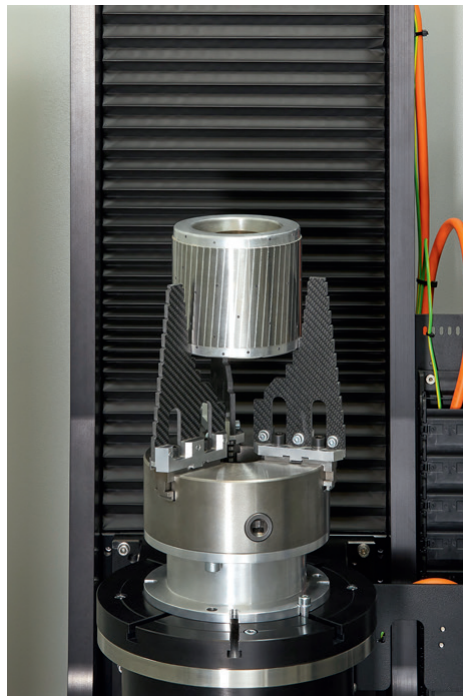# YXLON

YXLON
UX50

YXLON UX50

HIGH-PERFORMANCE, COMPACT CT INSPECTION SYSTEM FOR MEDIUM-SIZED TO LARGE COMPONENTS

- 450 kV for very dense and large components
- Automatic calibration and image sharpness measurement for high efficiency
- Line- and/or flat-panel detector for greatest flexibility
- Modern, compact design for industrial environment
- Cross-system software platform Yxlon Geminy

YXLON

Configuration with line- and flat-panel detector

Carbon part holder: ideal at high energies and small, dense parts
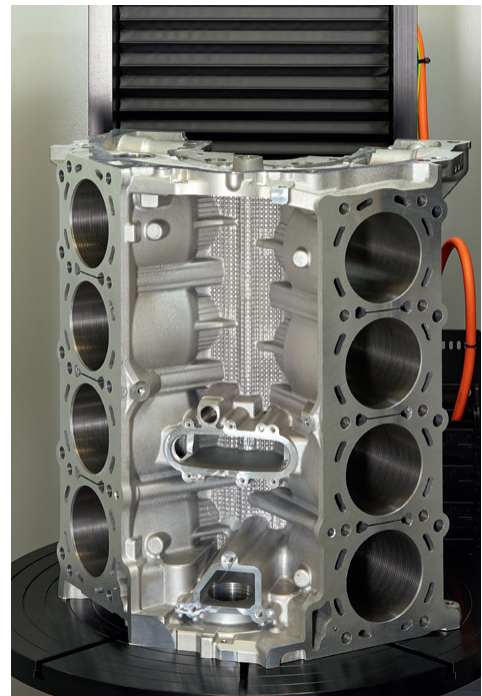
60 cm turntable for very large parts

Robust, reliable and future-proof

**QUALITY ASSURANCE
IN THE INDUSTRIAL ENVIRONMENT**

The compact, robust industrial design of the YXLON UX50 CT system is equipped with a 450 kV X-ray source being able to penetrate motor blocks of combustion engines, larger steel components, or complex components for e-mobility. Configured with Yxlon's line detector CTScan 3 and/or the latest generation of a large high-energy optimized flat panel allows for a virtually unlimited range of applications to be performed and versatile.

SECURITY OF INVESTMENT

Choose the image chain that meets your current requirements and budget. In the future, if your range of applications changes and/or your throughput increases, you can be confident in the system's upgradeability to meet your new demands.
With Yxlon's cross-system software platform Geminy, further innovations and new features are created and conveniently made available.

THE DECISIVE ADVANTAGES OF YXLON UX50

- Extensive range of applications due to 450 kV and large inspection envelope
- Extended field of view due to many developed CT scanning techniques
- Special flexibility with both line- and flat-panel detectors in one system
- Simple creation of inspection sequences through graphical symbols and wizard support with Yxlon Geminy
- Clear display of the system status via the Health Monitor
- Automatic routines for detector calibration and image sharpness measurement according to ASTM E1695

CT inspection
on the highest level

CT TECHNIQUES – ALL THAT IS POSSIBLE
Use the CT techniques that give you the optimum part
size spectrum, speed, and desired image quality.
CT scan with continuous rotation ("Quick-Scan"), start-
stop operation ("QualityScan"), ring artifact correction by
random pixel-by-pixel movements of the detector, helical/
spiral CT ("HeliExtend"), as well as horizontal and multiple
vertical field-of-view extensions are available when using
the flat-panel detector.

The YXLON CTScan 3 line detector offers a patented
horizontal field-of-view extension, which is unique in the
market.

**IMAGE QUALITY – OPTIMIZATIONS FOR THE
FINAL TOUCH**

ScatterFix: The innovative ScatterFix functionality devel-
oped by Yxlon reduces scatter radiation improving the
quality of the CT data. This effect is a significant
advantage, e.g. for optimized surface determination when
inspecting large, massive, and strongly scattering
components.

Beam hardening correction (BHC) with different
methods. 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 compo-
nents consisting of plastics and metals, this optimization
significantly reduces the interfering effects causing the
less dense material to "disappear".

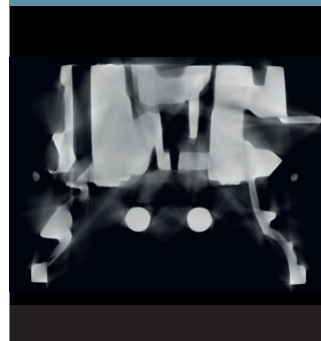**THE BEST RESULTS FOR YOUR APPLICATIONS
WITH YXLON UX50**

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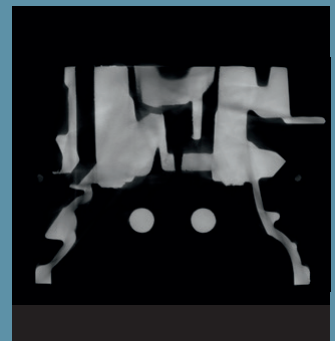- Fossils for paleontological research

Fan 2D top view
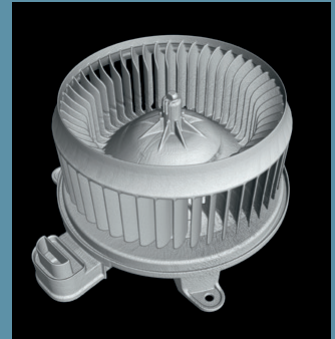
Fan 3D volume

Cone-beam CT without
ScatterFix

Cone-beam CT with
ScatterFix

Cone-beam CT without BHC

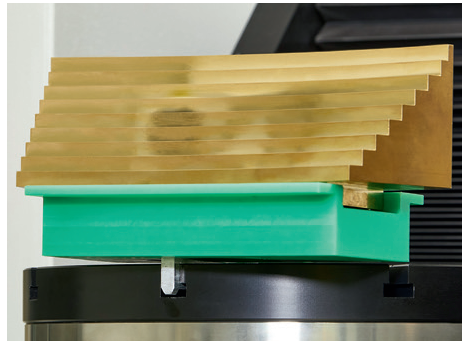Cone-beam CT with BHC

Cone-beam CT without MAR

Cone-beam CT with MAR

YXLON

Height-adjustable control panel for ergonomic working

Above: positioning buttons conveniently located on the front of the system for ease of use. Below: brass step wedge for the line-detector calibration

Above: control panel with flexible table extension for mouse operation, left or right handed. Below: Regions for line scans in different qualities and speeds are possible.

Operating Comfort

ERGONOMY

The height of the control panel can be adjusted to meet individual requirements and allow ergonomic working in a standing or sitting position. It has a clear arrangement with joysticks and buttons and can even be operated while wearing gloves. Other valuable benefits include camera monitoring in the inspection area, X-ray beam indicator by a fan-beam laser, safe manipulation of the test part with the door in open position*, and the optionally available external loading crane for heavy parts.

AUTOMATED SEQUENCES

In conjunction with the calibration specimens included in the scope of delivery, fully automated sequences provide fast determination of the system's geometry. To document the condition of the CT system for an audit, UX50 offers the automated generation of an ASTM E1695 PDF report with all details of the system settings. For very dense components which require the use of the CTScan 3 line detector, a fully-automatic step-wedge detector calibration is also available.

*with clearly reduced, safe traverse speed

HEALTHMONITOR

Originally introduced with the Geminy Software platform, the Healthmonitor has become an indispensable component of Yxlon CT systems. Similar to a traffic light, for example, the display changes from green to yellow when calibration data for a geometry correction or detector calibration is not available. The Healthmonitor also allows ASTM E1695 check reports to be conveniently recalled.
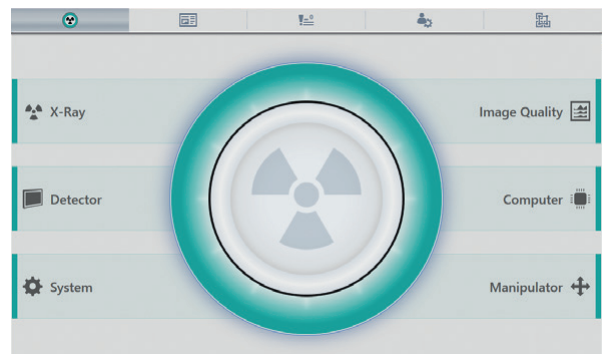
Geminy's Healthmonitor displays the current system status.

Separate evaluation station, here with the option 'laboratory environment'

# 3D and 2D evaluation

SEPARATE EVALUATION STATION
Your CT images are evaluated on a LAN-connected, separate workstation available in different performance classes. All versions are equipped with professional NVidia® graphics cards and have one or more Intel® Xeon® processors. You can choose between the workstation as a tower in a 19" rack with cooling fan for laboratory environments and the air-conditioned 19" rack with IP54 protection class for industrial conditions.

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.
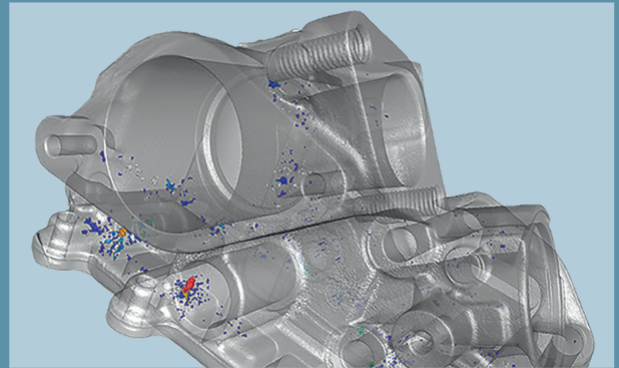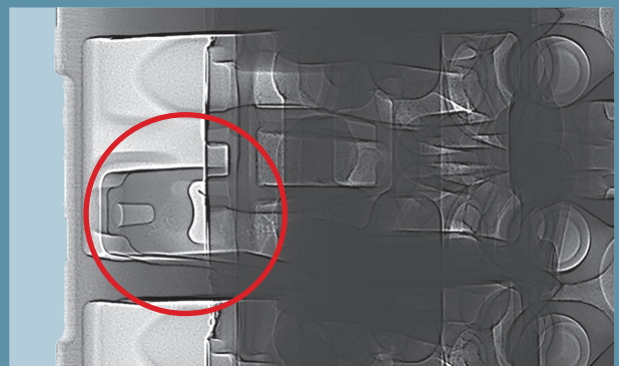
Reliable CT analyses at the 3D volume of combustion engine components ...
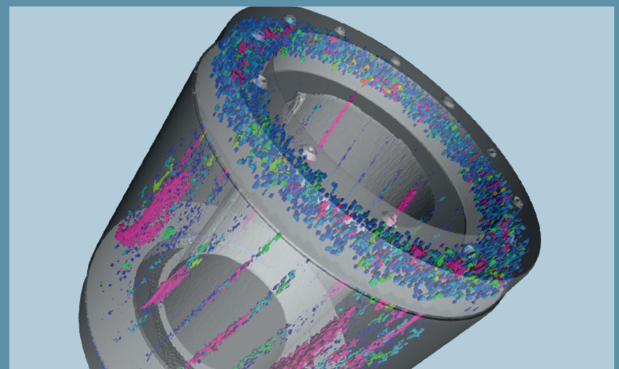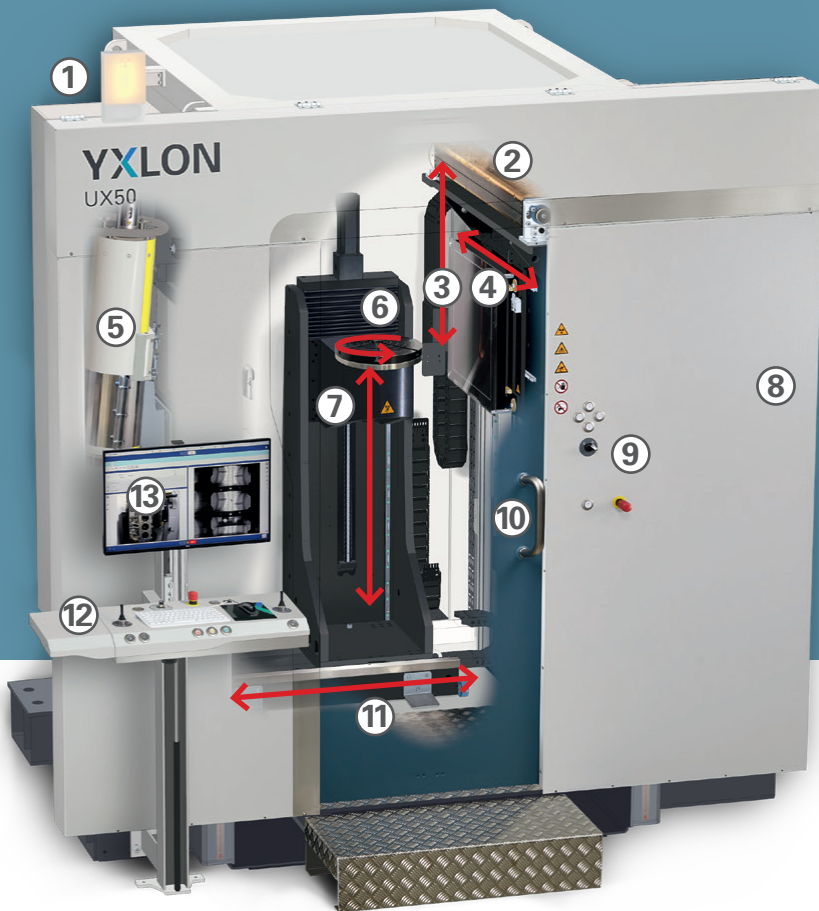
... cast rotor of an electric vehicle motor in the 3D volume ...
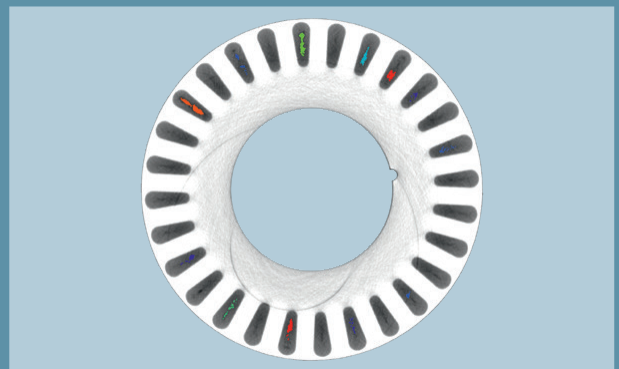
... or in the 2D cross-section.

Best detail recognition in DR images with HDR-Inspect.

YXLON

Most sophisticated technology for your convenience

1 X-ray warning lamp in LED technology

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

3 Motorized switching between line detector and flat-panel detector application with just one mouse click and automatic transfer of detector and geometry calibration data

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

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

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

7 Fast, motor-driven vertical movement of the test part

8 Air-conditioned, dust-protected control cabinet

9 Pushbutton for safe positioning with door open and reduced speed

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

Check out these facts

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 YXLON CTScan 3-780 / 16 bit	Flat-panel detector 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

Maximum diameter[2]	600 mm
Inspection part height[2]	850 mm
Maximum weight	100 kg

Manipulation [3]

Configuration	Line detector	Flat-panel detector	Line and 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	
Switch detector	N/A		approx. 10 sec.

Test cylinder CT (3D [3]

Configuration	Line detector	Flat-panel detector	Line and 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

CT techniques

Detector	Line detector	Flat-panel detector
Scanning method	triggered, continuous rotation	continuous rotation „QuickScan" start-stop scan „QualityScan"
Field-of-view extension	Virtual detector extension (YXLON patent)	horizontally by detector movement, vertically by optimized multiple scans with parallel reconstruction
Further scanning methods	N/A	standard helical CT „HeliExtend"

CT optimizations (selection) [5]

ScatterFix 2.0	YXLON software, without additional hardware
Ring-artifact reduction	through random detector movement and/or via Siemens CERA® in the volume
Beam hardening correction	physically with input of material or model-based, via Siemens CERA® in the volume
Noise suppression	on projections or in the volume, via Siemens CERA®
Metal-artifact reduction	via Siemens CERA®

Live-image field of view for fluoroscopy (2D) [3] [6]

Configuration	Flat-panel detector	Flat-panel and line detector
Width	520 mm	510 mm
Height	850 mm	850 mm

Dimensions / weight / connection [3]

	width	depth	height
Cabinet dimensions [7]	2,620 mm	2,585 mm	2,275 mm
Cabinet weight [7]	12,000 kg		
Connection	400V ± 10 %, 50/60Hz, 3 phases, neutral wire, grounding		
Power consumption	6 kVA		

1) Due to the manufacturer's recommendation, 15 pixels are not used at the edges.   2) Maximal test part height that can be manipulated without further setting of the software collision protection.   3) All values are approximate.   4) Based on ASTM E 1695   5) Optimizations available for CT scans with flat panel-detector   6) Statical, without rotation of the test part   7) Dimensions and weights incl. control unit, without external components.

YXLON Service Engine 4.0

To support our customers' success, we created our Service Engine 4.0: first-class technical problem solver combined with high economic efficiency. This engine drives our service, our processes and our partners to detect and correct failures quickly and reliably by remote access and during on-site visits. Our service centers and our service partners worldwide are at your disposal and can be contacted by phone, e-mail or via our website.

BENEFIT FROM:
- Guaranteed operational safety
- Maximized system availability
- Minimized repair times
- Full cost control of life cycle costs
- Extended product lifetime

Our module-based approach, such as performance and feature upgrades, enable you to adapt to future requirements and safeguard your initial investment by extending the product's lifetime. With our Service Engine 4.0, fast support is provided by the way we network all service activities within our organization. We do not only see your immediate need but are predictive of your future needs.

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 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 Yxlon system portfolio

Would you like to learn more about our systems?
Interested in a test inspection? Please contact us by phone or e-mail.
We look forward to hearing from you.