guaranteed operational safety
- Prolonged system lifetime



# The EVOLution continues: faster and more precise

In addition to enhancements to established features, Cheetah EVO operators benefit from three advanced technologies.

## eHDR-Inspect

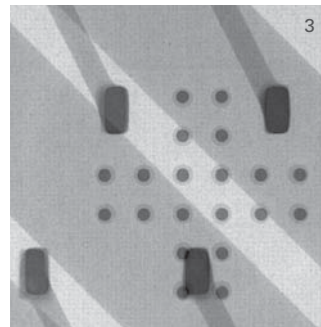
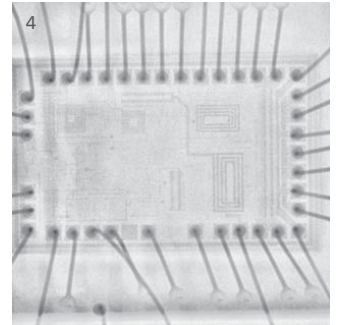
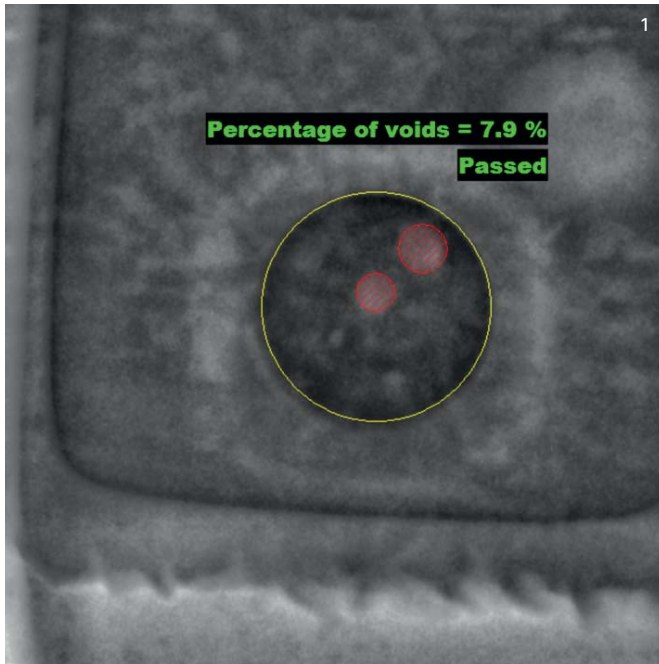
Highest product quality is a major competitive advantage in electronics. Developed especially for the electronics market, our eHDR filter highlights critical structures with just one click. It detects even the slightest variances in grayscale and no defect will be missed, thanks to our software and the enhanced 16-bit grayscale values. This is a real “game changer”, as it allows you to easily see faults that were invisible before.

## New user friendly FGUI and larger monitor

With the new and improved software it is easier to observe and change all X-ray parameters at the same time. Also, the monitor is much larger so that both the X-ray image and the popular overview image are available in higher detail.

## 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. Not using X-ray leads to a high risk of missing solder joints or large areas of voiding which could result in product failures. MAVC helps detect voids in complex soldering designs. With just four parameters to adjust, setup is quick, simple, and cost-efficient. Results are consistent, repeatable and accurate.



- 1 Voiding measurement of 15 µm copper pillar
- 2 LED pad voids
- 3 10 µm TSV top view in flipchip
- 4 Easily visible die detail

## Our record: Brilliance by numbers.

### General Product Features

Time to first image (typ.)	~ 10 s
Reconfiguration time (typ.)	< 60 s
µCT scan time	~ 7 s
µCT reconstruction time	~ 60 s
micro3Ds scan time	~ 20 s
micro3Ds reconstruction time	~ 20 s
Access for sample loading	large automated door (690 x 650 mm)
System window	520 x 370 mm
Monitor	New 27" Ultrasharp, wide viewing angles
Zoom+	yes
PowerDrive	yes
Image stabilization	air suspension

### Manipulation

Manipulation control via	mouse or joystick
Inspection area (max.)	460 mm x 410 mm (18" x 16")
Sample size (max.)	800 mm x 500 mm (31" x 19")
Sample tray axes	X,Y, rotation
Oblique viewing	+/-70° (140°)

### X-Ray Tube

Tube type	open X-ray tube
Target	transmissive
Voltage range	25–160 kV
Current range	0.01–1.0 mA
Max. tube power	64 W
Max. target power	15 W
Detail detectability	< 1 µm
X-ray intensity control	TXI

### Image Chain

Geometric magnification (max.)	~ 3,000x
Total magnification (max.)	~ 384,000x

### Physical Dimensions

Width / depth / height	1,650 / 1,400 / 2,050 mm
Weight	~ 2,200 kg



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