Micro-focus X-ray inspection at your fingertips

Best value for top performance

Compact, versatile and easy-to-use workhorse

XT V 130: X-ray inspection made easy

Today there is a growing demand for flexible, high-resolution and cost-effective inspection systems to cope with the demands of ever-smaller electrical components and increasing quality. With the XT V 130, you can get the inside view of printed circuit boards, in a smooth, non-destructive process.

The Nikon Metrology XT V130 X-ray inspection system is a high-precision, flexible solution that facilitates defect analysis in loaded PCB boards. Designed for 100% BGA and μBGA inspection, multi-layer board inspection and PCB solder joint inspection, it is a compact, easy-to-use, and most of all, cost-effective inspection system that is an indispensable workhorse in any electronics production area.

In a nutshell

- Highly flexible system
- Interactive visualization
- Fully automatic inspection and reporting
- High magnification at all angles
- High, 16-bit resolution imaging reveals all defects
- Fast operation with intuitive joystick navigation
- Low cost of ownership and maintenance with open-tube technology
- Inherently safe system, does not require special precautions or badges
- Small footprint and low weight for easy installation

X-ray insight into the inside

### Tracing hidden defects and internal imperfections

With the advent of many newer type components, optical inspection is no longer an option because the majority of connections remain hidden for the eye. This means that the ability to generate premium-quality real-time X-ray images is more important than ever before. Today, any OEM and subsystem supplier in electronics, consumer, automotive, aerospace and medical can take advantage of X-ray inspection technology to get the job done!

### An enabling X-ray imaging concept

A micro-focus X-ray source providing a small source of X-rays acquires information regarding the internal structure of the specimen. An image intensifier and digital camera are used to capture patterns of X-rays that pass through the specimen, showing different shades of gray depending on material and geometry. Thicker or denser material – such as iron, copper and lead – represent darker areas than areas highlighting thin or light materials – such as plastic, paper or air. By moving the position of the sample relative to the source and the detector, the preferred magnification (and field of view) is obtained for optimized viewing of components.

Automation increases throughput rates

Automated inspection functions and automatic board identification ensure high inspection throughput rates. Inspection reports compliant with MRP systems facilitate tight integration into customers' manufacturing processes.
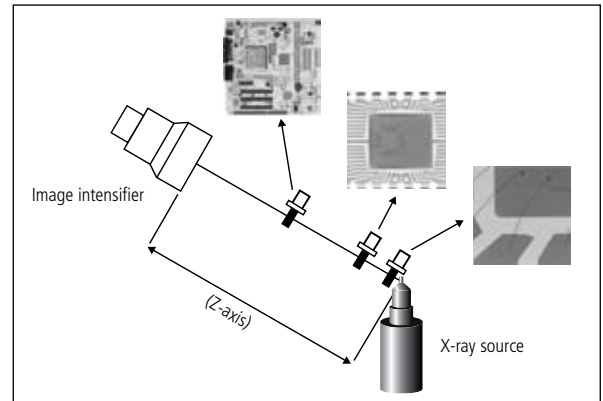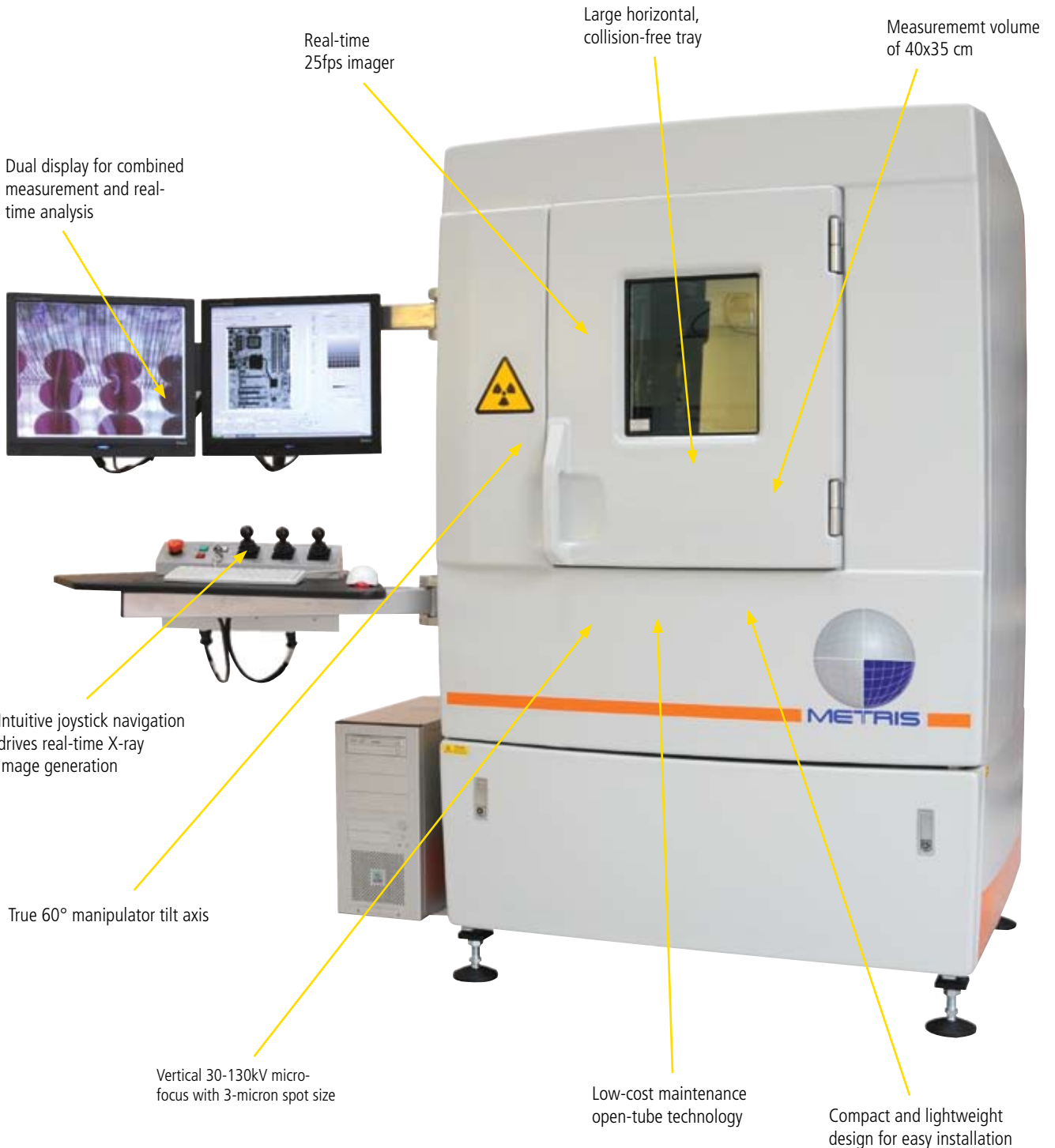

Moving the sample closer to the x-ray sources increase the magnification of the resulting image
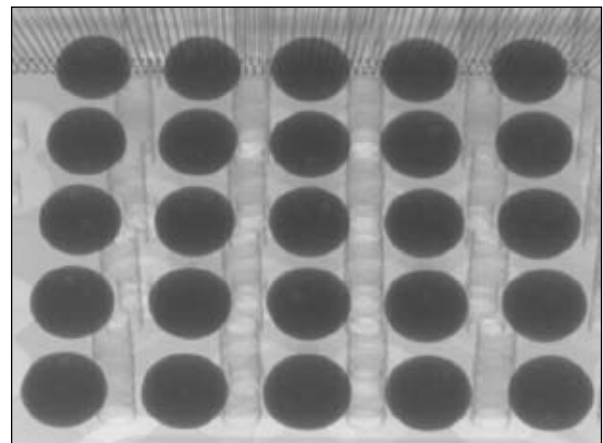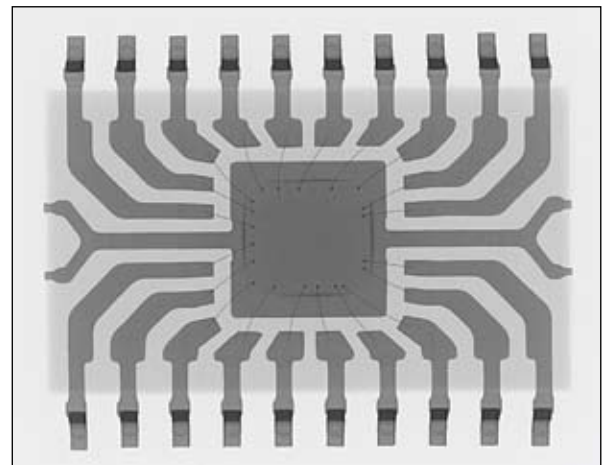
XT V130: Fast inspection of today's miniaturized electronics

Answering the need for a compact, versatile and high-resolution X-ray inspection system, the XT V 130 was designed by combining over 20-years experience in X-ray technology and intensive cooperation with customers active in electronics, automotive, aerospace and telecommunications industries. This resulted in an affordable, compact and lightweight X-ray system for QA automation and execution on serial-produced electronic samples.

Intuitive control software and automated inspection functions allows operators to manually or automatically trace defects in multi-layer boards, PCB solder joints, Ball Grid Arrays (BGA) and µBGAs. As a result, samples are inspected and assigned pass/fail status based on user-definable criteria.

Large horizontal, collision-free tray

Measurememt volume of 40x35 cm

Real-time 25fps imager

Dual display for combined measurement and real-time analysis

Intuitive joystick navigation drives real-time X-ray image generation

True 60° manipulator tilt axis

Vertical 30-130kV micro-focus with 3-micron spot size

Low-cost maintenance open-tube technology

Compact and lightweight design for easy installation

METRIS

High quality images

- In-house micro-focus source with 3-micron focal spot size
- Change position, angle and zoom as desired
- 4-inch image intensifier, optically coupled to a high-resolution digital CCD camera
- Large set of 16-bit image processing tools
- True 60° tilting angle for easy inspection of internal features

Intuitive to use

- Short learning curve – operational within 1 day
- Intuitive joystick navigation
- Large TFT screen for combined measurement and real-time analysis
- Bar code reader to read board SN (optional)
- Local language support

Focus on productivity

- Large tray to load multiple boards
- Fast automated component inspection
- Large door with automatic interlocked X-ray off function

Safety as a design criterion

- Full protective enclosure requires no special badges or protective clothing
- Lead-lined cabinet fully complies to DIN 54113 radiation safety standards and CE regulation
- Continuous fail-to-safe monitoring
- Designed for collision-free manipulation

Low cost of ownership

- Open X-ray tube design allows for easy maintenance of internal tube components and replacement of low-cost filaments
- No high-voltage cable required
- Low system weight (1150kg) avoids special floor treatment
- Compact design easily fits double-door entries
- Easily maneuverable through 3-wheel transportation
- Serviceable components installed in an easily accessible drawer

5.3x

16.7x

150x

320x image magnification enables users to zoom in on any specific item of interest

0°

45°

60°

Tilt angle up to 60° offers sufficient flexibility to trace connectivity issues quickly
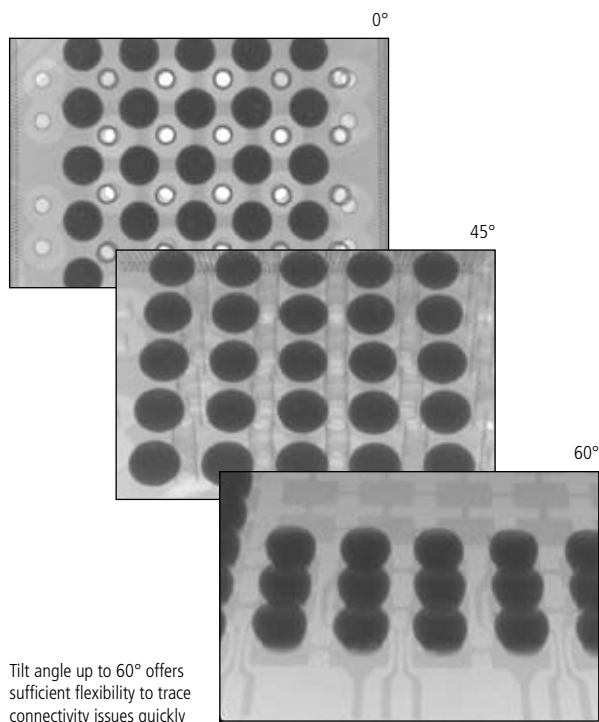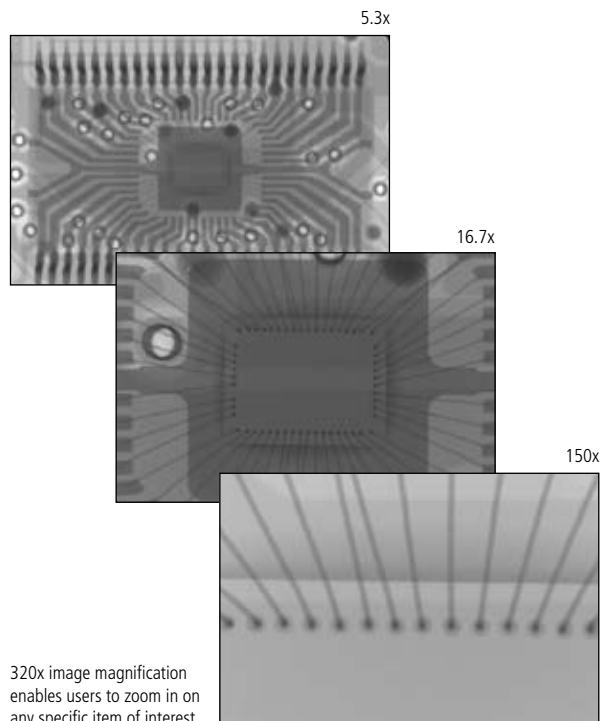
Inspect-X application software

Interactive and user-friendly software is essential in evaluating the complex internal structure of samples and performing accurate inspection. Inspect-X provides all the means to guide you in retrieving the required information, using the most advanced visualization and analysis capabilities. Developed to streamline the process of inspection and measurement, it runs first-article inspection in minutes, instead of hours or days.

Real time X-ray inspection

- Intuitive joystick control for interactive part positioning
- Lock in on BGA or region of interest (ROI)
- Ultra-fast acquisition of X-ray scans
- Integrated display and analysis tools
- Measure on screen and annotate data

Image analysis / enhancement

- User-configurable multi-point tone adjust
- Image processing filters (sharpen, smooth, edge detect, emboss, background subtract, etc.)
- Image histogram
- Electronics inspection tools (e.g BGA void recognition) as standard
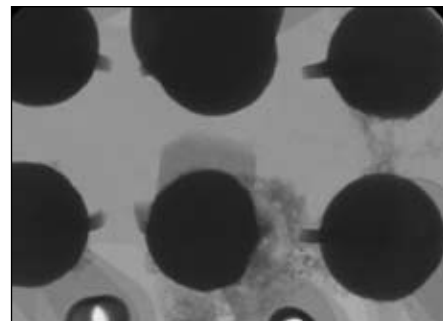
Minuscule solder dendrites and voids
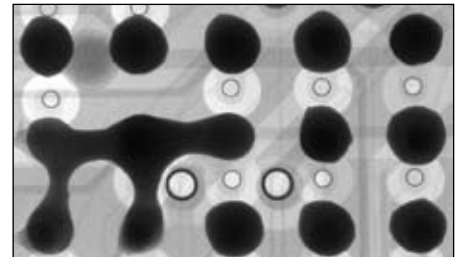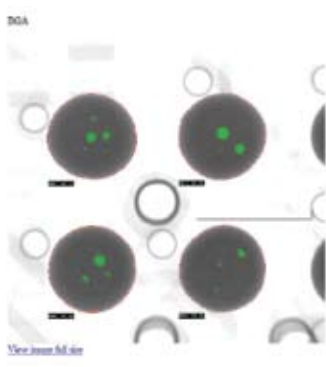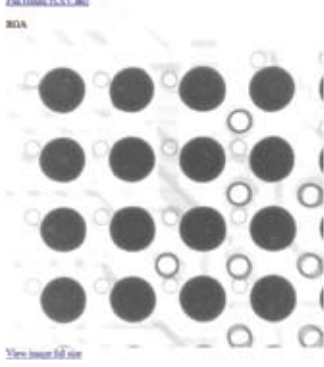
Bridging/Shorts due to surplus solder

Automatic report generation

The versatile software for all applications

Maximum productivity

- Component-specific automated pass/fail analysis
- Redo analysis on off-line visualization station
- Parameter locking organizes operator and supervisor rights
- Macro-based automation requires no programming skills
- Automatic HTML report generation
- Ready to automate complex tasks with Visual Basic for Applications (VBA)

## Wide range of applications

Electronic and electrical components
Inspection/Detection of broken wedge bonds, lifted ball bonds, wire sweep, die attach, dry joints, bridging/shorts, voiding, etc.

Populated and unpopulated PCBs
- View surface mount defects i.e. misaligned devices, solder joint porosity, bridging
- Detailed inspection of vias, through-hole plating and multi-layer alignment
- Wafer-level chip scale packages (WLCSP)
- BGA and CSP inspection.
- Non-lead solder inspection.

Micro-electro-mechanical systems (MEMS, MOEMS)

Cables, harnesses, plastics and many more
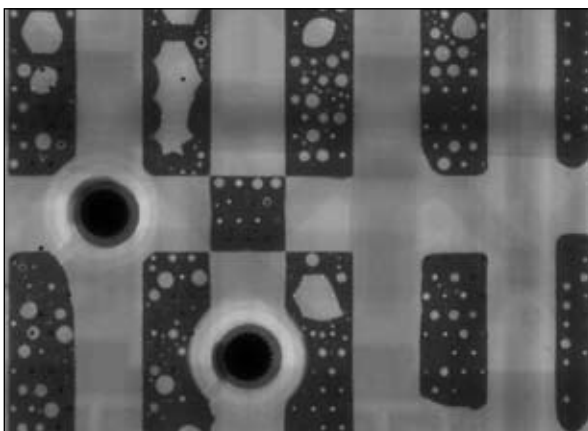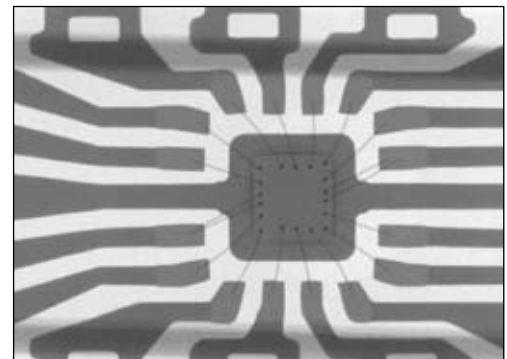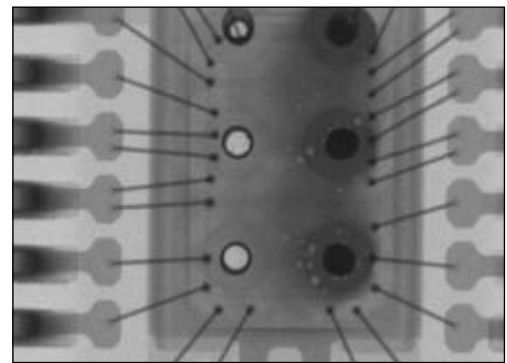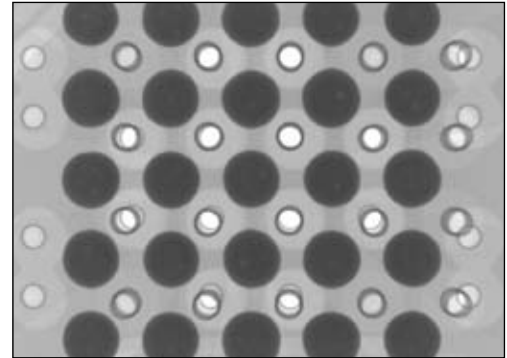
Voiding at board level
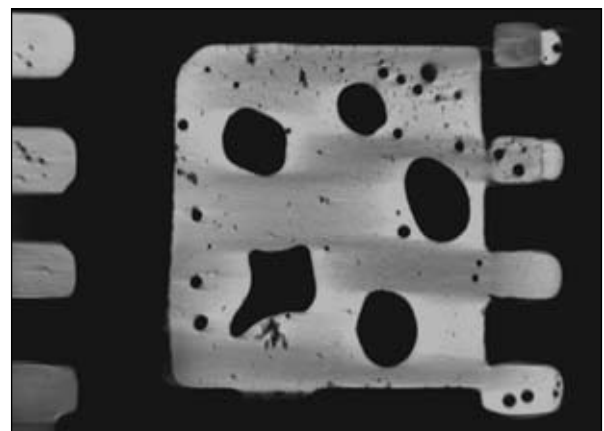
NIKON METROLOGY NV
Geldenaaksebaan 329
B-3001 Leuven, Belgium
phone: +32 16 74 01 00 fax: +32 16 74 01 03
info@nikonmetrology.com

More offices and resellers at **www.nikonmetrology.com**