

Led by experience. Driven by curiosity.

Semiconductor inspection with X-ray.

**Solutions for front-
and backend processes.**

In the semiconductor industry, the zero defect approach demands a consistent quality management along the process development and production chain. Comet provides high-tech X-ray inspection solutions for crucial production phases, such as TSV filling in wafer processing or die attach in chip-level bonding. AI-powered real-time metrology enables highest degrees of automation, helping to reduce cost, shorten time-to-market, and increase yield.

comet

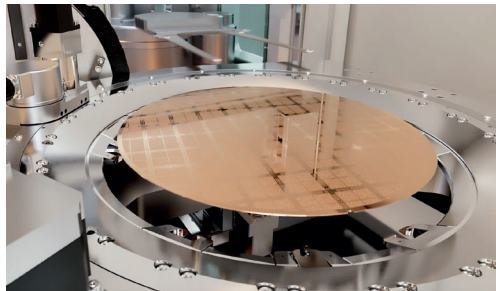
Visualization of 3D X-ray inspection results of TSV fills in a wafer. Segmentation and visualization of TSVs (105 μm high, 10 μm wide) with voids (50 μm high, 6 μm wide) with our AI-powered software Dragonfly 3D World.

Wafer designed for Comet by Fraunhofer IZM_ASSID, it contains voids for illustrative purposes.

Boost your inspection strategy – from lab to fab, from wafer to chip.

2.5D and 3D X-ray offers the semiconductor industry a powerful upgrade of their inspection strategy. As a non-destructive, high-resolution imaging technology it helps to identify and measure critical attributes which impact yield, reliability, and performance faster than ever before – especially in advanced packaging and miniaturized devices.

What we offer.

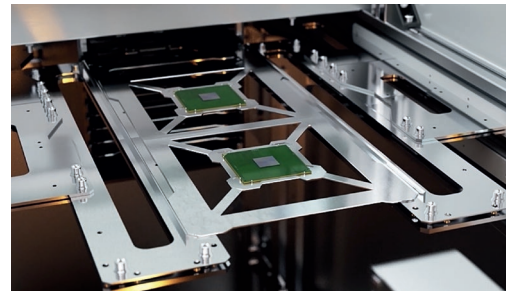


Frontend process development

- Assessment of TSV dimensions, voids, fill level and more with CT
- Inspection of complete wafers, coupons or dies
- Highest precision on submicron level
- Real-time metrology
- Speeding up new product introductions

Wafer production

- Identification and quantification of TSV dimensions, voids and more in complete wafers
- Fully integrated inline inspection including clean-room requirements
- Completely automated, AI-powered inspection of wafers in high volume production
- Increased yield with valuable process insights
- 2.5D X-ray for incredible speed and throughput



Backend process development

- Crystal-clear 3D images of submicron details within seconds
- 3D metrology data available for bump size, stand-off height, head-in-pillow ratio, shift length, void area in solder bumps
- Fast and accurate analysis of critical defects for direct process feedback
- Suitable for traditional or advanced packaging
- Accelerated development with AI-powered insights speeding up time-to-market

Chip production

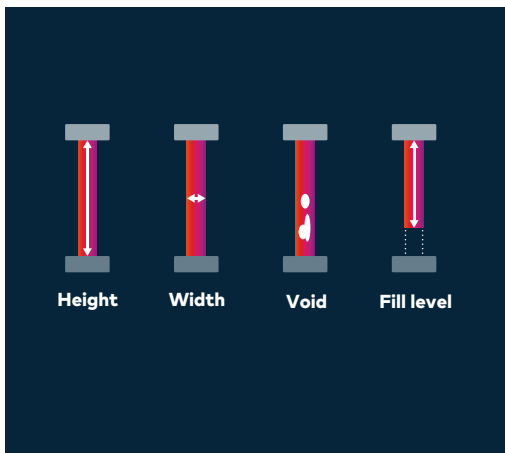
- Completely automated, AI-powered inspection of IC packages in high volume production
- Full integration into the production line including clean-room requirements
- Optimized for production process monitoring and quality assurance
- Cost-saving process improvements through production insights

Extract critical information with AI – powered by Dragonfly.

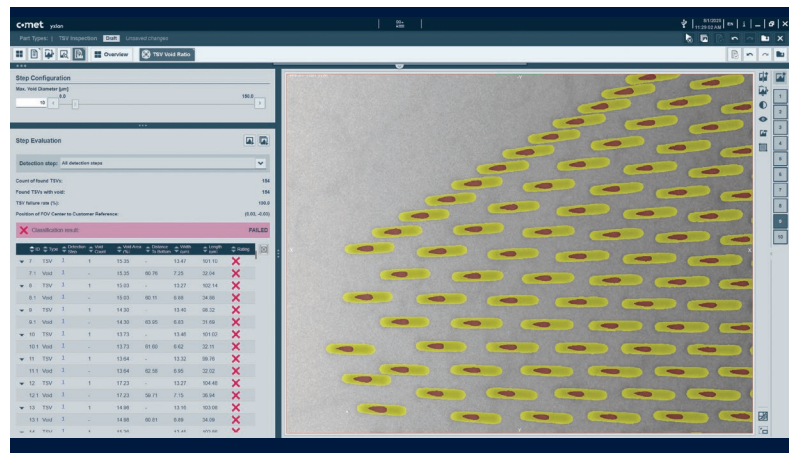
Enhancing product and process quality with artificial intelligence

From root cause analysis to process ramp-up, from failure analysis to quality control, from segmentation and visualization to evaluation and quantification: The Comet Yxlon Software Suite includes powerful software tools and packages that allow deepest insights into product and process quality.

Metrological insights into TSVs with 2.5D X-ray.

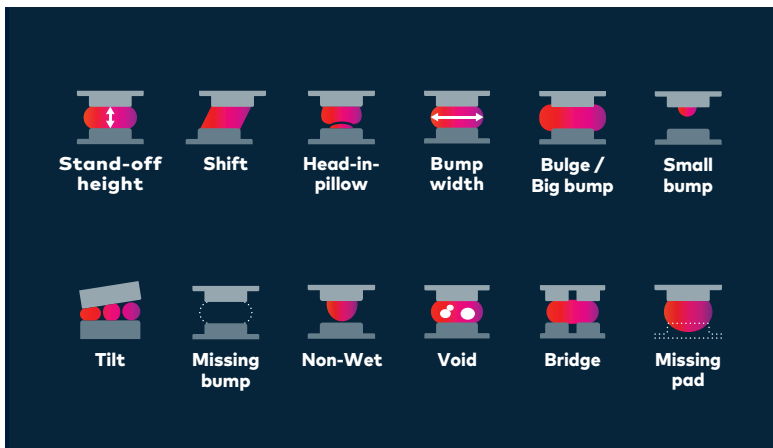


Critical attributes of TSVs, which can be visualized and measured.



Automated detection and critical defect classification of TSVs for voids. Wafer designed for Comet by Fraunhofer IZM_ASSID, it contains voids for illustrative purposes.

3D metrology for solder connections.



Critical attributes of solder connections which can be visualized and measured.



Automated detection and classification of head-in-pillow in C4 bumps.

Find the perfect match for your application.



CA20: For lab and fab

- X-ray inspection of wafers and packaged chips
- Fast acquisition of submicron 2D and 3D images
- Identifies structural defects such as voids in wafer-level TSVs or head-in-pillows in solder connections of IC packages automatically
- For process development and high volume production.
- Seamless integration into the production line
- Fulfills cleanroom requirements
- Non-destructive inspection with the Dose Manager protecting parts sensitive to X-ray
- SEMI® S2-0818 & SEMI® S8-0218 certified



FF35 CT Semi

- Computed tomography solution for R&D and quality assurance for labs
- Highest resolution of submicron details in wafer coupons, dies and assembled chips
- Effortless visualization and AI-based segmentation and quantification with Dragonfly 3D World
- Single or dual tube configuration for highest versatility with microfocus and nanofocus X-ray tubes
- Precise manipulation and temperature stability
- SEMI® S2-0818 & SEMI® S8-0218 certified



Cheetah EVO/Cougar EVO

- High detail resolution and very flexible X-ray systems for 2D/2.5 D, 3D laminography and computed tomography imaging
- For R&D and at-line inspection in traditional packaging environments
- Features various image enhancement tools, automated inspection workflows and software-assisted image review
- Dose monitoring for sensitive parts
- Cheetah EVO Semi is SEMI® S2-0818 & SEMI® S8-0218 certified



Comet Technologies USA, Inc.
100 Trap Falls Road Ext
Shelton, CT 06484, USA

<https://yxl.comet.tech>

