

Tire-X PC

Automated X-Ray Inspection Machine for Passenger Cars Tires

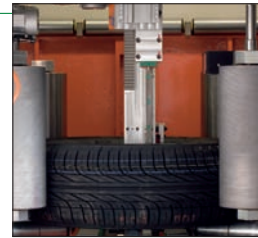
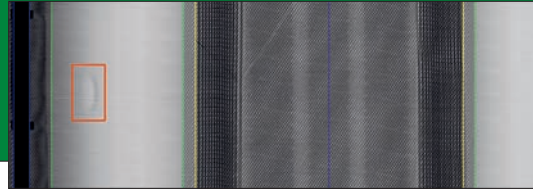
Tire-X PC system is an automated X-ray tire inspection machine to identify foreign materials, body ply cords, chafer dimensions, bad splices and belt step offs. The system delivers a superior tire image and offers automatic detection of some tire defects. In addition, Tire-X PC provides special imaging tools for defect detection that are not automatically identified. The simple and rugged design of the Tire-X PC system guarantees high-reliability and easy maintenance.

■ FUNCTIONS

- Tire identification based on tire dimensions or bar code (option)
- Base and enhanced (if bar code is in place) recipe system
- Recipe driven positioning of the X-ray tube and detector
- Recipe driven setup of the X-Ray generator and rotation speed
- Advanced algorithms for the image calibration and enhancement
- Automated page-by-page image display
- Operator tools for manual image inspection
- Automated image storage on hard disk for off-line tire quality control
- Quality mode to adjust recipe parameters

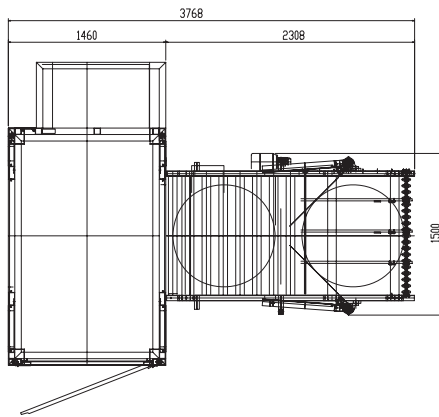
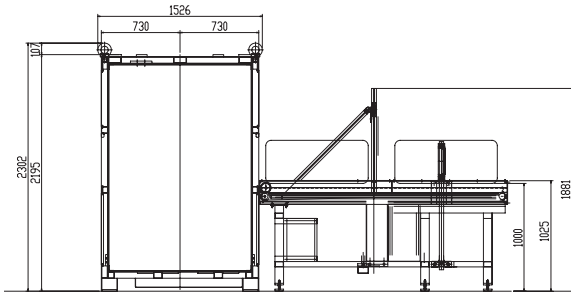
Features & Benefits

- Bead to bead high quality simultaneous inspection, based on panoramic X-ray tube and U-shape detector
- High throughput (cycle time < 25 sec)
- Compact design (X-ray cabin is a single unit, easy to transport and install)
- Minimum operator stress through high quality images and an user friendly operator interface
- Optional automatic detection of some specific defects
- Minimum maintenance requirement
- Optional off-line analysis software package for statistical extra control on a separated PC



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■ TIRE MANIPULATOR

The tire manipulator has four vertical rolls positioned according to the tire dimensions to optimize tire centering and rotation. The tire is not mechanically solicited at all and there is no need to enlarge the beads. Moreover the system has complete control on peripheral tire speed and, as a consequence, the image acquisition line clock can be tuned with the actual tire speed. Both the X-ray tube and the U-shape detector are automatically positioned according to the dimensions of the incoming tire, through two controlled axis each. This allows an optimized position of the two main components affecting the image quality.

■ IMAGE ACQUISITION SYSTEM

Our fully digital image acquisition system displays the image and performs the operator inspection process completely asynchronously from the tire loading and unloading process. The operator views the tire images on a 23" flat screen monitor. The image acquisition system uses National Instruments hardware and software products including the NI PCI-1424 digital camera image acquisition board, the NI LabVIEW® development environment and the NI IMAQ Vision Library.

■ PANORAMIC X-RAY TUBE AND U-SHAPE DETECTOR

The metal ceramic X-ray tube provides a panoramic emission angle of 6° x 280°, 0,5 x 1,5 mm focal spot and a max tube voltage of 100kV. The Alfautomazione proprietary X-ray detector is a high-resolution line diode array. The u-shaped construction provides minimum geometric distortion.

■ PROTECTIVE CABIN

The protective cabin is lead shielded to guarantee zero emission for a total operator safety. It can be handled and moved as a single unit (easier/cheaper to transport and install). It is equipped with one service door and two automatic sliding doors for tire in/out.

■ TECHNICAL DATA

Bead diameter	13" – 27"
External diameter	500-950 mm
Width	120-400 mm
Minimum bead distance	80 mm
Max weight	30 Kg
Cycle time	< 25 sec./tire
Voltage	400VAC/50 Hz 3 phases (480VAC / 60 Hz available)
Electrical power	18KW
Power consumption	5 KW
Pneumatic supply	min 6, max 10 bar
PLC, motors, drives	Siemens or Allen-Bradley (other available on request)

Compliant with CE/UL/CSA safety requirements

World Wide Service and Support

Alfautomazione main customers are multinational corporations and our assembly/test systems are installed around the world. We offers pre- and post-sales support and service from our headquarters in Italy and from our strategically located Sales and Service field offices.

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