

# X-Ray Upgrade Kits

## *Image Acquisition Systems to upgrade X-Ray Tire Inspection Machines*

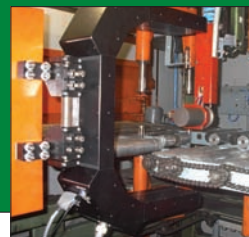
Tire makers use end-of-line X-ray inspection to guarantee a high level of product quality and safety. Often the inspection machines constitute a production bottleneck, especially if they are old. Our **X-Ray Upgrade Kits** offer cycle time reduction, inspection quality improvement, and cost-effectiveness. Using a parallel software architecture, our solution reduces cycle time by keeping the tire load and unload process fully asynchronous to the operator image inspection process. The high quality of images and reduced operator stress improve the overall inspection process considerably. Alfautomazione has extensive experience in retrofitting primary brand X-ray inspection machines worldwide. Broad competence in industrial imaging, electronics and software, makes Alfautomazione the ideal partner to define the exact retrofit solution you need, extending the life of your X-ray tire inspection system.

### ■ FUNCTIONS

- Bead to bead high quality simultaneous inspection, based on panoramic X-ray tube and U-shape detector
- Automated page-by-page image display
- Advanced tools for manual image operator inspection
- Automated cord spacing control
- Parallel software architecture to reduce cycle time
- Automated image storage on hard disk for off-line quality tire review

### Features & Benefits

- Impressive return of investment
- Cycle time reduction
- Image quality improvement
- Reduced operator stress
- Long life components
- Easy maintenance by plant staff
- Compact, Modular and Scalable Design



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## ■ 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. This unique feature provides the operator with a higher degree of flexibility during the inspection process, thereby guaranteeing shorter cycle times. An industrial PC controls the entire imaging system. The operator views the tire images on a 23" flat screen monitor. Optionally, multi-monitor support is available. The image acquisition system uses National Instruments hardware and software products including the NI PCI-1424 digital camera image acquisition board, the NI PCI-DIO-96 digital I/O device with a solid-state relay and optoisolated barrier for field interface, application software developed using NI LabView®, and the NI IMAQ Vision Library.

## ■ PANORAMIC X-RAY DETECTOR

The Alfautomazione proprietary panoramic X-ray sensor is a high-resolution line diode array. The u-shaped construction provides minimum geometric distortion, and, with its modular design, you can adjust the sensor over a wide range of tire sizes. By scanning a rotating tire between the X-ray source and the line diode sensor, the system creates a high-resolution image that is suitable for automatic defect detection.

Scan time	9-11 sec (*)
Scan speed	Up to 24 m/min
Pitch	0.4/0.8 mm
Pixels per line	3328/1664
Line rate	Up to 1000 lines/sec
Resolution	12-bit/4096 gray levels
Max tire width	540 mm

Compliant with CE/UL/CSA safety requirements

\* At max speed, with 1150-1400 mm tire diameters

## ■ PANORAMIC X-RAY TUBE

The metal ceramic X-ray tube provides a panoramic emission angle of 35° x 300° and a max tube voltage of 120kV. Designed for reliability and long life, the tube has no moving parts or drives. Therefore, maintenance and service requirements are minimal.

## 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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