# YXLON GEMINY – EXPERIENCE SMART SYSTEM CONTROL AND ADVANCED CT-INSPECTIONS


YXLON

**Intuitive operation for effortless system control allows operators to exploit the full potential of x-ray and computed tomography inspections. Easy-to-grasp indicators about systems settings, procedures, and conditions ensure full focus on the job that matters most: inspection of parts.**

Yxlon has taken the major step to develop an entirely new, future-proof operator interface for its inspection solutions. The Geminy software platform uses state-of-the-art input devices, such as flexible touch screen controls. Fully automated routines running in the background enable safe system usage even under most difficult conditions. The operator quickly checks settings, progress and system conditions at the blink of an eye – and where desired comfortably digs deeper by simple touch operations.

Even teaching an inspection system becomes a comfortable job. Composing an inspection reduces to dragging wanted functions and operations into a simple sequence which can be executed, saved for reuse, or tested in sections. An entire range of different CT trajectories is available at the tip of a finger. Icons for CT analyses allow to automatically reconstruct volume data and to apply predefined analyses in a range of data analysis packages, such as VG Studio or GOM inspect.

YXLON FF20/35/85 CT systems are the first products to benefit from the novel Geminy software platform. With more products to join, new and existing customers benefit from all major developments whether in new systems or via software updates continuously adding to an existing system's performance and functionality.

*Convenient control with a special GUI design and touch operation*

**Upper viewing monitor:**

- Health monitor: status of important components and system properties
- Information display: most important parameters at a glance
- System messages: information, warnings, and errors
- General administration: user administration
- Device manager: service and maintenance

**Lower system control touch panel:**

- Compose inspection sequences, set parameters and run wizards
- Manipulate the part by simple touch gestures
- Visualize collision protection or display the internal camera
- Enhance reports with markers …

**Health monitor – all you need to know about your system**

The health is indicated in green, yellow or red for all major components. This even includes some optional functionality, such as a system's readiness for metrological inspections – where calibrations intervals and temperature conditions are checked. Where corrective actions are required, the system guides the operator from this starting point.

**IntelliGuard – fully automated collision protection**

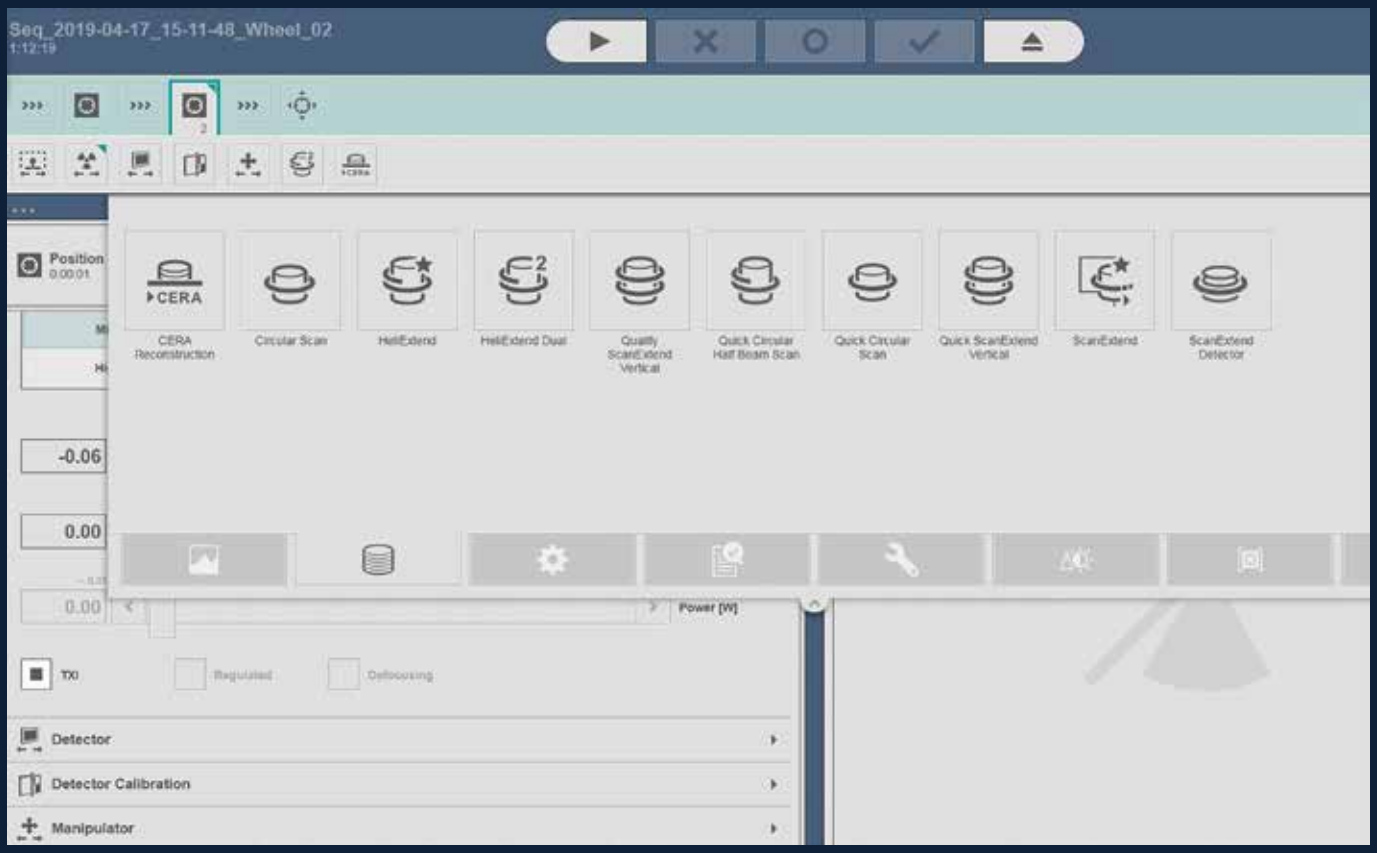
Systems with IntelliGuard assess a part's individual contour within a few seconds. Collision-free manipulation is automatically ensured even at close proximity to the tube and other components. Other systems deploy one or more stacked cylindrical protection envelopes.



*Above: dual monitor configuration, both full HD resolution*

*Above right: visualization of collision protection's CAD model and scanned inspection part*

*Below right: green health monitor indicating perfect system condition*




*Geminy's strength is a flexible selection of various CT trajectories.*

**CT – large choice of scans to address different parts**

- ***Quick scan:*** set the number of projections, rotation angles and exposure times.
- ***Quality scan:*** additionally set the number of images to integrate per projection.
- ***Horizontal scan extension:*** Scan parts of larger diameter by stitching images into one larger projection. Alternatively, use offset scan where the rotation axis is positioned to one edge of the detector.
- ***Vertical scan extension:*** Stack standard scans at different heights which are merged into one larger volume.
- ***Combined horizontal and vertical scan extension:*** Stack horizontally extended scans for largest parts.
- ***HeliExtend scan:*** Innovative scan process that boosts image quality significantly. Optimal detail recognition is achieved especially for the largest parts.
- ***Dual helical scan:*** combined offset and HeliExtend scan for largest parts.
- ***FlexCenter*** (not for FF20 / FF35 CT Metrology): Determination of a new virtual rotation axis eliminates the need to reposition the test part or use an XY table.


**Automatic functions and system reports**

Geminy aims to free users from routine work by automated functions for calibration and system performance tests:

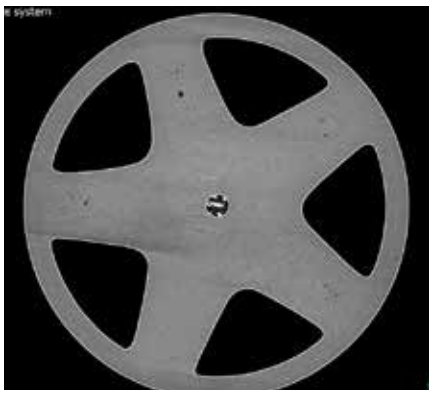
- ***Geometric calibration*** checks and corrects component orientations and positions.
- ***Detector calibrations*** offer automatic single-gain, multi-gain, and step wedge calibration. Expert mode with additional options for further optimization.
- ***ASTM report*** is created in accordance to ASTM E1695 for MTF and CDF.
- ***$MPE_{SD}$:*** fully automated determination and documentation of maximum SD deviation referring to VDI/VDE 2630 – Sheet 1.3. Measurements of the sphere distances of the Yxlon ruby gauge at two positions.
- ***Separation*** breaks multiple parts into individual volumes.

**Reconstruction workspace and reconstruction improvements**

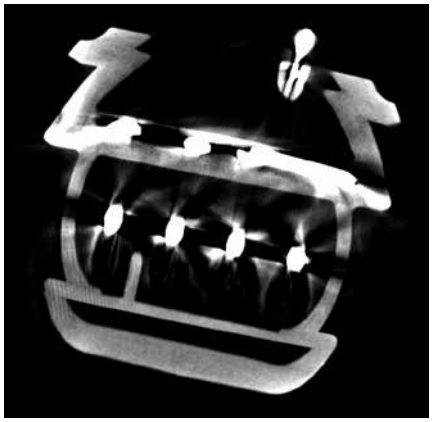
CT systems based on Yxlon Geminy are equipped with separate workstations for controlling the system and for reconstruction and analysis. The reconstruction workspace manages reconstructions and calls CERA-algorithms including:

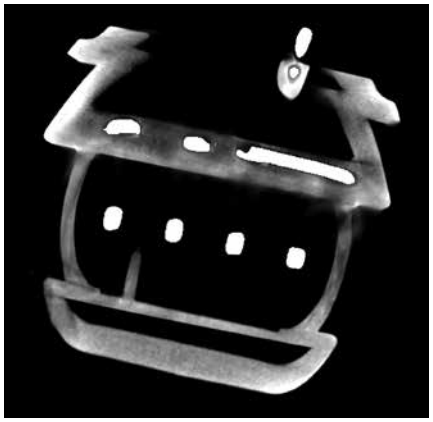
- ***Jitter correction*** to eliminate any blurry edges caused by a focus drift or shifted parts
- ***Truncation correction*** to correct truncation artifacts on ROI scans where the inspected part fills the entire field of view
- ***Ring artifact correction*** for processing projections or volume or detector shift corrections
- ***Beam hardening correction/reduction:*** Various methods are available for reducing these artifacts, including model-based corrections.
- ***Metal artifact reduction:*** FSMAR helps in surface extraction, especially with plastic-metal mixes and metrological applications.

*Electric component without Jitter Correction (left) and with Jitter Correction (right)*

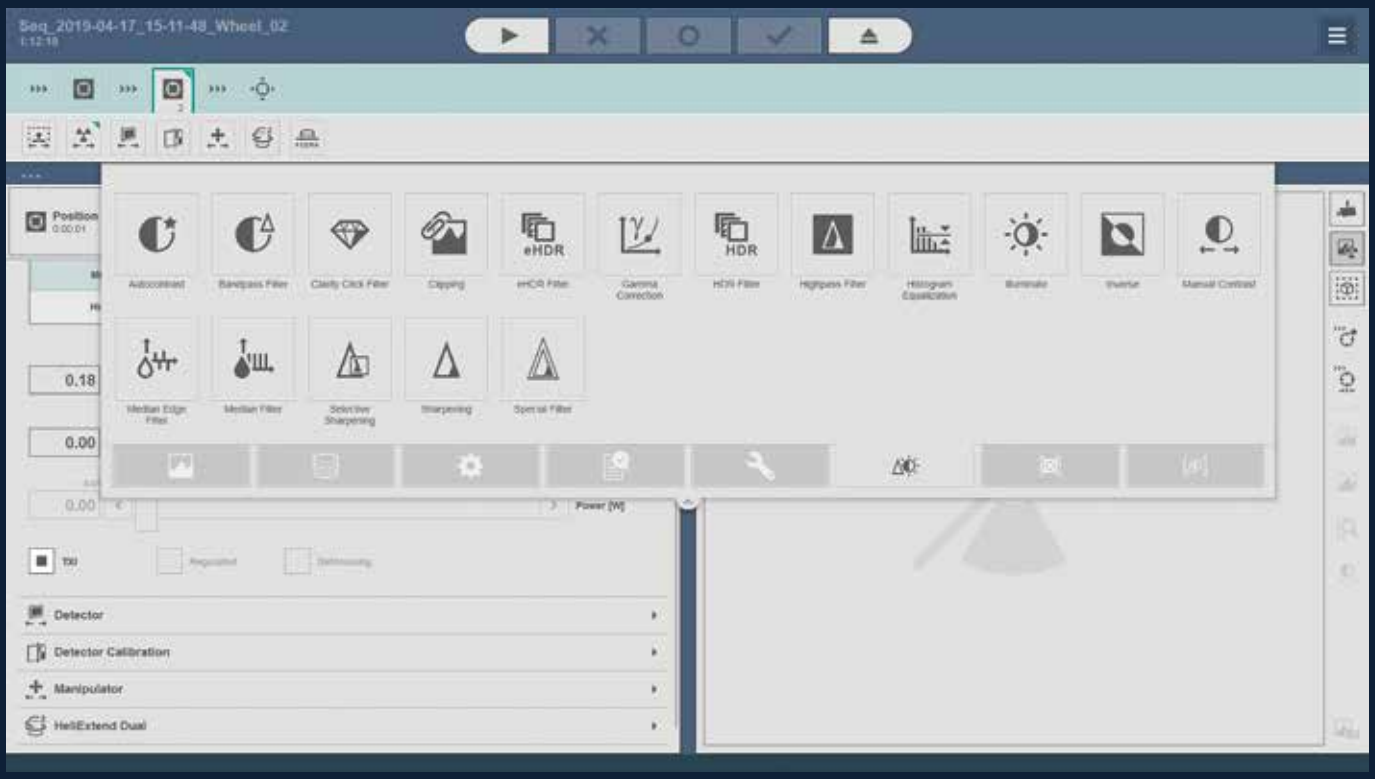


*Wheel without Beam-Hardening Reduction (left) and with Beam-Hardening Reduction (right)*

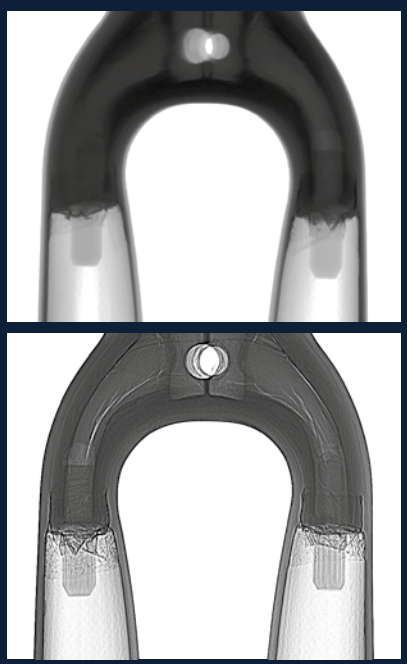




*Plug without Metal Artefact Reduction (left) and with Metal Artefact Reduction (right)*




*A large number of digital filters is available for x-ray image enhancement*



*Racing Bike Fork – Standard scaling (top) and HDR (bottom)*

**2D image optimization**

As a software platform, Geminy is also used for radioscopy inspection. Numerous image enhancement options, such as HDR, eHDR or adaptive sharpness filters are implemented.

| System functionalities across product range | FF20 CT | FF35 CT | FF 85 CT |
|---|---|---|---|
| **Collision Protection** | | | |
| Manual adjustment | ✓ | ✓ | ✓ |
| Intelliguard | ✓ | ✓ | – |
| **Scan trajectories** | | | |
| Std. circular scan | ✓ | ✓ | ✓ |
| HeliExtend (standard and dual) | ✓ | ✓ | ✓ |
| ScanExtend (offset scan) | ✓ | ✓ | ✓ |
| ScanExtend (detector shift) | – | – | ✓ |
| ScanExtend (vertical) | ✓ | ✓ | ✓ |
| FlexCenter (virtual rotation axis) | ✓ 1) | ✓ 1) | ✓ |
| **Automatic Sequence and Report** | | | |
| ASTM E1695 | ✓ | ✓ | ✓ |
| Max. SD deviation referring to VDI/VDE 2630 | ✓ | ✓ | ✓ |

1) Not with FF20 CT Metrology and FF35 CT Metrology (specified accuracy)

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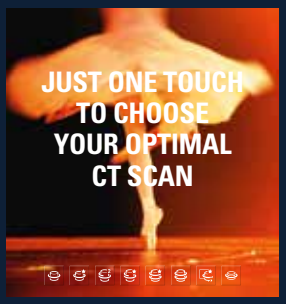


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**The excellent ergonomics of the user interface have been acknowledged by the „German Innovation Award" in Berlin, July 2018.**

GERMAN INNOVATION AWARD '18 WINNER

**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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