

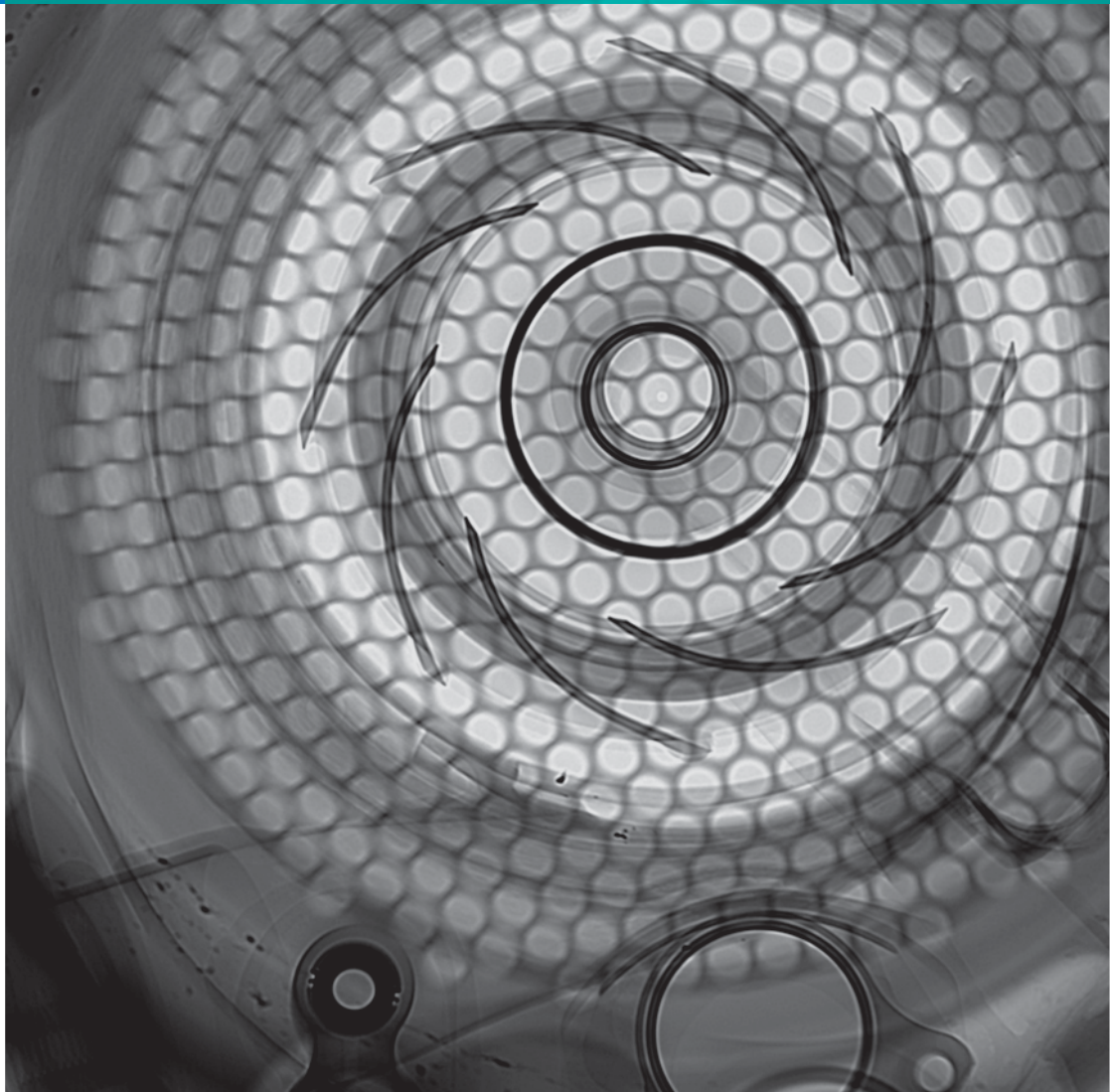
# YXLON MU60 AE

X-ray and CT inspection system for a variety of aerospace and automotive cast parts

Experience reliable, safety-critical component testing



**YXLON**  
Technology with Passion



# Explore the art of detection

As a world leader in non-destructive X-ray testing, YXLON has mastered the art of detection. Based on our extensive experience in designing tailor-made X-ray and CT solutions, we help our customers achieve excellent results during their scientific research and development projects as well as production inspection procedures. Making the invisible visible – that's what we call the art of detection.

No matter what industry you're in, you'll get precise images thanks to our smart systems. The diversified YXLON portfolio covers the widest variety of sizes and materials, with the scalable MU60 AE X-ray system and its CT option focusing on aerospace and automotive cast part testing. Use

the unit when migrating from analog to digital.

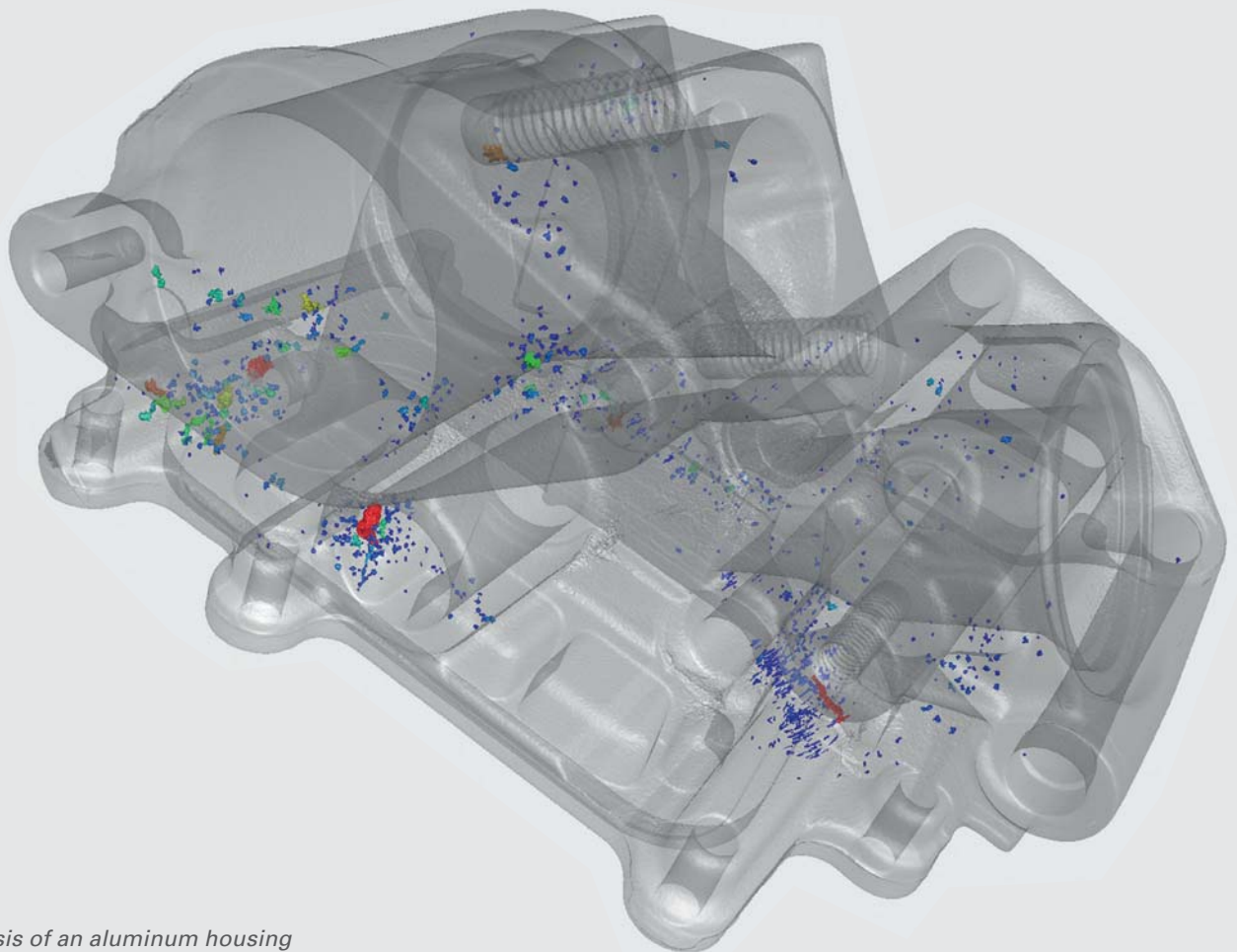
YXLON solutions are tried and tested premium systems. They blend smoothly into your processes, guaranteeing fast, intuitive workflow and high uptime. Our product range equips you with relevant information regarding the interior and exterior structures of your items, enabling you to do all kinds of measurements and analyses.

Additionally, the worldwide YXLON service network is an important factor to be taken into account when evaluating the YXLON price-performance ratio – one that appeals to quality managers, operations personnel, and purchasers alike.

## Where do you use MU60 AE?

- In aerospace
  - To detect casting defects like discontinuities and cracks
  - To measure wall thickness and for actual/target comparison
  - To analyze porosity and inclusions
- In automotive foundries
  - To analyze various flaw types such as porosity and discontinuities
  - To serially inspect cast parts

Volume [mm<sup>3</sup>]



*Porosity analysis of an aluminum housing*



## Place your trust in dependable inspection results

Are you working in aerospace and need a flexible system to x-ray safety-critical components? Are you in the automotive foundry industry and want to test diverse cast parts? The YXLON MU60 AE X-ray system provides intelligent workflow for sample evaluation, batch processing and series inspection.

MU60 AE adapts to your special application needs, for example with a 3D CT option and the optional TrueInspect automatic defect recognition ADR for foundries. MU60 AE hardware supports smooth handling with a compact cabinet design including a split door for swift loading. A seven-axes U-arm manipulator with mounted detector and tube makes fixing parts easy and allows for vertical scanning. The advantages of CT include extremely accurate pore analysis, surface-distance measurement and nominal/actual comparisons.

Brilliant image quality is essential, especially for the rigorous demands of aerospace. A 16-bit detector with YXLON's premium pixel quality satisfies aerospace requirements, while the Variofocus X-ray tube is the most powerful tube we have to offer. Additional tubes and detectors are available as options for customers' with special requirements. MU60 fully complies with aerospace standards such as DICONDE, ASTM, MAI, and Nadcap.

Benefit from even more user-friendly image inspection with dedicated software packages and a separate review station. Smart software enables you to conveniently share, trace, and store data supported by a barcode reader or a data matrix code reader. Plus, you can automatically conduct the all-important ASTM E2737 system test. The review station speeds up procedures because it allows you to analyze results and parameters separately while the system is in operating mode.

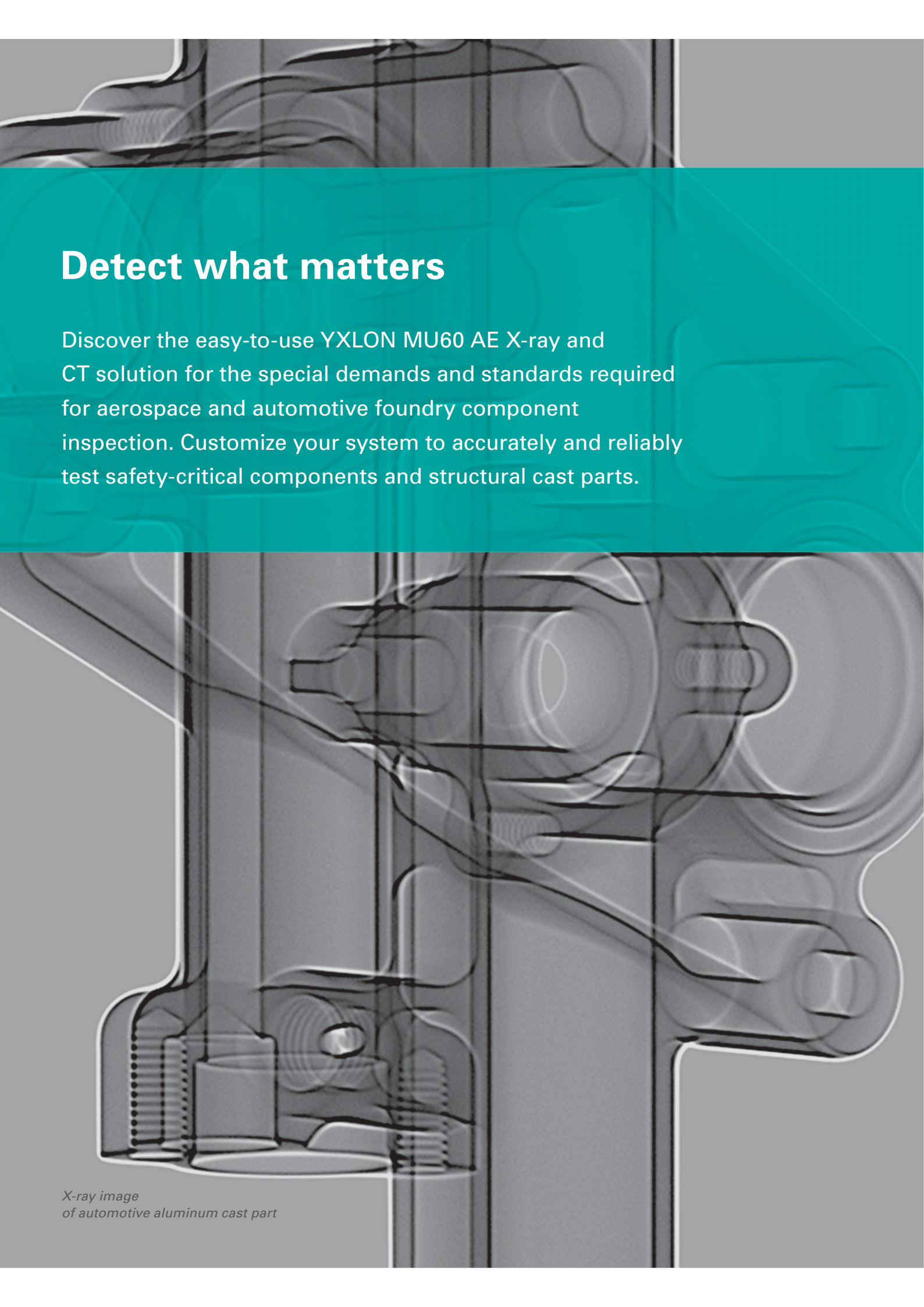
### YXLON MU60 AE key benefits

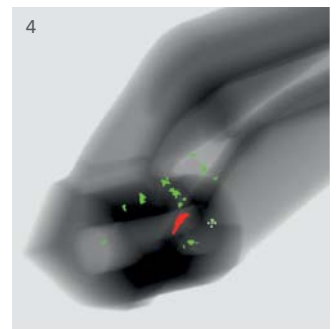
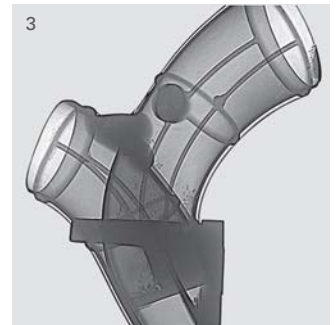
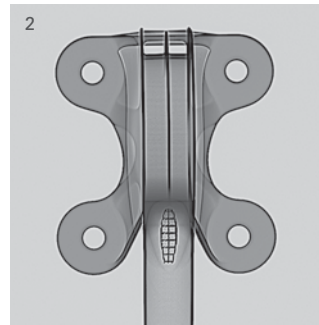
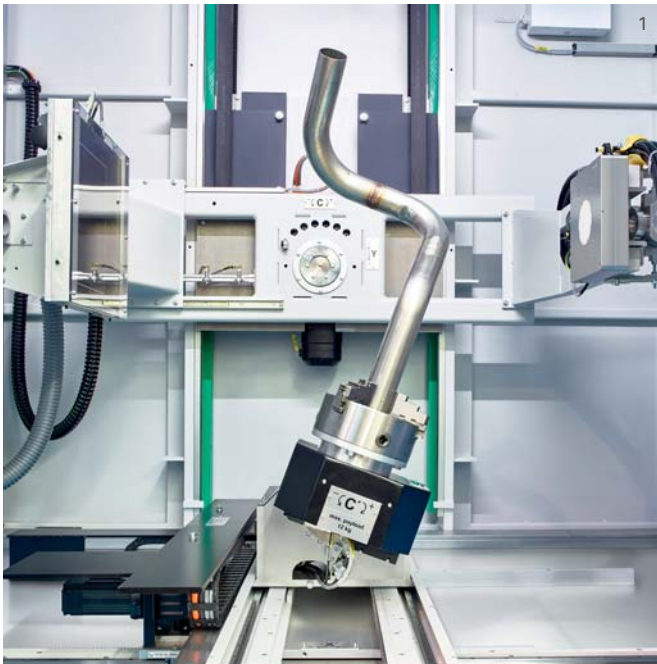
- Brilliant image quality for safety-critical and structural cast part testing
- Compact cabinet design for 2D X-ray and 3D CT inspection as well as TrueInspect ADR
- User-friendly operation with advanced software tools and optional review station
- Networked system for continuous system availability and maximized data security
- Complies with current aerospace industry standards
- Can be flexibly adapted to fit your needs

# Detect what matters

Discover the easy-to-use YXLON MU60 AE X-ray and CT solution for the special demands and standards required for aerospace and automotive foundry component inspection. Customize your system to accurately and reliably test safety-critical components and structural cast parts.

*X-ray image  
of automotive aluminum cast part*





- 1 Manipulator with floor tilt axis
- 2 2D image of additive manufactured cast part
- 3 2D HDR X-ray image Inconel part
- 4 2D X-ray image with ADR indications

## Choose data security and long-term traceability

MU60 AE software-based, automated, connected tools make aerospace and foundry inspections highly efficient. The network system approach ensures high system availability and maximized data security. This allows you to save a great deal of time. A broad selection of inspection programs caters to your individual material and workflow needs. The gain/offset calibration to optimize the detector output is carried out automatically at the start of each working day. This way, you'll save ample time.

Long-term archiving and statistics are essential, particularly in aerospace. Y.AdResult facilitates efficient, reliable storage and queries of digital images and data across different sites. An archive navigator and Microsoft Office integra-

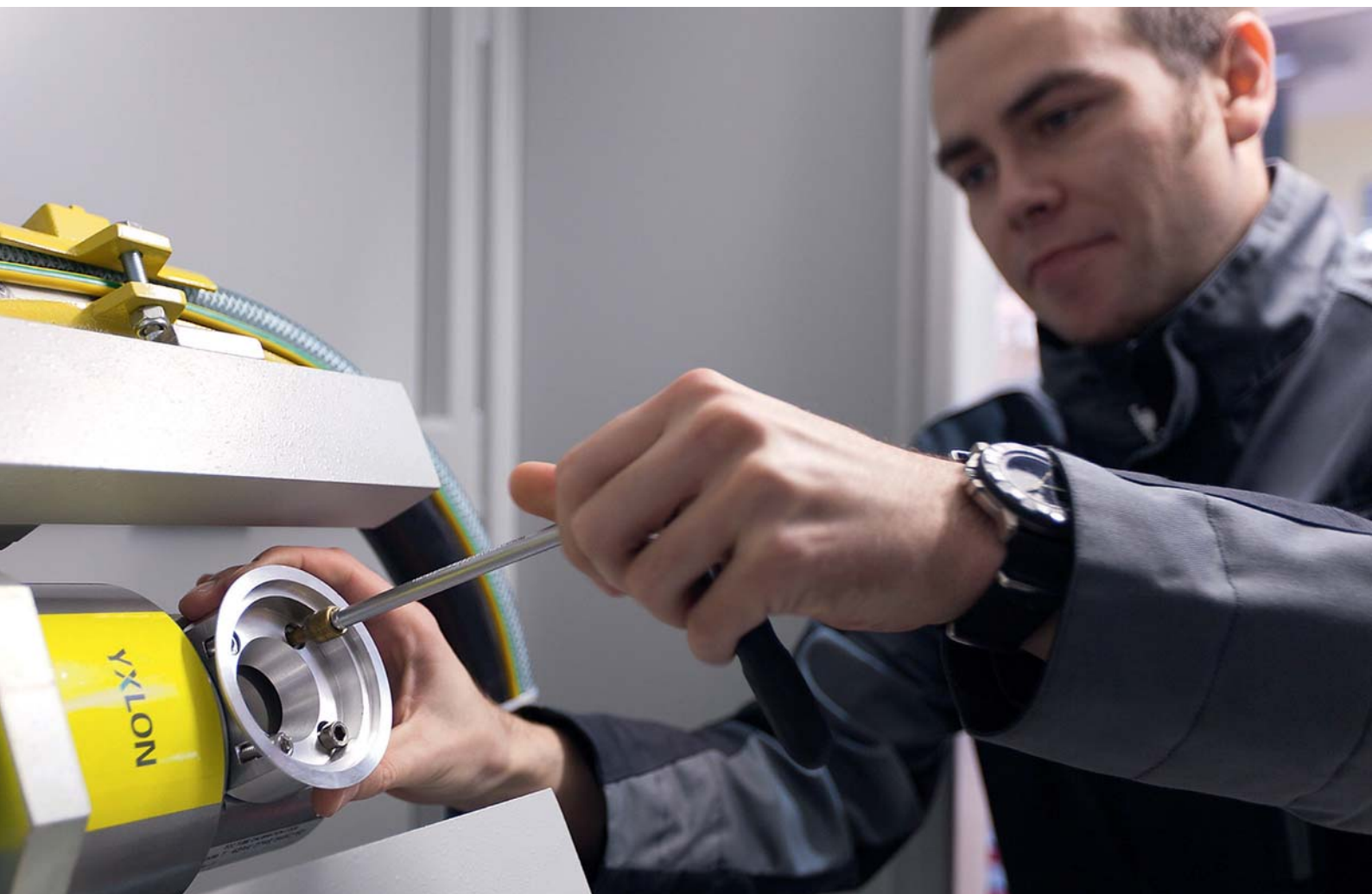
tion contribute to this dependability. You can conveniently share inspection information and archive the complete life cycle of each component including all repairs.

For foundries, the TrueInspect automatic defect recognition ADR is indispensable. Benefit from cost-effective, fully automatic, unsupervised inspections. Using a clearly arranged workspace you can easily adjust rapid evaluations.

For both aerospace and automotive foundries further hardware options reduce time per inspection. A floor tilt axis for the inspection of ducts and pipes, part holders and the possibility to expand the tested part weight capacity create less effort and more flexibility for the operator. Features like a light curtain add to user safety.

### Items especially suitable for MU60 AE

- Safety-critical parts
- Structural cast parts
- Turbine blades
- Tube pipes
- Ducts
- Welds
- Light metal cast parts
- Special alloy cast parts
- Plastics
- Additive manufactured cast parts



## YXLON Life Cycle Service – more than the best image

### YXLON Life Cycle Service

- **Y.ServicePass** – the most important services tailored to your system and your needs
- **Y.SmartPass** – for customers who need instantaneous spare parts availability
- **Y.LifeCyclePass** – the all-inclusive package covering all costs throughout the entire system lifetime
- **Y.WarrantyPass** – predictable costs by extending the warranty for one or two years
- **Y.SmartSpares** – the best compatibility and added functionality using original YXLON spare parts
- **Y.Exchange** – direct replacement of defective or worn-out components to minimize system downtimes
- **Y.Updates** – up-to-date system technology and prolonged lifetime
- **Y.Academy** – professional training teaches your operators how to get the most out of the system

**What are your specific service requirements? We offer a wide range of service modules and packages tailored to your needs.**

Our highly qualified global service team is committed to providing excellent service to our customers worldwide. With eight global service centers and specialized staff at over 50 service partners, we can ensure a rapid response time wherever and whenever you need it.

### Your benefits include:

- High system availability
- Low operating costs
- Superior inspection results
- Guaranteed operational safety
- Prolonged system lifetime

We align our organization and all service activities to comply with your requirements. With our innovative, modular service solutions you can count on true added value throughout the entire life cycle of your system.

We support you in keeping your inspection costs to a minimum. At the same time, your systems operate safely at peak performance while providing optimum inspection results throughout their entire lifetime.

# Check out these facts and figures

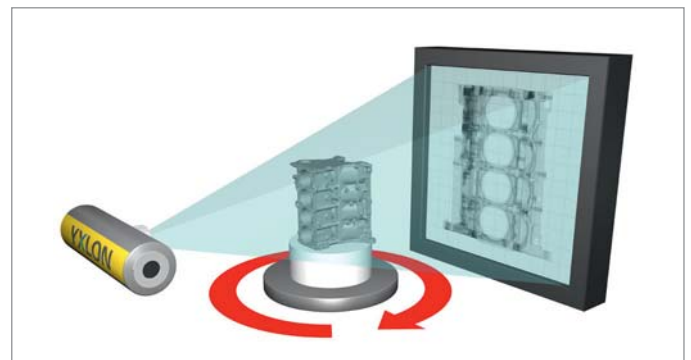
	MU60 AE Standard			MU60 AE XL		
	160 kV	225 kV	320 kV	160 kV	225 kV	320 kV
<b>Inspection envelope</b>						
Inspection envelope DR (2D) ( $\varnothing$ x height)	600 mm x 900 mm			800 mm x 1500 mm		
Inspection envelope CT (DR) ( $\varnothing$ x height) approx.	150 mm x 150 mm			160 mm x 160 mm		
Sample weight	60 kg (optional 200 kg)			60 kg (optional 200 kg)		
Object carrier						
- Rotary plate	400 mm / 600 mm			400 mm / 600 mm		
- Three-jaw chuck	160 mm / 200 mm			160 mm / 200 mm		
<b>Cabinet dimensions</b>						
Width, approx.	2,200 mm	2,250 mm	2,400 mm	2,650 mm	2,700 mm	3,000 mm
Height (incl. pedestals), approx.	2,700 mm	2,750 mm	2,750 mm	3,300 mm	3,350 mm	3,500 mm
Depth, approx.	1,800 mm	1,850 mm	1,950 mm	2,050 mm	2,100 mm	2,200 mm
Weight, approx.	4 t	6.5 t	10 t	6 t	10 t	15 t
<b>Cabinet door</b>						
Width x height, approx.	from 760 mm x 1,150 mm			from 1,100 mm x 1,700 mm		
Open, close (motor-driven)	~ 2 s	~ 3 s	~ 4 s	~ 2 s	~ 3 s	~ 5 s
<b>Manipulator*</b>						
FDD (Focus Detector Distance)	695 mm x 995 mm			945 mm x 1,245 mm		
Beam – hub vertical axis	~ 900 mm			~ 1,500 mm		
Magnification axis	~ 640 mm			~ 850 mm		
Horizontal axis	~ 650 mm			~ 900 mm		
Loading / unloading axis	~ 490 mm			~ 490 mm		
Tilt of C arm**	$\pm 30^\circ$ (opt. $\pm 45^\circ$ )		$\pm 20^\circ$	$\pm 30^\circ$ (opt. $\pm 45^\circ$ )		$\pm 20^\circ$
Sample rotation	n x 360°			n x 360°		

\*The travel paths depend on tilt angle, programmed crash protection and object carrier. \*\*Larger tilt angles reduce the maximum travel paths.

Detectors	Detector YXLON Panel 0822		Detector YXLON Panel 2530	
	Active area	200 mm x 200 mm		249 mm x 302 mm
Pixel pitch	200 $\mu$ m		139 $\mu$ m	
Frame rate (16-bit detector)	15 fps / 30 fps		9 fps / 30 fps	

CT modes	fast	medium	high resolution
Scan time	~ 75 sec.	~ 4.40 min.	~ 7.50 min.

Principle of cone-beam CT:  
The 3D model comprises almost  
all information acquired by  
the detector during the rotation.



**Find the system  
that suits you best**

			
	MU60 AE	MU80 AE	MU2000-D
Part Size DR	++	+++	++
Part Size CT	++	+++	++
Material density	++	++	++
HDR	yes	yes	yes
Truelnspect ADR (Automotive)	yes	no	no

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.

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Technology with Passion



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