Led by experience. Driven by curiosity.

FF35 CT

The high-resolution, multi-application CT system for science & research.

comet
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Comet Yxlon – this is who we are.

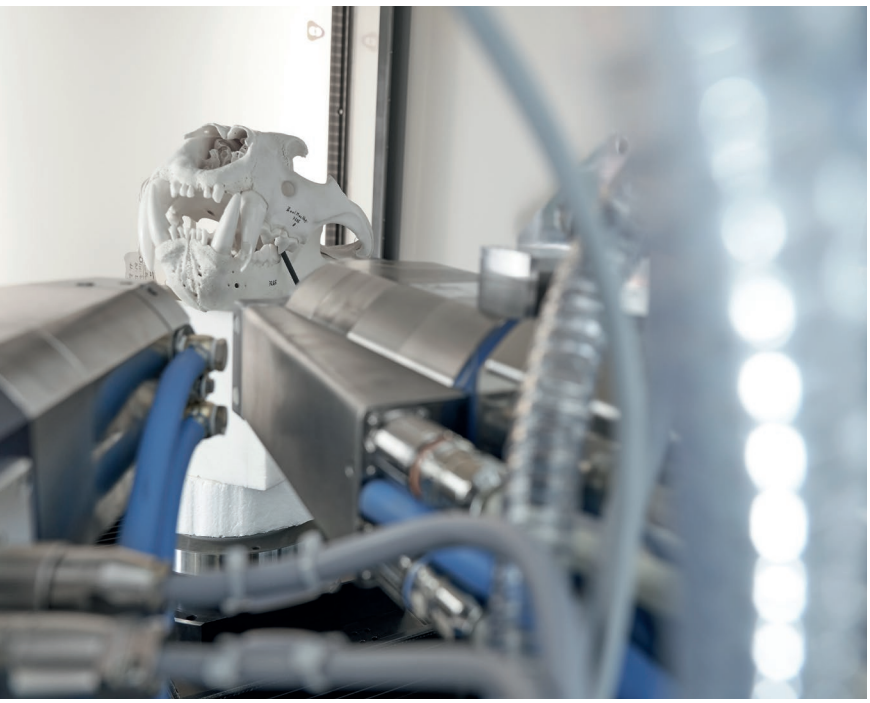
Comet Yxlon designs and manufactures high-end X-ray and CT system solutions for industrial environments – based on customer-centric product development. We're proud to be part of Comet, the globally leading Swiss technology company with a focus on plasma control and X-ray technology.

Led by experience.
Driven by curiosity.

Deeper insights.

Looking beyond the surface is our core competency at Comet Yxlon – but not only in a technical way.

Zooming in on your industry, applications and business challenges allows us to develop innovative and relevant solutions that help you shape future markets. Faster time to market? Avoiding production downtimes? The perfect image with the highest resolution, as fast and easy as possible? Whatever your goal – let's talk about it!



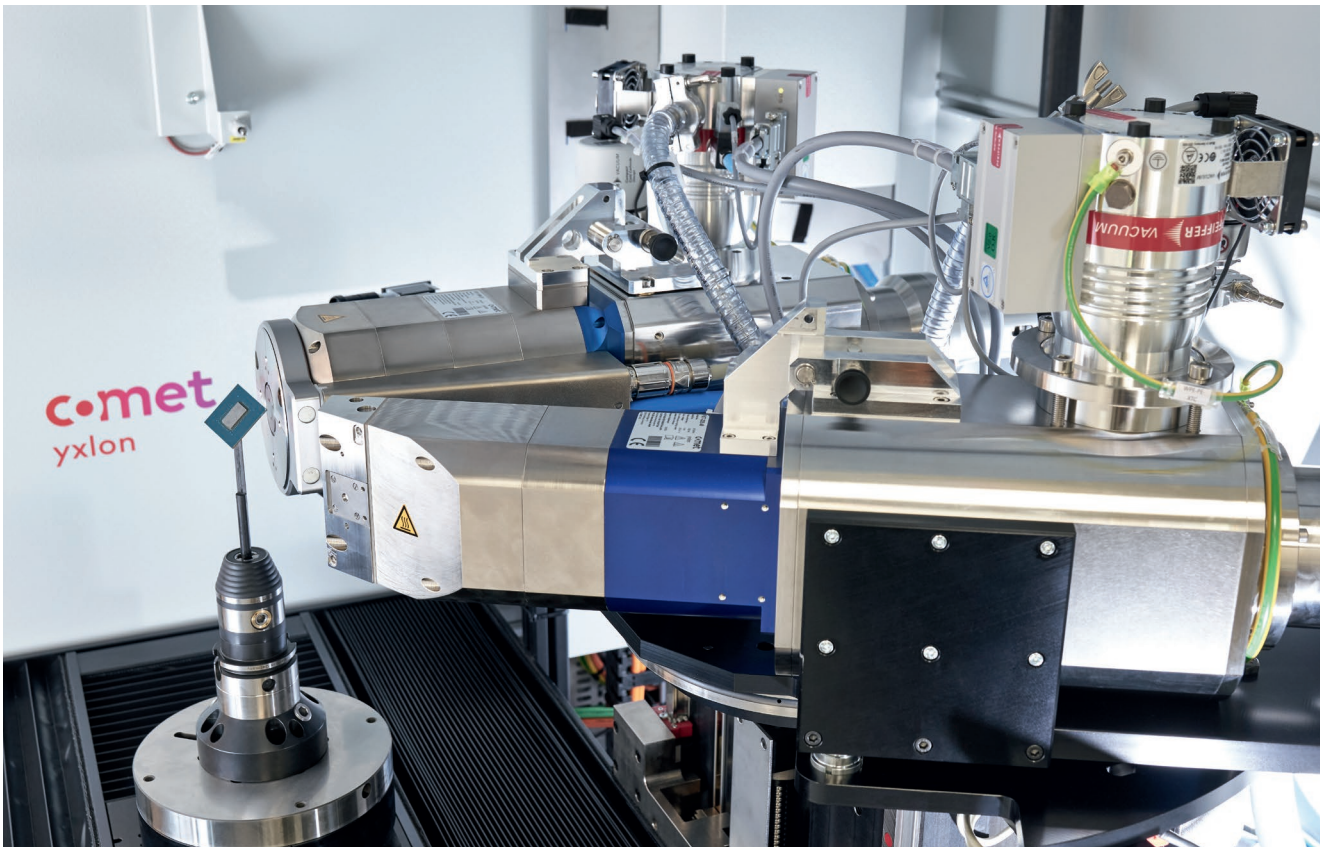
The flexible system with dual-tube set-up covers a wide range of applications.

Your benefits with the FF35 CT:

- Single or dual tube configuration for highest versatility in laboratory micro-CT applications
- New VistaX software packages for best-in-class image quality and speed
- Precise manipulation and temperature stability
- Various CT trajectories and FOV extensions
- Metrology version available
- Special version for the semiconductor sector available

Two tubes, one goal: maximum versatility.

With its optional dual-tube set-up the FF35 CT combines unprecedented CT data quality with highest versatility when inspecting small and medium-sized parts.



High-power 225 kV microfocus tube and 190 kV nanofocus transmission tube – the perfect combination.

From improved material testing in the R&D department, to optimization of process control and small series inspection, to various science applications – the Comet Yxlon FF35 CT covers an extraordinary range of applications.

225 kV microfocus directional beam tube

With its high power of 320 W and the water-cooled target, the 225 kV Comet Yxlon directional beam tube allows quick CT scans in less than a minute. In 2D operation, the tube reaches a spatial resolution of 4 µm.

Optional 190 kV nanofocus transmission tube

For part sizes of 10 mm and smaller, the 190 kV nanofocus transmission tube with its resolution in the submicron range is the right choice. While its water-cooled tube head allows for quick temperature balance and highest focal spot stability, four modes enable the optimal adjustment of the focal spot size in relation to power. Since both tubes have their own generator and HV cable, they can be switched without the need of reconfigurations.

Choice of detectors for larger field of view

With an active area of up to 430 x 430 mm the recommended flat-panel detector 4343 CT offers a generous field of view. The CsI scintillator guarantees maximum contrast sensitivity and a high spatial resolution with a pixel pitch of 150 µm and a matrix of 2,880 x 2,880 pixel.

Which items can be inspected with the FF35 CT?

Electronic components incl. SMD
Products involving new materials or manufacturing methods, e.g. AM components, fiber-reinforced plastics
Battery cells and modules
Injection molded plastics
Microsystems (MEMS, MOEMS)
Medical objects, e.g. cannulas
Light-alloy castings
Geological, paleontological and biological samples

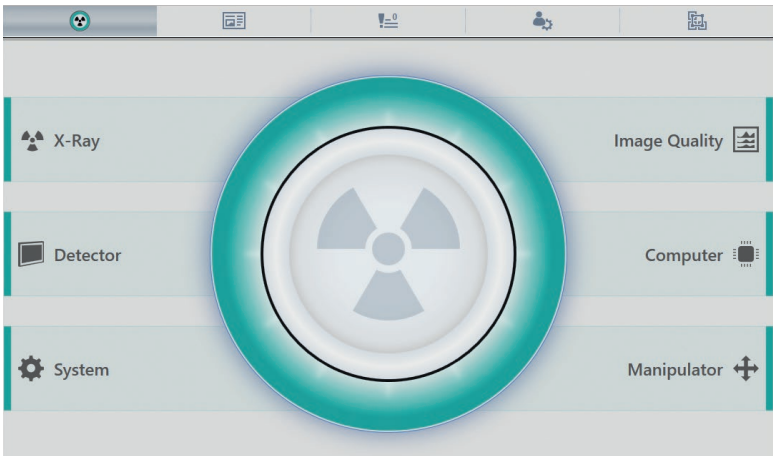
Which applications is it designed for?

Quality assurance, material analysis, material research
Failure and structure analysis
Assembly checking
Inspection of small serial productions
Process control
Digitization
Segmentation

Easy operation. Ultimate flexibility.

Our Geminy software helps users perform inspections as easily as possible – and boasts some highly potent CT techniques for maximum image quality and diverse field-of-view extensions.

As the single user interface for all workflows, Geminy uses automation, wizards and presets to guide users of different skill levels smoothly through the inspection process. In addition, its powerful CT techniques facilitate the optimum part size spectrum, speed, and image quality.



Geminy's Healthmonitor shows the current system condition.

Collision protection

The intuitive SmartGuard takes collision protection to the next level. Benefit from highest magnifications without risking damage to part or system by following the exact outline of your part.

Helical scan trajectories

- HeliExtend – to avoid cone-beam artifacts
- HeliExtend Dual – combined offset and helical CT scan for very large parts
- Both HeliExtend and HeliExtend Dual available as QuickScan and QualityScan
- QuickScan allows for 3 to 5 times faster scanning

Scan extensions

- Horizontal field-of-view extension
- Vertical field-of-view extension
- Combination of horizontal and vertical field-of-view extensions

Image quality optimizations.

ScatterFix 2.0

The innovative ScatterFix 2.0 functionality developed by Comet Yxlon reduces scatter radiation to improve the quality of the CT data, e.g. for optimized surface determination.

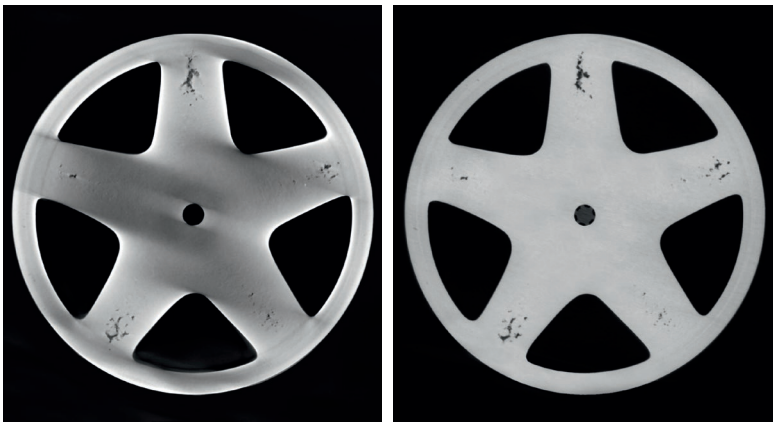
Beam hardening correction (BHC)

It allows the correction of unwanted gray-value gradients in otherwise homogeneous materials, e.g. in order to reliably carry out a pore analysis.

Metal artifact reduction (MAR)

With complex components consisting of plastics and metals, MAR significantly reduces the interfering effects causing the less dense material to 'disappear'.

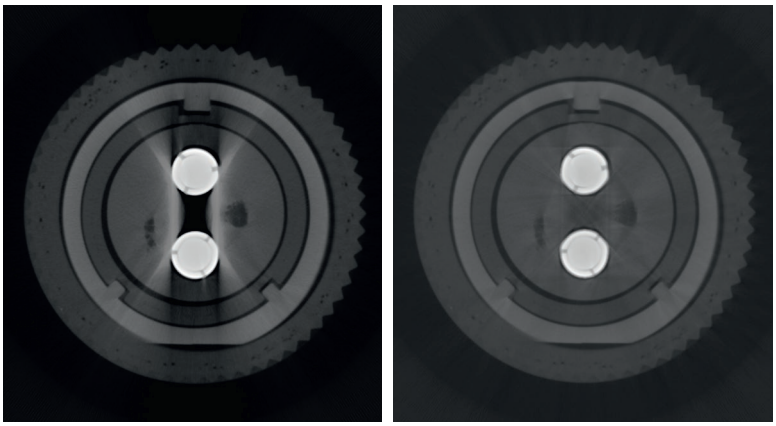
Improving image quality: Cone-beam CT without (left) and with ScatterFix 2.0 (right).



Eliminating unwanted gray-value gradients: Cone-beam CT without (left) and with Beam Hardening Correction (right).

Ergonomic. Intuitive. Accessible.

In the FF35 CT, software and hardware work hand in hand to make system operation as easy as possible. The clean layout of the operator desk with tiltable touchscreens allows users to stay focused on the inspection task. The height of the desk can be adjusted, facilitating operation from a sitting or standing position. Healthmonitor and push messages keep the user informed about system status and inspection progress at all times.



Reducing interferences: Cone-beam CT without (left) and with Metal Artifact Reduction (right).

VistaX.
See better. Faster. More.

Opening new horizons: With best-in-class image quality and unprecedented speed, VistaX significantly increases productivity. The powerful CT software solution comes in different feature packages.

Vista.

The best-in-class entry-level package contains these features:

QuickScan / QualityScan

Choose a mode according to your requirements: Use QuickScan for a revealing overview or QualityScan for high-resolution in-depth analysis.

SpeedMode

Achieve up to three times* faster scans for parts of a flat geometry than with the classic QualityScan while keeping image detail resolution.

FlexCenter

Your ROI is not in the center of the turntable? FlexCenter provides a flexible rotation axis – no need for part repositioning.

VistaX.

See finest details in unrivaled resolution: In addition to all features of the Vista package, VistaX also comprises ZoomScan.

ZoomScan

Increase your resolution by up to ten times* compared to QualityScan. Just combine SmartGuard with the revolutionary ZoomScan feature, and the system follows your part's exact outline. Additionally activate the SpeedMode to increase scan speed by up to three times*.

VistaX Pro.

Setting new standards in productivity: In addition to all VistaX features, VistaX Pro also contains LayerScan.

LayerScan

The Comet Yxlon computed laminography solution is the most efficient technology for highest resolution slice images of flat parts without the need for 360° rotations. Furthermore, it accelerates the scan speed by up to five times*.

* Achieved magnification and acceleration of scan times depend on the geometry of the part.

The FF35 CT Metrology: measuring finest inner structures.

With its ability to capture nearly unlimited measuring points in one CT scan decoupled from the measurement evaluation, the metrology version of the Comet Yxlon FF35 CT takes accuracy to the next level. Seamless defect analysis and nominal-actual comparison save time and reduce correction loops. Smart fan control enables the stabilization of the interior temperature, making the FF35 CT Metrology compliant with temperature range regulations defined by VDI 2627.

FF35 CT SEMI: for applications in the semiconductor field.

The Comet Yxlon FF35 CT SEMI is an innovative, versatile high-resolution CT system for use in R&D and quality assurance. It was developed specifically for inspections in semiconductor-related industries. The FF35 CT SEMI meets the high SEMI® standards, including the hazard and safety standards SEMI® S2-0818 & SEMI® S8-0218, and is certified accordingly.

Our supportive Life Cycle Service.

At Comet Yxlon, service is not an add-on, but an integral part of every product. We support you through the entire life cycle of your system – for easy operation and extended product life.

Offline applications, at-line scenarios, or in-line implementation – Comet Yxlon supplies tailored service solutions for a wide range of production environments. Whether you are an X-ray beginner or a CT expert, whether you need introductory training or a performance upgrade: Our service team is here to support you.

1. Getting you started

Our professional Comet Yxlon field service technicians or certified service providers will ease your way into working with your new inspection system.

- Bringing the system to life: installation & commissioning
- Power on: introductory training by Comet Yxlon Academy
- Correct measurements from the start: SmartCalibration
- Cost transparency from the beginning: flat fee service rates

2. Running things smoothly

Is there an issue? No problem. Our skilled service technician team helps with troubleshooting, maintenance, and part exchange for easy operation.

- High efficiency thanks to remote control and VisualAssist
- Professional phone support and on-site visits
- Preventive maintenance and SmartExchange
- High-end system monitoring with SmartCalibration

3. Enhancing performance

With our upgrades and conversion kits, your Comet Yxlon system remains in top-notch condition and keeps its value as market demands change.

- System release upgrades, feature & performance upgrades
- Component upgrades
- System software upgrades
- Advanced Academy training

Tailor-made Service Level Agreements

Our Service Level Agreements are based on different performance factors, e.g.

ServicePass – for fast reaction times and seamless maintenance

SmartPass – focusing on the highest possible system availability

LifeCyclePass – the all-inclusive premium contract for guaranteed life-cycle-costs

Please contact us to learn more about the specifics of our different service contracts!

FF35 CT in numbers.

Inspection parts

Max. part size (Ø x H)	530 x 800 mm[1)]
Max. inspection envelope 3D (Ø x H)	510 x 600 mm
Max. part weight	up to 50 kg

X-ray source

	FXT-225.48	FXT-190.61
Tube type	microfocus, open	nanofocus, open
Energy range	20 - 225 kV	20 - 160 / 190 kV[2)]
Max. power	320 W	80 W
Max. target power	280 W	15 W
Focal spot size	6 µm	<1 µm
Spatial resolution[3)]	4.0 µm	0.6 µm
Features	TXI[4)]	TXI[4)], multifocus, cooled

Detector

	Flat-panel detector 4343 CT
Active area	432 x 432 mm
Pixel matrix	2,880 x 2,880 px
Pixel pitch	150 µ
Max. frame rate	30 Hz

Manipulation

Focus-detector distance (FDD)	up to 1,170 mm

Cabinet / System

Dimensions (W x D x H)	2,960 x 1,590 x 2,120 mm (w/o levelling wedges)
Weight	~ 6,800 kg (single tube setup) / ~ 6,900 kg (dual tube setup)
Loading door clearance (W x H)	650 x 790 mm
Mains connection	3-phase 230 / 400 V AC ±10 %, 50 / 60 Hz, zero, ground; transformator available
Max. power consumption	2.1 kVA

Option

	FF35 CT Metrology
Features	as above, but without virtual rotation axis FlexCenter
Air conditioning inside cabinet	yes, temperature range referring to VDI 2627 measuring room quality class 3
Systems ambient conditions	measuring room quality class 4
Measuring accuracy MPE SD[5)]	5.9 µm + L/75 [L = mm]

[1)] Collision-protected by manual definition of cylinder. [2)] For local requirements, FF35 CT energy range may be limited via hardware to max. 160 kV. [3)] Measured with JIMA RT RC-02B or HiCo micro-chart test specimen. Acceptance criteria CNR*MTF > 5 %; MTF > 5 %; CNR > 0.5. [4)] TXI = true X-ray intensity – controls real output dose for constant intensity. [5)] Referring to VDI / VDE 2630 part 1.3. Measured as deviation of sphere distance in tomographic static mode (TS) with std. circular scan. Values valid only for FF35 CT Metrology under compliance with conditions described. More details on request.

Worldwide offices.

Germany – Headquarters
Comet Yxlon GmbH
Essener Bogen 15
22419 Hamburg
Germany
T. +49 40 527 290
E-mail: yxlon@comet.tech
https://yxlon.comet.tech

USA
Comet Technologies USA, Inc.
100 Trap Falls Road Ext
Shelton, CT 06484
USA
T. +1 234 284 7849
E-mail: yxlon.us@comet.tech

China
Comet Mechanical Equipment
(Shanghai) Co., Ltd
Block B, 1F No.2, Lane 777
West Guangzhong Road,
Jingan District
200072 Shanghai, PRC
China
T. +86 21 36696906
E-mail: yxlon.cn@comet.tech

Japan
Comet Technologies Japan KK
New Stage Yokohama Bldg.
1st Floor
1-1-32 Shinurashima-cho
Kanagawa-ku
221-0031 Yokohama
Japan
T. +81 45 450 1730
E-mail: yxlon.jp@comet.tech

Korea
Comet Technologies Korea Co., Ltd.
Suwon Venture Plaza Bldg.
48, Samsung-ro,
168 beon-gil Yeongtong-gu
Suwon-si, Gyeonggi-do 16676
Korea (South)
T. +82 (0)70 4337 6480
E-mail: yxlon.kr@comet.tech

Taiwan
Comet Technologies Taiwan Ltd.
1st Floor, No. 120, Guangming Rd.
Qionglin Township
Hsinchu County 307001
Taiwan
T. +886 35922398
E-mail: yxlon.tw@comet.tech

comet
yxlon

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