

Y.CT Tire CT system for the tire industry



YXLON's Computed Tomography based tire inspection system is designed for passenger car and truck tires. The Y.CT Tire provides information applicable for prototypes and products produced in series regarding their internal structures and the reliability of manufacturing quality. The line detector used generates high-resolution cross-sectional images of a tire segment or the volume of the whole tire.

The system's excellent density differentiation allows different types of rubber composites to be identified. Whether rim-mounted tires are to be tested, the Y.CT Tire system can be ordered with the appropriate X-ray source capable of penetrating variable tire sizes, and is configurable using conventional X-ray tubes or a linear accelerator. The system comes with an optional Tire Constraining Unit (TCU) which allows CT scans to be performed while placing a realistic multiaxial load on the tire.

YXLON. The reason why.

- applicable for a wide range of tires and applications
- provides high-resolution images of tire segments
- capable of scanning full-scale tire volumes
- minimized handling time via optional pallet system
- tire constraining unit for inspection under close-to-reality loads



The CT Tire system is designed for the Computed Tomography of various tire dimensions and materials and can be individually adapted to customers' specific applications and requirements thanks to the modularity of its components and options (required spatial and contrast resolution).

Parts	Passenger, truck, bus and Mini OTR tires	
X-ray system		
X-ray system	Y.MG452	Y.LINAC
X-ray tube	Y.TU 450-D09	
Tube voltage	20 – 450 keV	2 – 6 MeV
Power	1.5 kW	1.5 kW
Focal spot acc. to EN 12543	0.4 mm / 1.0 mm	< 2 mm
Imaging System		
Type of detector	Y.Line Scan	
Format / sensor	640 mm / 1,024 mm / 1,530 mm effective length	
Resolution	2.560 pixel	
Pitch	250 µm / 400 µm / 600 µm	
Dynamic	16 bit	
Performance		
Spatial resolution	0.10 mm – 0.60 mm	
Contrast resolution	< 1%	
Typical scan time	15 sec – 2 min	
Inspection envelope		
Inspection item diameter	900 mm – 2,000 mm	
Inspection item width	400 mm – 600 mm	
Inspection item weight	350 kg plus loading unit	
Manipulator	4 – 8 axes manipulator (adapted to application and dimensions of item)	
Length x width	3,500 mm x 1,500 mm – 5,500 mm x 3,500 mm	
Turntable	n x 360°	
Longitudinal axis turntable	500 mm – 1,000 mm	
Traverse axis turntable	600 mm – 1,700 mm	
Vertical axis x-ray source & detector	700 mm – 2,000 mm	
Focus-detector-distance	variable (1,500 mm – 3,000 mm)	
Measurement modes		
Computed Tomography	slice images / fan beam	
Radiography	digital radiography	
Software		
System software	Y.CT software, control, reconstruction, remote maintenance	
Analysis software	3D Volume software VG Studio Max2.0	
Control unit	Ergonomically designed operator's desk incl. TFT monitor, computer server cabinet and X-ray operation sector	
Environment		
Power supply	3 Phases + PE + N 63 A / 400 V / 50 Hz	
Ambient air temperature	20 – 25 °C	
Humidity	30 – 70%, no condensation	
Options		
Radiation protection	Radiation- shielded cabinet or radiation protection room	
Operator room	for the control unit including air conditioning	
Tire Constraining Unit (TCU)	Simulation from radial, lateral und tangential load on the tire	
Loading unit	Pallet system for optimized load and unload	
Additional axes	For the installation of two X-ray sources (Y.TU + Y.LINAC)	
Software	e.g. material analysis, analysis of wall thickness nom./act. value comparison	
Customized	At customer request configurations are freely eligible	