Led by experience. Driven by curiosity.

UX50

Faster, most flexible inspection of dense and large parts.

comet
yxlon

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!

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.

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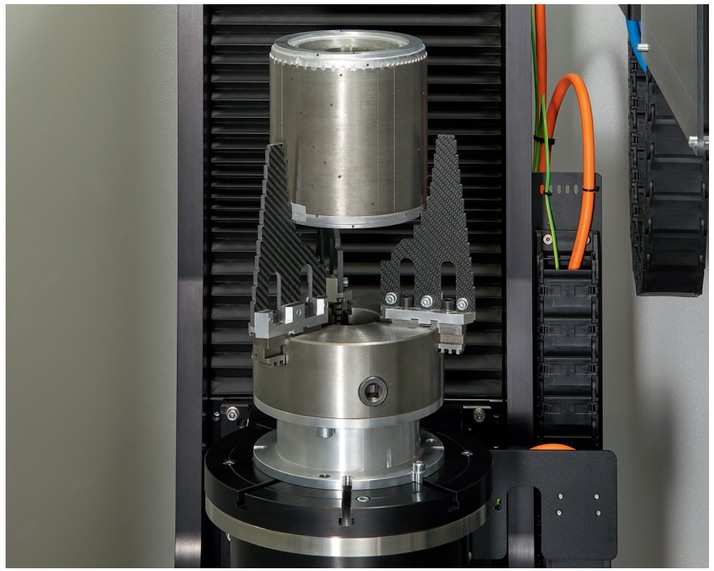


Carbon part holder for testing small, dense parts at high energies.

Your benefits with the UX50:

- High-performance 450 kV X-ray tube
- Line and flat-panel detectors in one system
- Intuitive operation with Geminy
- Benchmark image quality in 2D and 3D
- Compact footprint

Compact design. Huge possibilities.

With its large inspection envelope, various field-of-view extensions and a powerful 450 kV X-ray tube, the UX50 takes the inspection of complex, dense parts to the next level.

Massive motor blocks, larger steel parts, or complex e-mobility components – the UX50 CT system scans even the most challenging items in record time.

Maximum flexibility

Apart from sheer power, flexibility is its strong suit: fast switching between line and flat-panel detector, intuitive operation with our user interface Geminy, and a comprehensive set of image processing tools make the UX50 fit for a virtually unlimited range of X-ray and CT applications in the industrial environment.

One system, two detectors

With the UX50, the choice is yours: do you prefer the CTScan 3, a Line Detector Array (LDA) designed and produced by Comet Yxlon, which is highly efficient at high energies? Will you go for the versatile Y.Panel 4343 N next-generation digital flat-panel detector with high resolution? Or do you decide for a configuration including both? Switching between the image chain components in one sequence is easy: going from a 2D flat-panel overview scan to a LDA scan for higher detail visibility will only take seconds.

A future-proof investment

Simply choose the image chain that meets your current requirements and budget. If your range of applications increases, single detector configurations can be upgraded on-site. In addition, our Geminy user interface will provide regular updates including new features.

Joysticks enable easy part manipulation during fluoroscopic examination.

What are the key benefits of the UX50?

- Wide application range due to 450 kV and large inspection envelope
- Choice of line and/or flat-panel detector for maximum flexibility
- Comprehensive CT techniques for extended field of view and image processing
- Simple creation of inspection sequences with Geminy
- Automated detector calibration and image sharpness measurements (ASTM E1695)

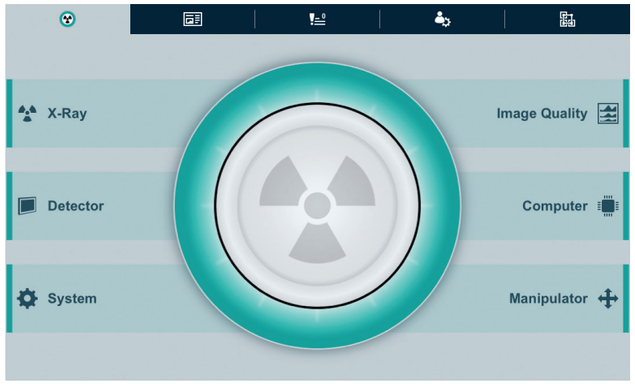
Which items can be inspected with the UX50?

- Components made of aluminum, steel and superalloys
- Mechatronic assemblies
- Electromobility drive components and batteries
- Geological samples
- Fossils for paleontological research

Geminy.

Getting the most out of your UX50.

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.



Geminy's Healthmonitor shows the current system condition.

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.

Special techniques for cone-beam CT with the DDA

- QuickScan® – continuous rotation image acquisition
- QualityScan – start-stop image acquisition, also for ring-artifact reduction
- HeliExtend – to avoid cone-beam artifacts
- Horizontal and vertical field-of-view extension
- Combination of horizontal and multiple vertical field-of-view extensions

Special techniques for fan-beam CT with the LDA

- Horizontal field-of-view extension, a Comet Yxlon patent unique in the market
- Determination of regions of interest (ROI) to be scanned with different line pitches with effect on image quality and speed

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.

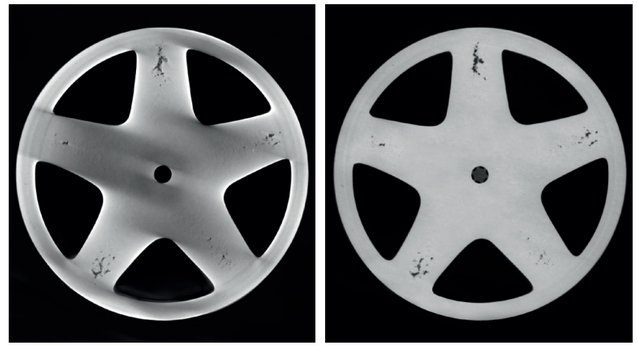
Beam hardening correction (BHC)

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

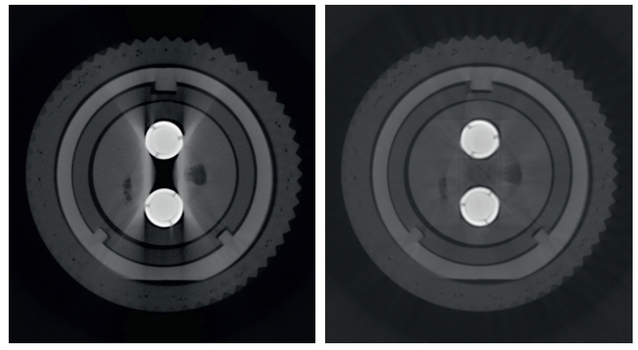
Metal artifact reduction (MAR)

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).

Most sophisticated technology. Highest convenience.

Automated calibration sequences

In conjunction with the calibration specimens included in the scope of delivery, fully automated sequences provide fast determination of the system's geometry. For the CTScan 3 line detector a fully automatic step-wedge detector calibration is available.

At a glance: system performance

Operators can quickly analyze the system's condition with one look at the Healthmonitor. In addition, performance checks can be executed easily with our automatic workflows. To document the condition of the CT system for an audit, automated reports with all details of the system settings e.g. ASTM E1695 are generated.

Accessible, ergonomic design

No distractions: the clean layout of the operator desk allows operators to stay focused on the inspection task. The height of the desk can be adjusted, facilitating operation from a sitting or standing position.

2D live images: fluoroscopic testing

Fluoroscopic examinations are possible due to the manipulation of the test part using joysticks and the sideways movement of the flat-panel detector. With the touch of a button, you can benefit from numerous digital 2D live-image filters, automatic 2D inspection reports, the possibility of predefined 2D inspection sequences, and the documentation of inspection decisions.

For the evaluation of your data you can choose between workstations in 19" racks with a cooling fan for laboratory environments (right) or air-conditioning for IP54 class protection in industrial conditions (left).

A detailed look at the inner workings of the UX50

1 X-ray warning lamp (LED)

2 Temperature-stabilized, high-efficiency Comet Yxlon CTScan3 line detector with tungsten collimator and brass housing

3 Large flat-panel detector, which can be moved horizontally for a CT scan with field-of-view extension or a 2D fluoroscopic inspection (motorized)

4 One-click switching between line detector and flat-panel detector (motorized); automatic transfer of detector and geometry calibration data

5 Powerful 450 kV mini-focus tube with variable collimators to reduce scatter radiation

6 Object manipulator for fast, motor-driven vertical movement of the test part

7 Turntable attachment, suitable for fixing specific part holders and Comet Yxlon calibration specimens

8 Air-conditioned, dust-protected control cabinet

9 Pushbuttons for the safe positioning of the inspection object with door open

10 Fast motorized cabinet door

11 Manual axis for setting the geometric magnification in three positions

12 Height-adjustable control panel for comfortable working in a sitting or standing position

13 Intuitive Geminy user interface for easy operation

Not shown: optional loading crane and various options of the CT evaluation station

Service Engine 4.0: taking customer care to the next level.

First-class technical problem solving combined with high economic efficiency – that's what we call Service Engine 4.0. It drives our service, processes and partners to detect and correct failures quickly and reliably by remote access and during on-site visits. Feel free to contact our service centers and partners worldwide by phone, e-mail or via our website.

Your benefits with Service Engine 4.0

- Guaranteed operational safety
- Maximized system availability
- Minimized repair times
- Full cost control of life-cycle costs
- Extended product lifetime
- Maintaining the measuring capability of metrology systems [FF20/35 CT Metrology]

Our module-based approach with performance and feature upgrades enables you to adapt to future requirements and safeguard your initial investment by extending the product lifetime. Service Engine 4.0 does not only provide fast support now, but is predictive of your future needs.

The Comet 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 Comet 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 Comet Yxlon system portfolio

The UX50 in numbers.

Dimensions / weight / connection[3)]

Cabinet dimensions[6)]	width: 2,620 mm	depth: 1,930 mm	height: 2,775 mm
Cabinet weight[6)]	12,000 kg		
Connection	400V ± 10%, 50/60Hz, 3 phases, neutral wire, grounding		
Power consumption	6 kVA		

X-ray source

X-ray tube	**Y.TU450-D04**
Tube type	closed, bipolar, metal-ceramic, mini-focus
Energy range	20 kV – 450 kV
Focal spots	0.4 mm / 1.0 mm
Maximum power	700 W / 1500 W

Imaging

Detector type	**Line detector array (LDA) CTScan 3-780 / 16 bit**	**Flat-panel detector (DDA) Y.Panel 4343 N / 16 bit**
Scintillator	CdWO4	DRZ+
Pixel pitch	254 µm	150 µm
Pixel matrix	3,072	2,880 x 2,880[1)]
Active area	780 mm	432 mm x 432 mm[1)]
Frame rates	1 Hz – 100 Hz	15 Hz / 30 Hz/ 45 Hz / 60 Hz
Binning	1 x 1	1 x 1 / 2 x 2 / 3 x 3 / 4 x 4

Test parts

Part size, maximum[2)]	Ø 600 mm x 850 mm height
Maximum weight	100 kg

Manipulation[3)]

Configuration	**Line detector**	**Flat-panel detector**	**Line & flat-panel detector**
FDD (focus-detector distance)	1,370 mm	1,320 mm	1,265 mm
Magnifications	1.4 / 2.2 / 2.8	1.3 / 2.1 / 2.7	1.4 / 2.0 / 2.6
Vertical lift test part	800 mm (approx. 3 sec.)		
Horizontal travel detector	N/A	280 mm	280 mm
Switch detector	N/A	N/A	approx. 10 sec.

Test cylinder CT (3D)[3)]

Configuration	**Line detector**	**Flat-panel detector**	**Line & flat-panel detector**
Diameter	660 mm	570 mm	650 mm / 560 mm
Height	800 mm	850 mm	800 mm / 850 mm
Voxel pitch range	90 µm – 180 µm	55 µm – 115 µm	95 µm – 180 µm / 57 µm – 110 µm
Spatial resolution CT[4)]	2,0 lp / mm	2,8 lp / mm	2,0 lp / mm / 2,8 lp / mm

Live-image field of view for fluoroscopy (2D)[3)5)]

Configuration	**Flat-panel detector**	**Line & flat-panel detector**
Width, height	520 mm, 850 mm	510 mm, 850 mm

[1)] Due to the manufacturer's recommendation, 15 pixels are not used at the edges. [2)] Maximum part dimensions that can be manipulated over full height. Upper 500 mm of the part may have a diameter of up to 660 mm. [3)] All values are approximate. [4)] Based on ASTM E 1695. [5)] Statical, without rotation of the test part. [6)] Dimensions and weight without control unit and external components.

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