

YXLON FF35 CT

Multi-application, high-resolution computed tomography (CT) inspection system for fine parts

Precision with ultimate versatility



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.

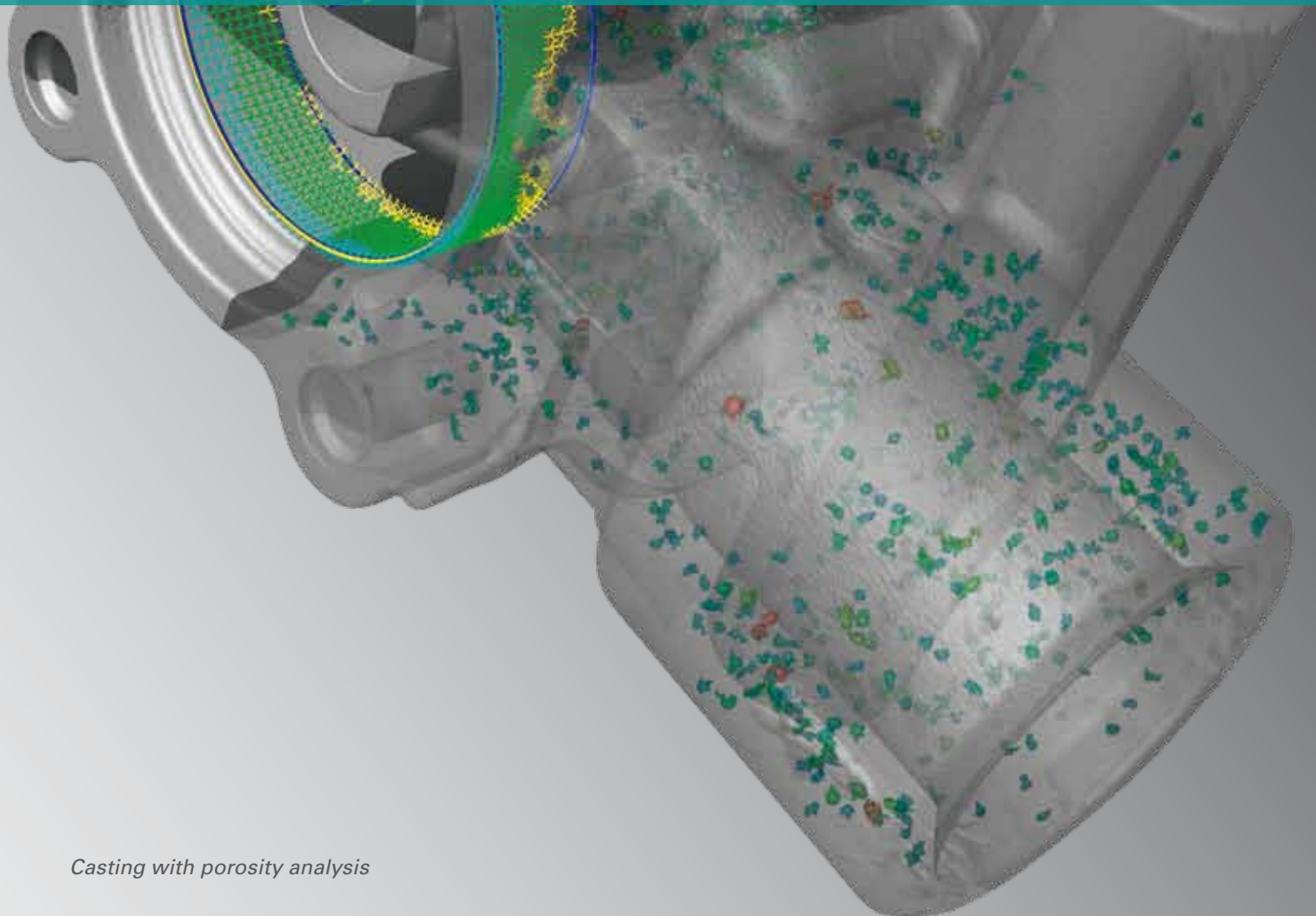
No matter what industry you're in, you'll get precise 3D images thanks to our smart CT systems. The diversified YXLON CT portfolio covers the widest variety of sizes and materials, with the FF35 CT focusing on very small to medium-sized parts.

YXLON CT solutions are tried and tested premium systems. They blend smoothly into your processes, guaranteeing fast, intuitive workflow and high uptime. Our CT 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 CT price-performance ratio – one that appeals to quality managers, operations personnel, and purchasers alike.

Where do you use YXLON FF35 CT?

- Research and development (R&D)
- Failure analysis (F/A)
- Process control
- Small series inspection
- Combined DR-CT inspection
- Defect and material analysis
- Assembly checks
- Dimensional measurement



Casting with porosity analysis



Experience a seamless CT inspection workflow

Do you want to improve the material testing procedures in your R&D department? Do you want to optimize your process control and small series inspection? Discover the versatility of the FF35 CT with its touchscreen Geminy user interface, intelligent automation and precision features.

FF 35 CT is ideal for fine parts inspection in the automotive, electronics, aviation and material science industries where accurate results are paramount in order to comply with high safety and quality requirements.

FF35 CT supports your ability to carry out your tasks easily since it provides smart inspection processes with its newly designed Geminy graphical user interface. Use the intuitive touchscreen

to easily combine 2D and 3D inspections in one sequence and to graphically create your individual imaging chain via drag and drop icons.

Various automated functions also help you save time. The automatic collision protection allows for carefree manipulation. The system health status and the important values trend indicator let you keep track of the testing routine.

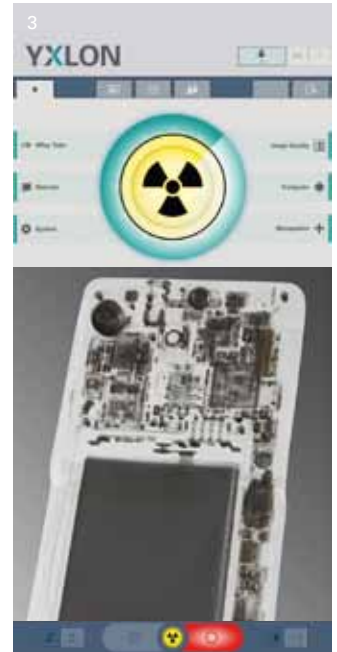
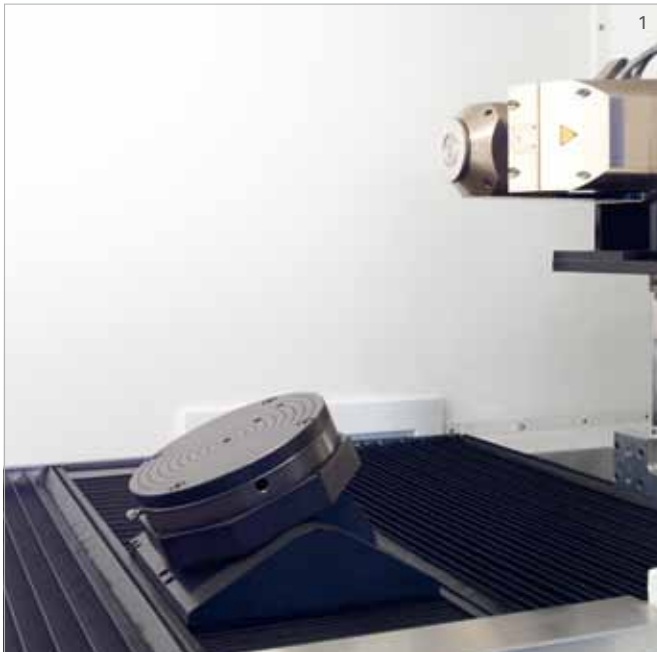
Remote monitoring with push messages is another process simplifier. Check the system from a distance and receive real-time information, for example when a CT scan is finished. Plus, to efficiently manage the daily inspection schedule you can assign different user levels that range from the unskilled operator to the experienced expert.

YXLON FF35 CT key benefits

- Intuitive touchscreen operation with new Geminy user interface
- Revolutionary inspection sequence creation using icons
- Flexible ROI selection thanks to off-center virtual rotation axis
- Extensive range of applications using two tubes in one inspection sequence
- Time saving with remote monitoring including push messages
- Expanded inspection envelope with horizontal field of view extension

Detect what matters

Double impact. The core advantages of the powerful and versatile YXLON FF35 CT come in pairs: combined 2D and 3D inspection with touch operation, and two independent tubes which you can change with a touch of a button.



- 1 Double-tube set-up with optional tilt axis
- 2 Remote monitoring
- 3 Health monitor, consolidated view

Cover the broadest fine parts testing range

Experience the versatile and powerful performance of FF35 CT for defect and material analyses, CT metrology and many more applications. A high power reflectional tube and a nanofocus transmission tube are at your disposal during a single inspection sequence. Inspect even more materials and sizes with the YXLON real ROI scan which enables off-center virtual rotation axis. The horizontal field of view extension expands the bandwidth of parts even further.

Instead of stitching different areas of a tested object, you can use helical CT to automatically compose a single accurate image. In addition, supreme image

quality is supported by ring artifact and beam hardening correction. The motorized focus-detector distance, multiple gain detector correction, and step-wedge calibration also facilitate the premium inspection level of FF35 CT.

A foundation for the power and precision of FF35 CT is the water-cooled X-ray tube which has a 600 nm resolution thanks to its very small focal spot.

The highest quality is our benchmark when it comes to our components as exemplified by the system's premium angle encoder modules and linear encoders. These parts are manufactured by market leader Heidenhain.

Which items and materials are especially suitable for YXLON FF35 CT?

- Electronic components like SMD
- Semiconductor packaging
- Probes of new materials (e. g. metal, plastics, CFRP)
- Microsystems, MEMS, MOEMS
- Medical devices like hollow needles
- Small metal parts such as injection molds
- Electronic devices
- Small castings

Maximize your uptime

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 our eight global service centers and the specialized staff of our 50 service partners we always ensure a rapid response time wherever and whenever you need it. Your benefits include:

- High system availability
- Low inspection costs per part
- Best inspection quality
- Continuous operational safety

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

We support you in limiting your CT inspection costs to a minimum. At the same time, your systems operate safely while obtaining optimum inspection results.

YXLON Life Cycle Service – more than the best image

- **Y.ServicePass** – increase your system availability
- **Y.WarrantyPass** – keep your costs predictable with an extended warranty
- **Y.SpareParts** – operate your system at peak performance with YXLON spares
- **Y.Exchange** – minimize your system downtime by direct exchange of original components
- **Y.Updates** – keep your system state of the art
- **Y.Academy** – train your operators



Check out these facts and figures

| CT Modes | | QuickScan®, QualityScan, Offset Scan, Helical CT, Real ROI CT | |
|-------------------|--|---|--|
| X-ray Components | | | |
| Tube | | Y.FXE 225.48 reflection tube | |
| Maximum energy | | 225 kV | |
| Maximum power | | 320 W | |
| Detail visibility | | ≤ 4 µm ¹⁾ | |
| TXI | | yes ²⁾ | |
| Tube (optional) | | Y.FXT 190.61 transmission tube | |
| Maximum energy | | 160 kV (prep. for 190 kV) | |
| Maximum power | | 64 W | |
| Detail visibility | | ≤ 0,6 µm ¹⁾ | |
| TXI | | yes ²⁾ | |

1) Acc. JIMA wire visibility at minimum focal spot size

2) TXI = True X-Ray intensity - controls real output dose for constant intensity

| Inspection Item | |
|-----------------------------------|-----------------|
| Maximum part size (Ø x h) | 300 mm x 500 mm |
| Maximum part weight ³⁾ | 5 kg / 30 kg |

3) Inspection item placed centrally on turntable resp. partholder.
First value with optional tilting axis.

| Manipulator Data | |
|---|--------------------|
| FDD (Focus Detector Distance) ⁴⁾ | ~ 620 mm - 1160 mm |
| FOD ⁴⁾ | ~ 0 - 930 mm |
| Beam – hub vertical axis ⁴⁾ | ~ 500 mm |
| Object – transversal axis ⁴⁾ | ~ +/- 150 mm |
| Tube axis ⁵⁾ | ✓ |
| Motorized door | ✓ |

4) Values are average and depending on detector and tube configuration. Details see technical description.

5) Currently all FF35 CT systems are furnished with a tube rotation axis and can be upgraded with the transmission tube.

| Operator Desk | |
|--------------------|--|
| Dimensions approx. | |
| Width | 1,800 mm |
| Height | 700 mm - 1,200 mm |
| Depth | 800 mm |
| Weight | ~ 175 kg |
| Monitor | 2, capacitive touch, 1920 x 1080 pixel |

| Detector | | YXLON Panel 1515 UHS | |
|------------------------|--|----------------------|--|
| Active area | | 146 mm x 146 mm | |
| Pixel pitch | | 127 µm | |
| Pixel matrix | | 1,152 x 1,152 | |
| Frame rate | | up to 58 fps | |
| Detector (alternative) | | YXLON Panel 2530 | |
| Active area | | 249 mm x 302 mm | |
| Pixel pitch | | 139 µm | |
| Pixel matrix | | 1,792 x 2,176 | |
| Frame rate | | up to 30 fps | |

| CT Parameters | | single tube | double tube |
|--|--|-------------------------------------|-------------|
| Minimum voxel size ⁶⁾ | | ~ 1 µm | ~ 270 nm |
| CT field of view (Ø x h) – filtered back projection (“Feldkamp”) ⁶⁾ | | ~ 110 mm - 110 mm / 225 mm - 185 mm | |
| CT field of view (Ø x h) – filtered back projection (“Feldkamp” – Hor. Extended) ⁶⁾ | | ~ 200 mm - 100 mm / 300 mm - 160 mm | |
| CT field of view (Ø x h) – Helical CT ⁶⁾ | | ~ 110 mm - 500 mm / 225 mm - 500 mm | |

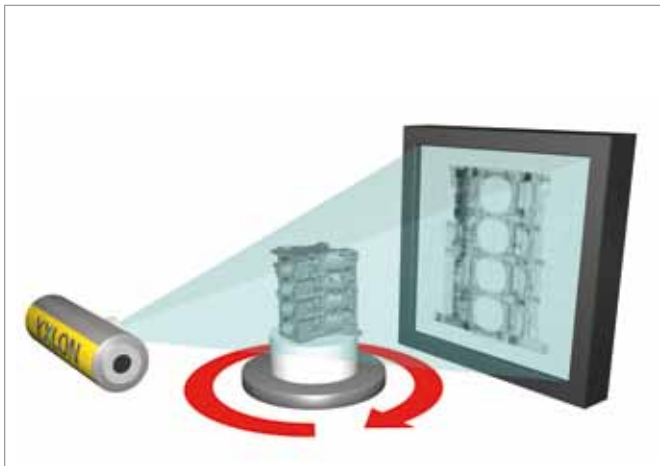
6) Based on a calculation considering rotation axis distance of 2 mm from the tube surface.

| Cabinet / System | | single tube | double tube |
|---|--|--------------------------------|-------------|
| Dimensions approx. (width x height x depth) | | 2,990 mm x 2,220 mm x 1,550 mm | |
| Inspection envelope ⁷⁾ | | 300 mm x 500 mm | |
| Weight ⁸⁾ | | ~ 6,800 kg | ~ 6,900 kg |
| Vibration damper ⁹⁾ | | passive / active | |
| Tube maintenance access | | very easy | |

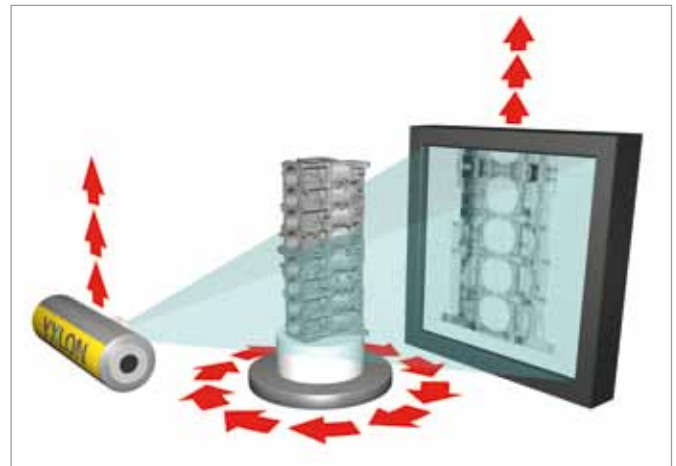
7) YXLON's envelope definition: every area of envelope represented by central beam on center of detector.

8) System weight due tough YXLON standard probably higher than competitor's: German “RöV” (X-ray regulation) limits are 2.5 µSv/h in 100 mm distance. Tough YXLON standard is 1.0 µSv/h measured on cabinet's surface.

9) Active vibration damping with FF35 CT is optional. Needs compressed air (7 bar). Compressor unit available.



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



Principle of Helical CT: With stepwise rotation of the sample and stepwise vertical manipulation of the X-ray tube and the flat-panel detector all information for precise 3D volumes of long parts are obtained.

Find the system that suits you best



| | FF20 CT | FF35 CT single tube | FF35 CT double tube |
|----------------------------------|---------|---------------------|---------------------|
| Part size | ++ | +++ | +++ |
| Material density | ++ | +++ | +++ |
| Part weight | + | ++/+++* | ++/+++* |
| Detail visibility | +++ | ++ | +++ |
| Combined 2D and 3D | ✓ | ✓ | ✓ |
| Helical CT | ✓ | ✓ | ✓ |
| Real ROI (virtual rotation axis) | ✓ | ✓ | ✓ |
| Powered by YXLON Gemini® | ✓ | ✓ | ✓ |

* triple plus without tilting axis (optional)

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.

YXLON

Technology with Passion

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