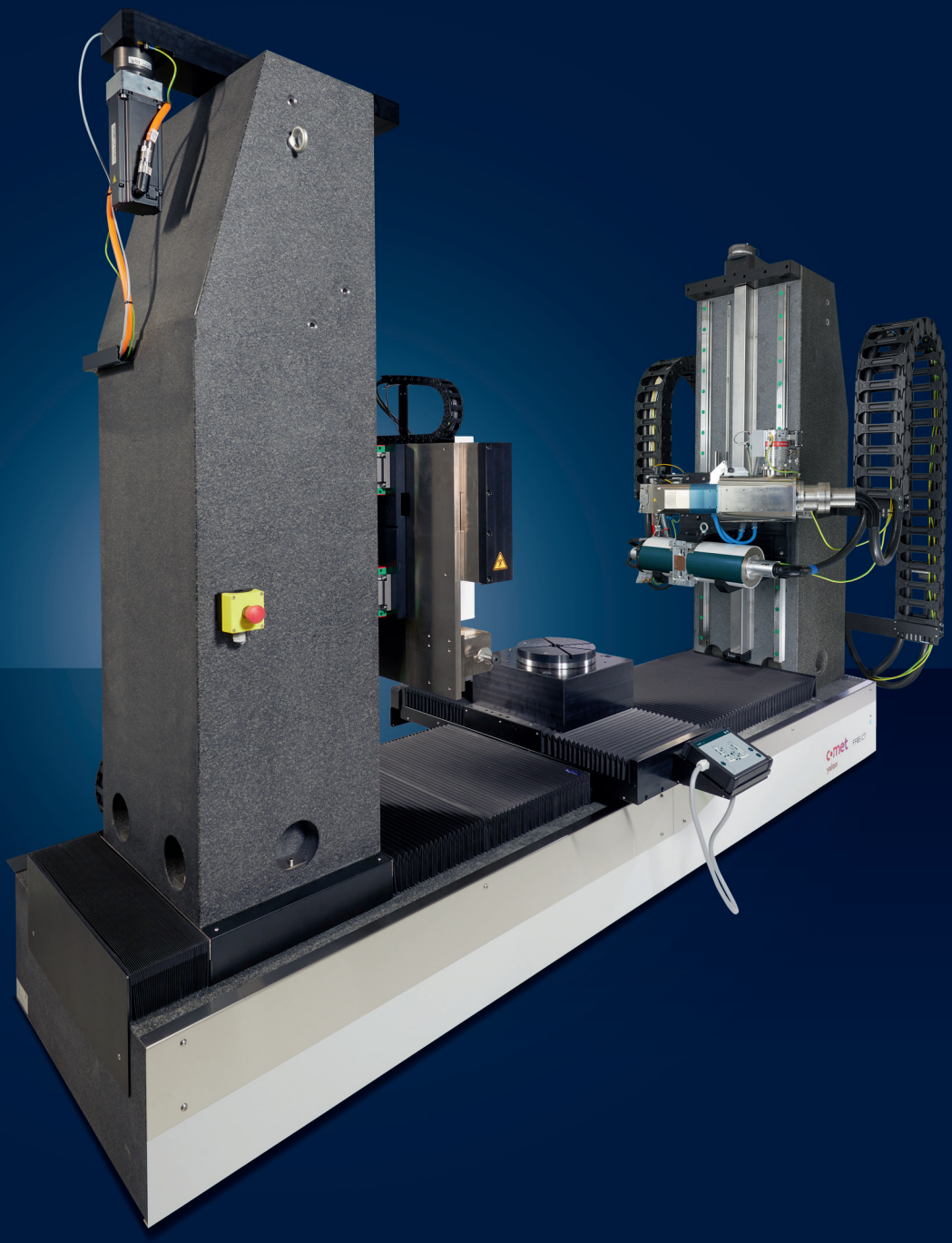
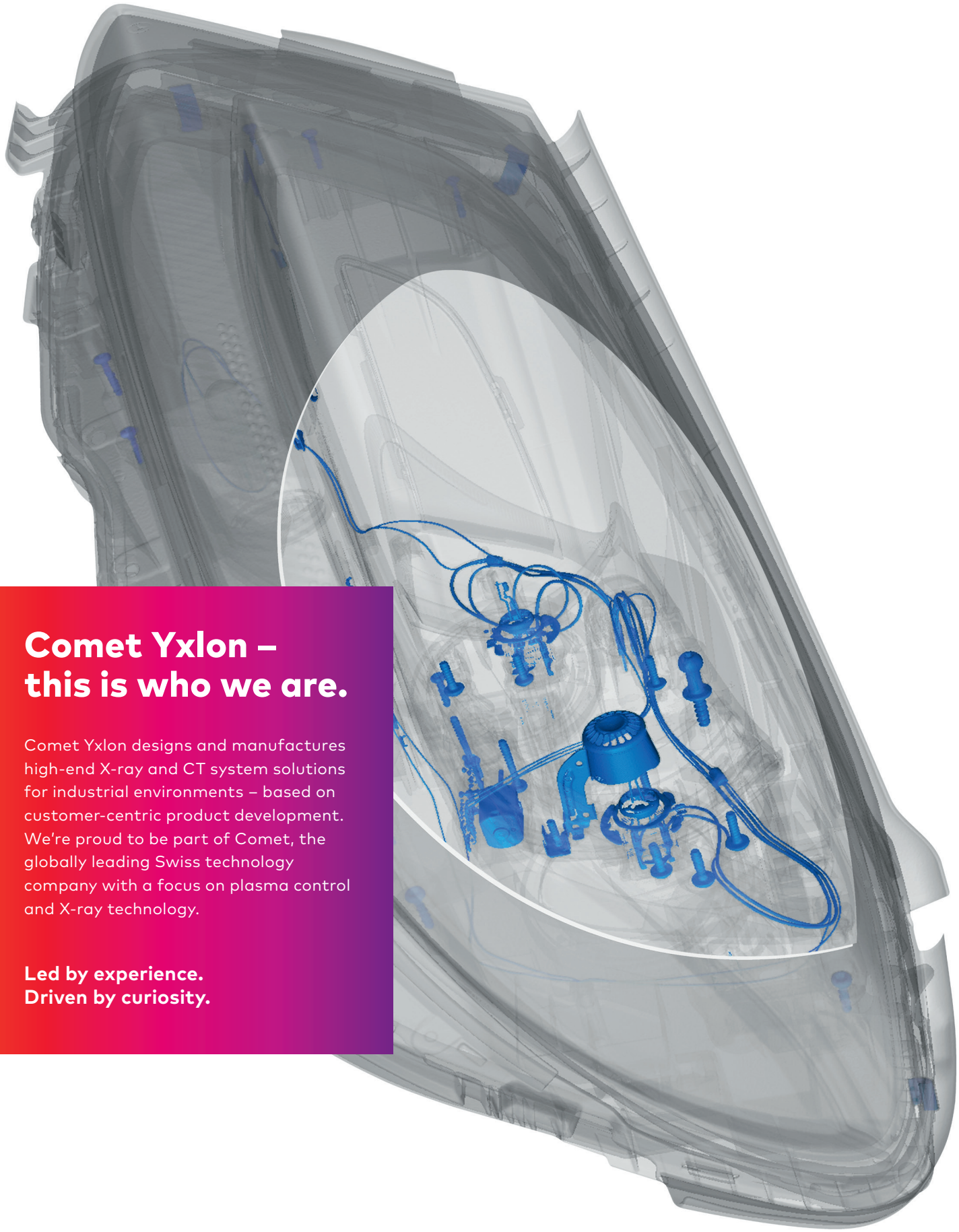
Led by experience. Driven by curiosity.

FF85 CT

High resolution and ultimate inspection versatility for science & research.



comet yxlon



Comet Yxlon – this is who we are.

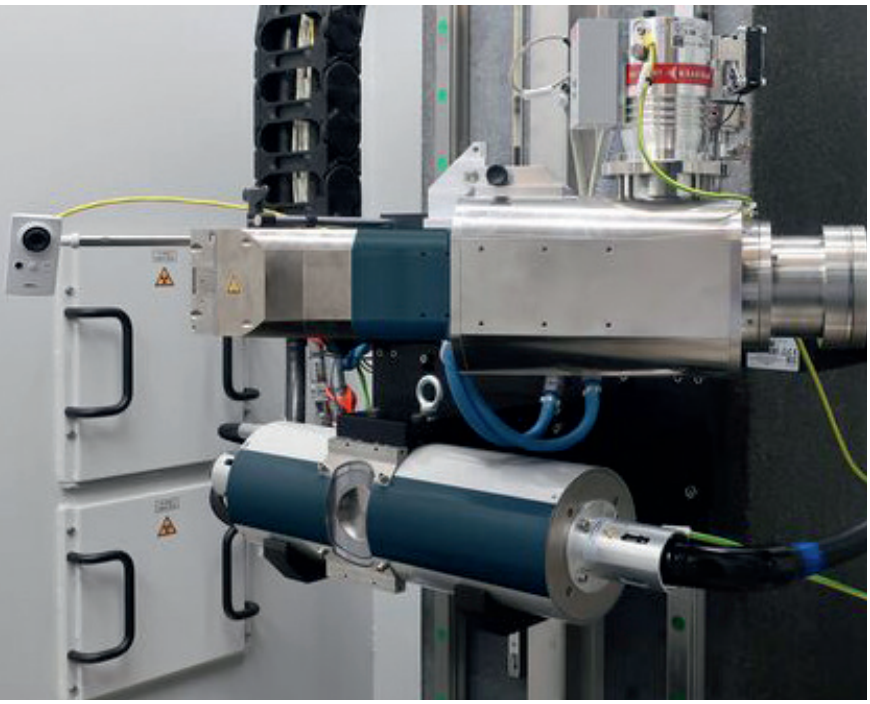
Comet Yxlon designs and manufactures high-end X-ray and CT system solutions for industrial environments – based on customer-centric product development. We're proud to be part of Comet, the globally leading Swiss technology company with a focus on plasma control and X-ray technology.

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!



You can switch between the different tubes in one CT sequence.

Your benefits with the FF85 CT:

- Large inspection envelope: FOV extensions, multiple trajectories
- Precise manipulation and temperature stability
- Vista feature packages for best-in-class image quality and speed
- Intuitive user interface
- Optional 450 kV mesofocus tube
- Fit for extra-large items such as EV battery packs

As versatile as your applications.

A new level of flexibility: Thanks to its dual-tube configuration, various sizes of manipulators, and the choice of two detectors, the high-energy, high-resolution FF85 CT covers a wide variety of applications.

The FF85 CT is available in several configurations and sizes.

Small parts, large parts, dense materials – with its possible combination of two X-ray tubes, a spacious flat-panel detector and / or the CTScan 3 line detector, the FF85 CT is up for almost everything. Seamless switches between 2D radioscopy, 3D cone-beam, and fan-beam CT provide outstanding flexibility and allow for individual inspection processes.

You choose: microfocus, minifocus or our mesofocus tube

While the minifocus tube, with its high energy of up to 600 kV, is the right solution for large and dense parts, the directional microfocus tube (up to 300 kV) provides detailed insights into the inner structures of small components. Our 450 kV mesofocus combines the robustness and high energy of our minifocus tubes with the spatial resolution of the open microfocus tubes by five selectable focal spots.

Flat-panel detector, line detector – or both?

The optional equipment with a large flat-panel detector optimized for high energies and the Comet Yxlon CTScan 3 line detector for challenging applications enables an above-average range of use for the FF85 CT. With its unprecedented signal-to-noise ratio and a pixel pitch of 254 µm, the CTScan 3 is the no-alternative solution for the crystal-clear inspection of large and / or dense components.

It is designed for up to 600 kV operation reducing unwanted scatter radiation, providing low-noise electronics and highly efficient scintillators.

The granite-based manipulator

Rock-solid and granite-based: The seven-axe manipulator guarantees temperature stability and smallest thermal expansion for maximum precision and accuracy. With a Focus-detector distance (FDD) of up to 3,700 mm it pushes the limits of large-volume CT scanning.

Which items can be inspected with the FF85 CT?

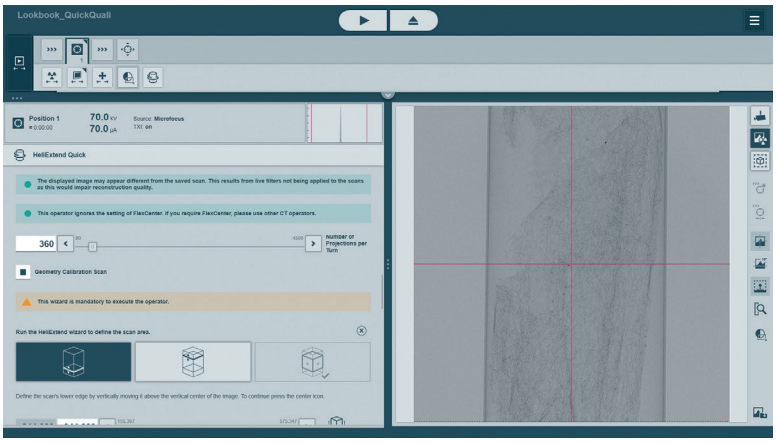
- Aluminum, steel and super alloy components
- Additively manufactured parts
- Battery cells, modules and packs
- Fiber-reinforced composites
- Plastic injection molded parts
- Cultural assets, historical art and archeological objects
- Geological, paleontological and biological samples
- Mechatronic modules

Which applications is it designed for?

- Material and structural analysis in R&D
- First article inspection
- Dimensional measurement
- Small series inspection
- Failure analysis
- Assembly checks
- Digitization
- Segmentation

Software solutions for accurate, repeatable, fast results.

See better, faster, more: Our wide range of integrated and optional software features for the FF85 CT facilitate inspection workflows with exceptional results in clarity, efficiency and insights.



Wizards guide the operator through the scan-setting process with ease. This example shows the HeliExtend wizard.

More clarity, efficiency and insights

Comet Yxlon image software solutions are as diverse as your applications. In order to supply you the best inspection results, we have structured our Software Suite into three interconnected pillars, serving three specific areas of interest.

"Clarity" focuses on detail-rich image acquisition, by offering a wide range of easily adjustable scan trajectories and image optimization tools, which allow you to see more details in your inspection part while saving time. "Efficiency" helps you streamline workflows through seamless connectivity and automation.

Last but not least, "Insights" features powerful solutions for image analysis and process control. It enables you to improve product and process quality by extracting critical information from image data – and to stay ahead of your market.

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.

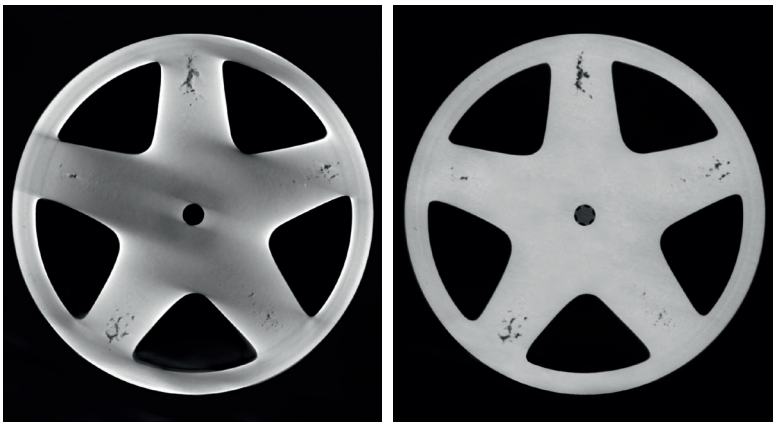
Beam hardening correction (BHC)

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

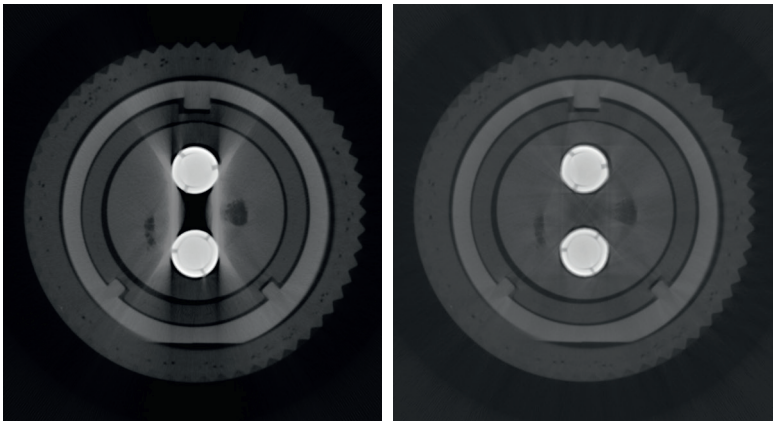
Metal artifact reduction (MAR)

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).



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

Clarity

Intelligent CT trajectories.

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.

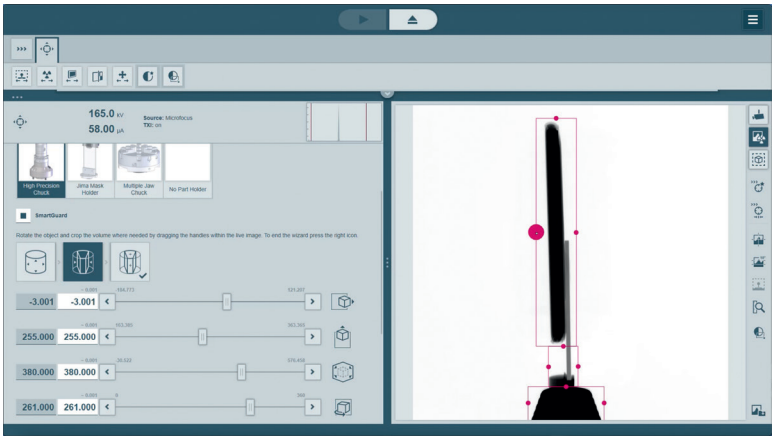
Helical scan trajectories

Helical scan trajectories avoid cone beam artefacts when scanning high parts. We offer two versions: HeliExtend and HeliExtend Dual. The Dual version combines offset and helical scan trajectories for very high parts. Both are available as QuickScan or QualityScan. The QuickScan offers 3 to 5 times faster scanning.

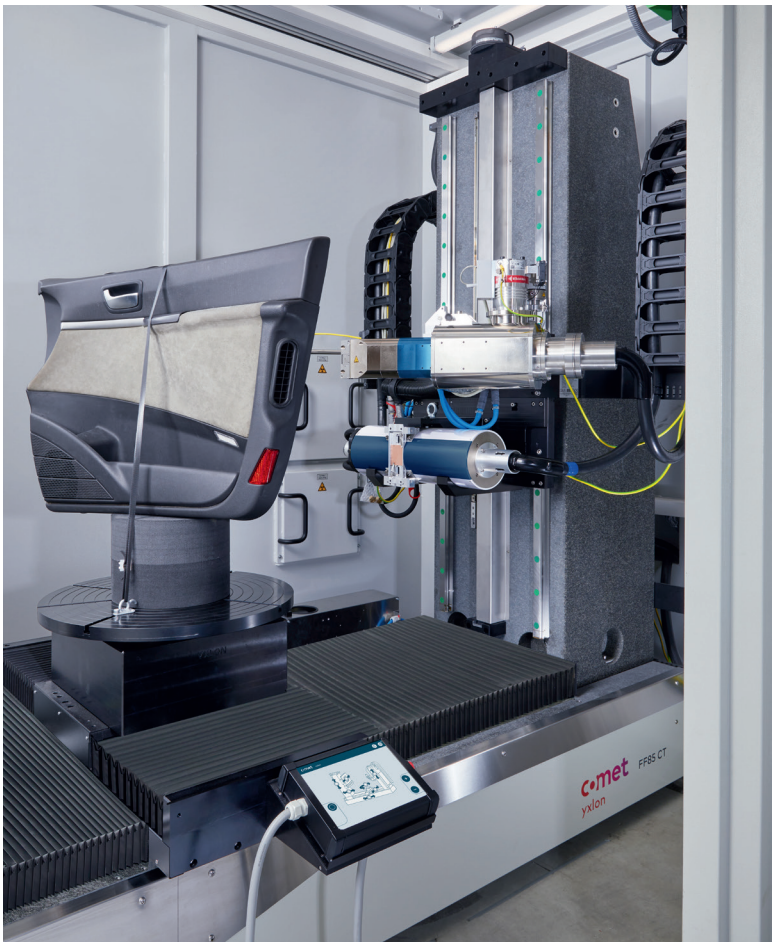
Scan extensions

Our ScanExtend trajectories offer horizontal field-of-view and vertical field-of-view extensions. You can also combine both in one scan. Furthermore the FF85 CT system offers Scan Extend Pro which enlarges the field of view even further.

As a result, the system can scan larger parts, or same size parts with higher resolution. This feature unlocks the maximum scan envelope possible with your system. It uses a combination of advanced CT techniques so that very large parts can be inspected.



Highly precise manipulation: The SmartGuard wizard allows to define the exact contours of (asymmetrical) test parts.



This example of a vehicle door shows how intelligent trajectories enable fast scans of large test parts.

Clarity

Our three Vista packages.

Opening new horizons: With first class image quality and unprecedented speed, our Vista packages significantly increase productivity. Choose between three well thought-out packages with different features to meet your requirements.

Vista.

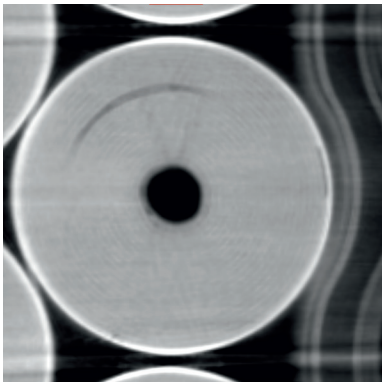
The best-in-class entry-level package. In addition to QuickScan and QualityScan it contains these features:

SpeedMode

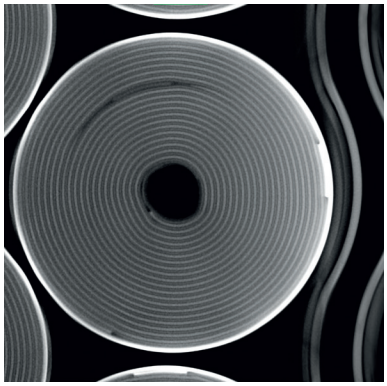
Achieve up to three times* faster scans for parts of a flat geometry than with the classic QualityScan while keeping image detail resolution.

FlexCenter

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



Conventional CT scan: 120 µm voxel size, 29 min scan time.



LayerScan (Vista X Pro): 24 µm voxel size, 17 min scan time.

Vista X.

In addition to all features of the Vista package, Vista X also comprises ZoomScan offering unrivaled resolution:

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*.

Vista X Pro.

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

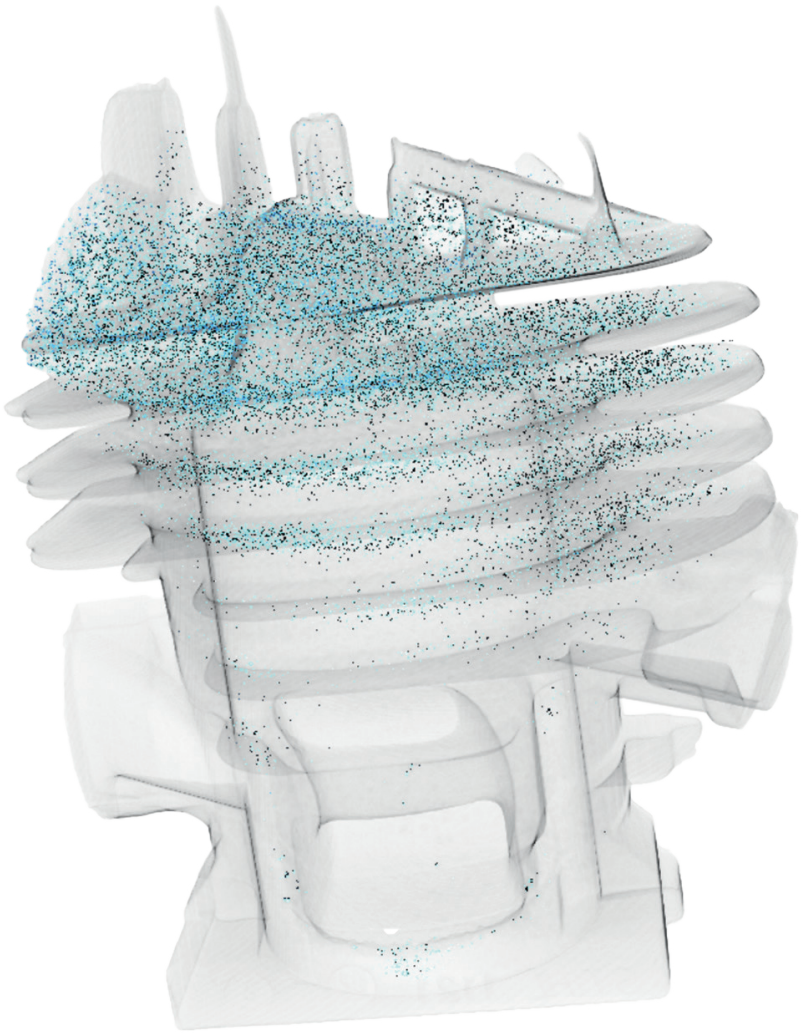
LayerScan

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*.

Clarity

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

Dragonfly 3D World: next-level 3D visualization and analysis – powered by AI.



Fast porosity analysis of a cast part using modified Otsu thresholding.

From counting to measuring, from fast segmentation to stunning visualization: Dragonfly 3D World's powerful AI-based quantification and analysis tools enable industrial users to unleash the true potential of scientific image processing.

Size, shape, and spatial properties

Make measurements on hundreds to millions of individual grains, pores, organelles, etc. Select from volume, surface area, Ferret diameter, aspect ratio, roughness, sphericity, and scores of additional measurements.

Porosity and void analysis

Dragonfly 3D World's automated thresholding tools enable a fast and efficient segmentation of casting or electronics parts. Porosity and voids can be calculated, visualized, and analyzed by size or volume using color coding.

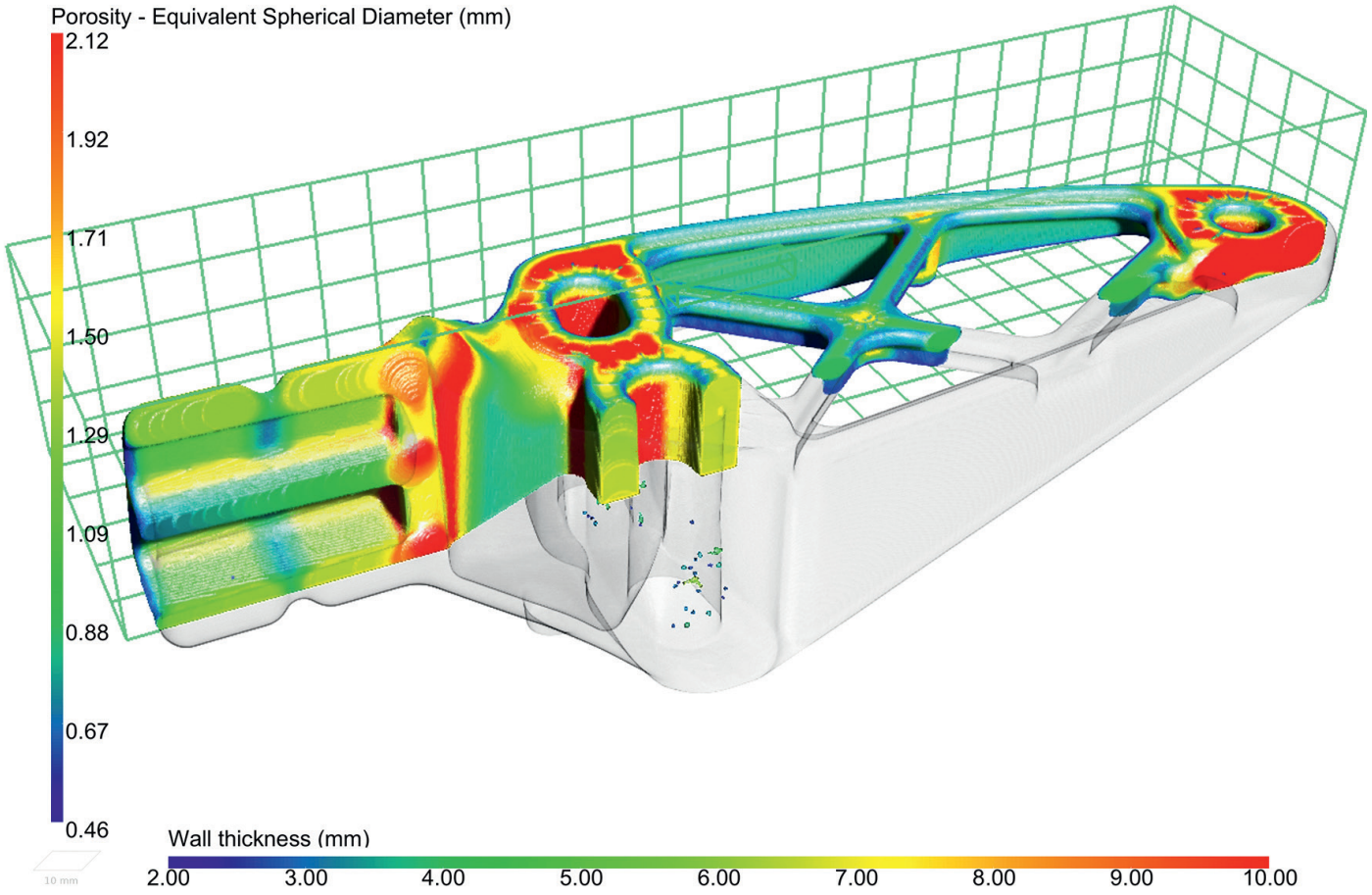
Meshes and models

Compute high-quality surface mesh models directly from images or from segmentations.

Wall thickness analysis

Create images that highlight different thicknesses and their distribution within inspection parts – with color-coding or complete statistical analysis.

Insights



In this casting part, a partly clipped car mirror, Dragonfly 3D World allows to analyse and visualize wall thickness and porosity.

Deviation from design

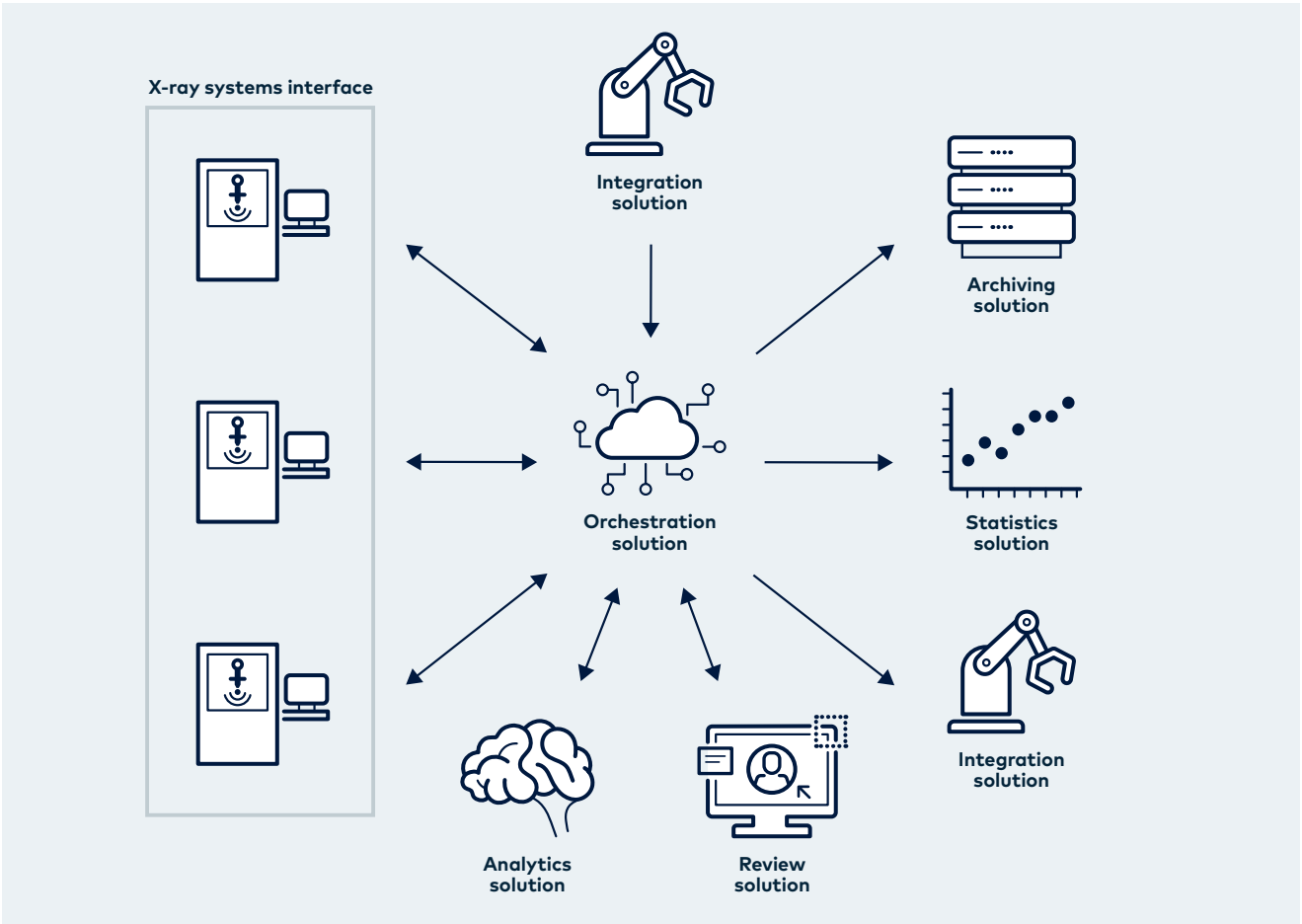
Does the final manufactured part conform to its original design? By importing the design mesh file (STL) Dragonfly 3D World allows the comparison of this file with the actual part. Color coding can be used to highlight the largest deviations or warping.

Automate your analyses

With Dragonfly 3D World, many inspection tasks can be automated. Just one example: the segmentation and measurement of battery overhang distances. Deep learning based analysis tools boost the speed and efficiency of the inspection processes.

Insights

More efficiency through connectivity and automation.



Batch Manager

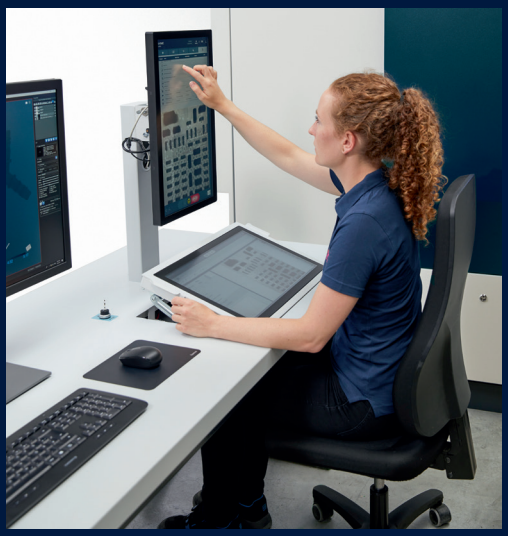
Increase your automation and process efficiency by loading multiple parts into the system at the same time. Set up your inspection for one part and the Batch Manager will run it for all loaded parts. The Batch Manager is fully compatible with the other software solutions of the Comet Yxlon Software Suite.

Automatic Data Transfer

Automatic Data Transfer helps you access X-ray data from your IT infrastructure fully automatically and without compromising security. The generated data is automatically transferred to a fileserver outside of the X-ray system, which can be configured according to the local IT policy.

Efficiency

Ergonomic. Intuitive. Accessible.



In the FF85 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.

Geminy's Healthmonitor shows the current system condition.

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!

FF85 CT in numbers.

Inspection parts

Max. part size (Ø x H, incl. part holder)	up to 1,800 mm x 3,000 mm[1]
Max. inspection envelope 3D (Ø x H)	up to 1,750 mm x 2,750 mm using ScanExtend Pro trajectory with flat detector and minifocus/mesofocus X-ray tubes up to 1,700 mm x 2,900 mm using ScanExtend Pro trajectory with flat detector and microfocus X-ray tubes up to 1,050 mm x 2,650 mm using Offset scan with Line detector and minifocus/mesofocus X-ray tubes
Max. part weight	Test part: 1,000kg, Part holder: 250kg

X-ray source

	FXT-190.61	FXT-225.48	XWT-300-CT	Y.TU 450-M01	Y.TU 450-D11	Y.TU 600-D02
Tube type	nanofocus, open	microfocus, open		mesofocus, sealed	minifocus, sealed	
Energy range	20 - 190 kV	20 - 225 kV	50 - 300 kV	20 - 450 kV	20 - 450 kV	20 - 600 kV
Max. power	80 W	320 W	350 W	50 / 100 / 250 / 350 / 450 W	700 / 1,500 W	700 / 1,500 W
Max. target power	15 W	280 W	300 W	50 / 100 / 250 / 350 / 450 W	700 / 1,500 W	700 / 1,500 W
Focal spot size[2]	<1 µm	6 µm	5 µm	60 / 100 / 250 / 350 / 450 µm	0.4 / 1.0 mm	0.7 / 2.0 mm
Features	TXI[3], multifocus, cooled	TXI[3]	Automatic Intensity Control (AIC); cooled	LaB6, Metal-Ceramic Insulator	Metal-Ceramic Insulator	Metal-Ceramic Insulator

Detector

	Flat-panel detector		Line detector	
	4343HE	4343N	CTScan 3-620	CTScan 3-780
Max. energy	600 kV	450 kV	600 kV	600 kV
Active area	427 mm x 427 mm	432 mm x 432 mm	620 mm	780 mm
Pixel matrix	3,070 x 3,072	2,880 x 2,880	2,432	3,072
Pixel pitch	139 µm	150 µm	254 µm	254 µm
Max. frame rate	25 fps (3 x 3 binning)	60 fps (4 x 4 binning)	100 fps	100 fps

Manipulation

Focus-detector distance (FDD)	up to 3,700 mm (minifocus & line detector)

System

Dimensions (W x D x H)	On request
Weight	from 9.9 t to 34 t [4]
Mains connection	3-phase 230 / 400 V AC ±10 %, 50 / 60 Hz, zero, ground; transformator available

[1] Collision protected by manual definition of cylinder. [2] For minifocus X-ray tubes, the focal spot size is determined according to EN12543.
[3] TXI = true X-ray intensity – controls real output dose for constant intensity. [4] Depends on configuration.

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