3D

Dynamic Planar CT

2.5D

Off-Axis Oblique Angle

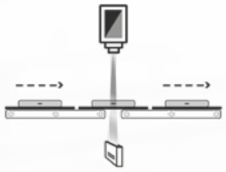
2D

Transmission

SFT

Slice-Filter-Technique™

LS



Line Scan

AXI PRODUCT Portfolio

Automated X-ray Inspection

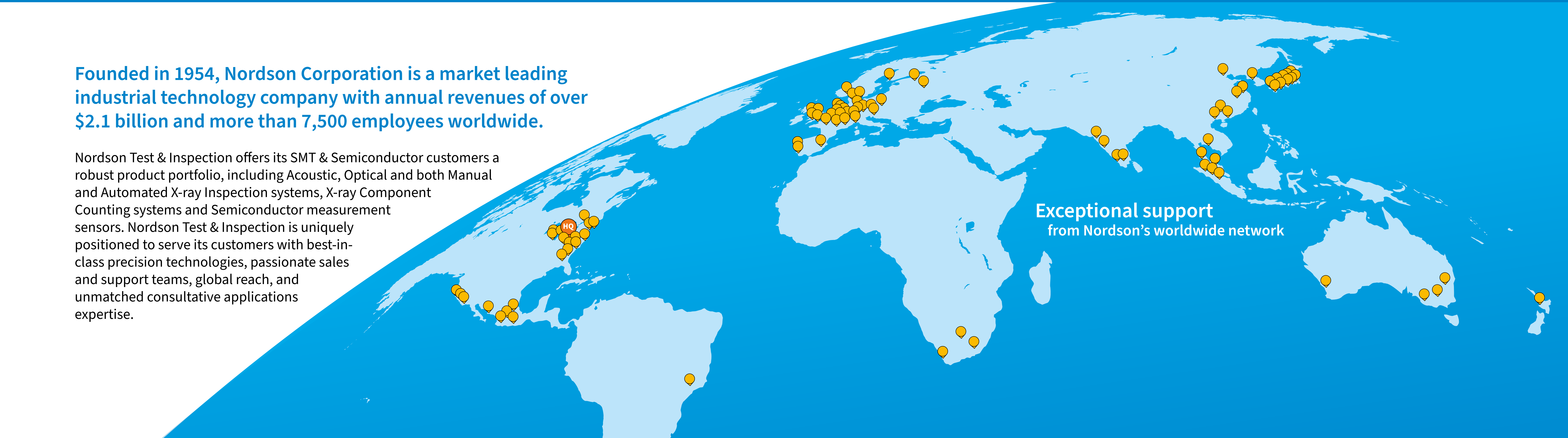
Nordson
Test & Inspection

www.nordson.com/TestInspect

Nordson Test & Inspection

Founded in 1954, Nordson Corporation is a market leading industrial technology company with annual revenues of over $2.1 billion and more than 7,500 employees worldwide.

Nordson Test & Inspection offers its SMT & Semiconductor customers a robust product portfolio, including Acoustic, Optical and both Manual and Automated X-ray Inspection systems, X-ray Component Counting systems and Semiconductor measurement sensors. Nordson Test & Inspection is uniquely positioned to serve its customers with best-in-class precision technologies, passionate sales and support teams, global reach, and unmatched consultative applications expertise.

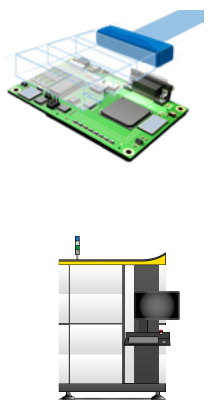


Exceptional support
from Nordson's worldwide network

AXI Products

High Speed
High Flexibility

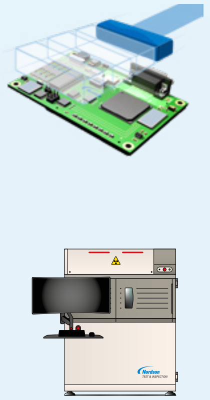
Automated
X-ray Inspection



MXI Products

Making the
Invisible, Visible

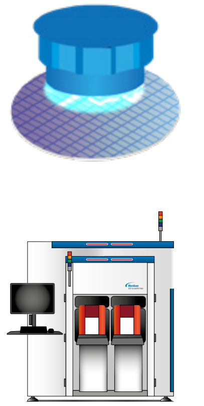
Manual
X-ray Inspection



AXM Products

Measuring the
Invisible

Automated
X-ray Metrology



CC Products

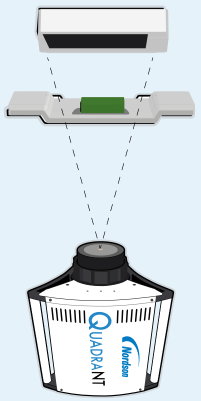
Count On Us™

X-ray Component
Counting

XT Products

High Speed
High Resolution

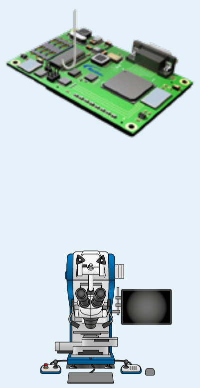
X-ray
Technologies



BT Products

Test Your
Design

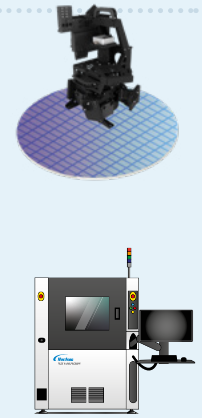
Bondtesters



AOI Products

Proprietary
Advanced
Technology

Optical Inspection
& Metrology



WS Products

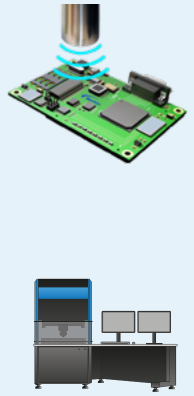
Improve Your
Yields

Semiconductor
Metrology Sensors

AMI Products

Qualify Your
Design

Acoustic
Inspection



XS Series

High Resolution Automated X-ray

The XS Series provides a platform for inline or island automated X-ray systems covering a wide range of Automated X-ray Inspection (AXI) applications. With up to 4 advanced image acquisition modes, you have the optimum setup for all your applications and inspection requirements. Three dedicated system configurations serve the Semiconductor market:

Semiconductor - High-Resolution Wire Bond inspection.
Semiconductor Pro Strip - Ultra-High-Resolution Wire Bond and Flip Chip inspection.
Semiconductor Pro Tray - Ultra-High-Resolution Wire Bond and Flip Chip inspection with handling for JEDEC, steel and specialized carriers.

Advanced Image Acquisition Modes

The XS Series platform is available with up to 4 advanced image acquisition modes, ensuring you have the optimal setup for all your applications and inspection requirements.

3D Dynamic Planar CT - The next generation of high-quality 3D inspection, employing high-speed detector motion (3 sec/FoV).

2.5D Off-Axis Oblique Angle - Off-axis inspection (≤30°) via detector movement for high performance, oblique angle imaging.

2D Transmission - Orthogonal two-dimensional imaging with movable sample tray and a fixed detector position.

SFT Slice-Filter-Technique™ - Patented inspection technique for golden sample comparison and background removal for analysis.

Advanced Hardware Technologies

- Maintenance free, sealed microfocus X-ray source
- 5-axis programmable motion system
- High-resolution, high-speed digital Flat Panel Detector
- Low dose radiation filters for dose sensitive devices

Traceability and Connectivity

- Automatic barcode read and inspection selection
- Full traceability via MES and SECS/GEM interfaces
- IPC-CFX-2591, IPC-Hermes-9852 and Industry 4.0 ready

Additional options

- Same-side load/unload configuration
- Barcode scanner for serial number and product type selection
- Auto BCR scanning station (x-y gantry)
- Low dose radiation filter

Wire Bond Inspection

Gold or copper wire bonding (≥0.6 mil) including stacked dies. Our advanced proprietary algorithm library includes specialized wire defect inspection for sweep, loop height, shorting, depressed, sagging, missing, broken, lifted wires, and lead frame deformation.

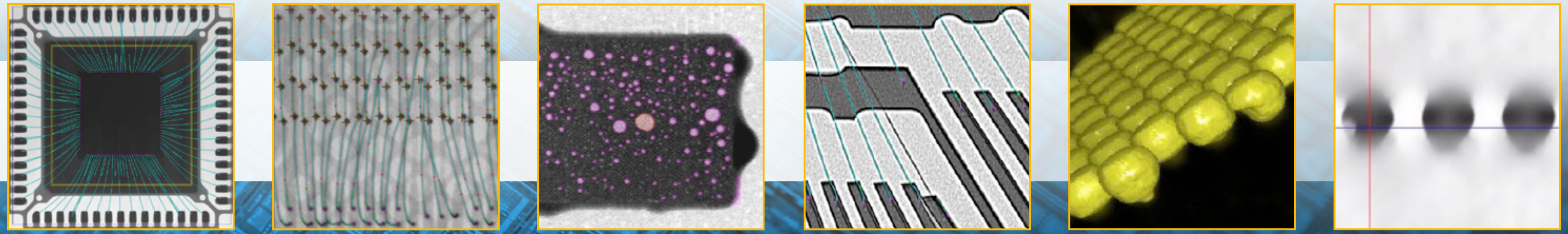
Solder Joint Inspection

Our defect detection capabilities also cover inspection of solder coverage, multi-die shift, rotation, voiding, foreign material checking and shorting.

Micro-BGA and Flip Chip Bump Inspection

Our sophisticated ball and bump defect algorithms include inspection for bridge, foreign material, deformed, tilted and missing balls, in addition to stacked die inspection for micro-voids.

APPLICATIONS



X Series

The X Series provide an inline automated X-ray system platform, for a wide range of Automated X-ray Inspection (AXI) applications within the Surface Mount Technology (SMT) market. The X Series offers market leading inspection speed and is ideal for low-mix high-volume production environments.

Our proprietary advanced algorithm library provides comprehensive inspection of all standard surface mount devices, including BGA, LGA, PTH, THT, POP, SIP, QFN, QFP and TSOP.

Advanced Image Acquisition Modes

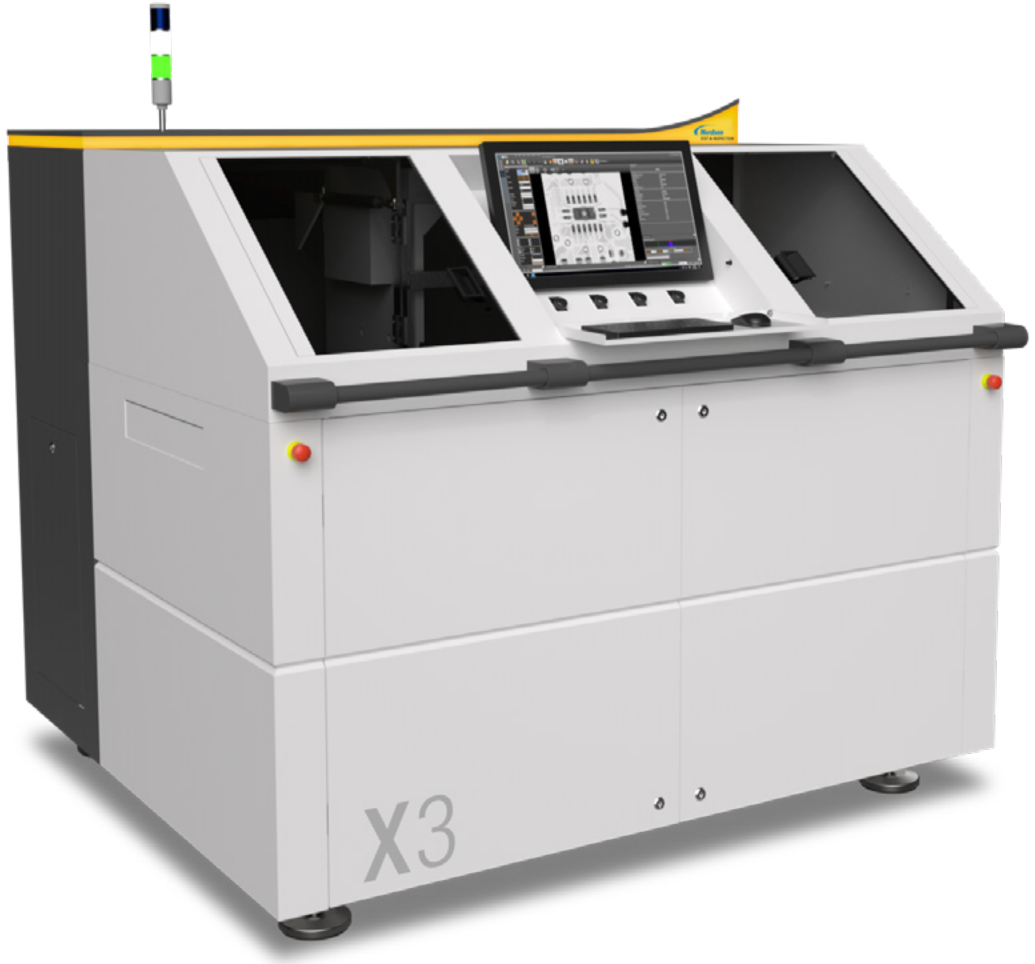
The X Series platform is available with up to 4 advanced image acquisition modes, ensuring you have the optimal setup for all your applications and inspection requirements.

3D Dynamic Planar CT - The next generation of high-quality 3D inspection, employing high-speed detector motion (3 sec/FoV).

2.5D Off-Axis Oblique Angle - Off-axis inspection (≤30°) via detector movement for high performance, oblique angle imaging.

2D Transmission - Orthogonal two-dimensional imaging with movable sample tray and a fixed detector position.

SFT Slice-Filter-Technique™ - Patented inspection technique for golden sample comparison and background removal for analysis.



High Speed Automated X-ray

Advanced Hardware Technologies

- Maintenance free, sealed microfocus X-ray source
- 5-axis programmable motion system
- High-resolution, high-speed digital Flat Panel Detector
- Low dose radiation filters for dose sensitive devices

Traceability and Connectivity

- Automatic barcode read and inspection selection
- Full traceability via MES and SECS/GEM interfaces
- IPC-CFX-2591, IPC-Hermes-9852 and Industry 4.0 ready

Additional options

- Barcode scanner for serial number and product type selection
- Auto BCR scanning station (x-y gantry)
- Low dose radiation filter

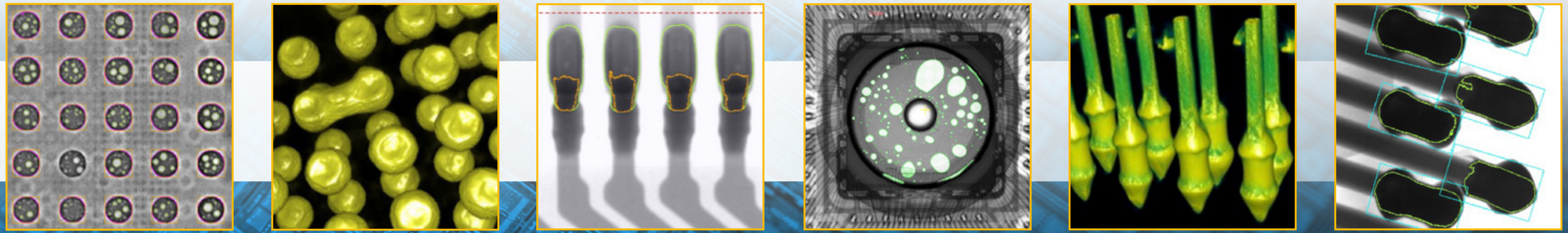
PTH Inspection

Our advanced algorithms also provide dedicated PTH defect inspection, including barrel fill, voiding, bridging, solder splash, bent pin and pin plugging.

SMD Solder Joint Inspection

Our sophisticated SMD inspections include solder coverage defect analysis for voiding, bridging, insufficient, missing, head-in-pillow, inside/outside meniscus, non-wetting, lifted lead, heal and toe, foreign material and shorting.

APPLICATIONS



X# Series

Flexible, Automated X-ray

The X# Series provide an inline or island automated X-ray system platform, covering a wide range of Automated X-ray Inspection (AXI) applications, with three dedicated system configurations to serve the Ultra-High Power (UHP), Surface Mount Technology (SMT) Final Assembly, Test and Pack (FATP) markets.

UHP - Single DBC and multi-layer IGBT inspection
SMT - PCB Solder Joint inspection
FATP - Partially assembled, fully assembled or packaged electronic products inspection

Advanced Image Acquisition Modes

The X# Series platform is available with up to 5 advanced image acquisition modes, ensuring you have the optimal setup for all your applications and inspection requirements.

3D Dynamic Planar CT - The next generation of high-quality 3D inspection, employing high-speed detector motion (3 sec/FoV).

2.5D Off-Axis Oblique Angle - Off-axis inspection (≤30°) via detector movement for high performance, oblique angle imaging.

2D Transmission - Orthogonal two-dimensional imaging with movable sample tray and a fixed detector position.

SFT Slice-Filter-Technique™ - Patented inspection technique for golden sample comparison and background removal for analysis.

Line Scan - Continuous scanning using a line detector with real time stitching and analysis of large area X-ray images.

Advanced Hardware Technologies

- Maintenance free, sealed microfocus X-ray source
- 5-axis programmable motion system
- High-resolution, high-speed digital Flat Panel Detector
- Low dose radiation filters for dose sensitive devices

Traceability and Connectivity

- Automatic barcode read and inspection selection
- Full traceability via MES and SECS/GEM interfaces
- IPC-CFX-2591, IPC-Hermes-9852 and Industry 4.0 ready

Additional options

- Flexible setup for inline pass through or same-side in/out configuration
- Combination with line scan camera for high throughput
- Auto BCR scanning station (x-y gantry)
- Low dose radiation filter

Final Assembly, Test and Pack

Final product checking to evaluate assembly condition, absence of foreign material, presence of all required items and correctness of packing. Including mobile phones, wearables, personal audio and portable computing devices (e.g. tablets and laptops).

Solder Joint Inspection

Our proprietary advanced algorithm library provides comprehensive solder joint inspection for all standard SMDs and a wide range of Power Hybrids including shunt resistors, capacitors, diodes and multi-layer IGBTs. These sophisticated inspections include solder coverage defect analysis for voiding, bridging, insufficient, missing, head-in-pillow, inside/outside meniscus, non-wetting, lifted lead, heal and toe, foreign material and shorting.

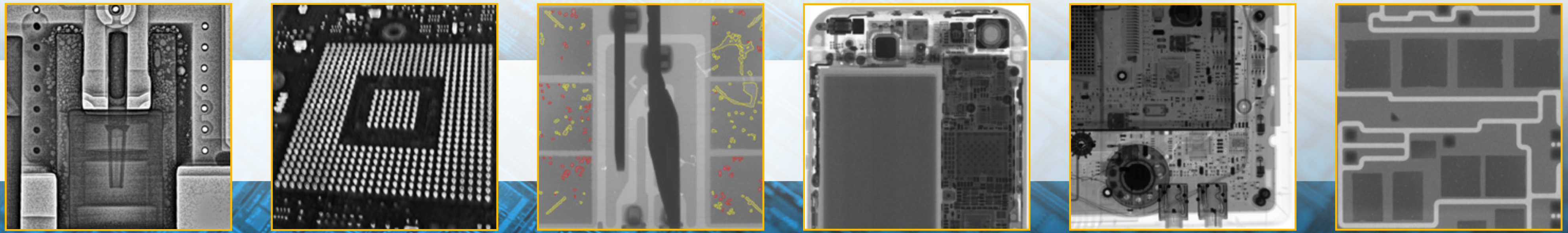
Power Device Cooling Plates

PTH Inspection

Sensor Inspection

LED Inspection

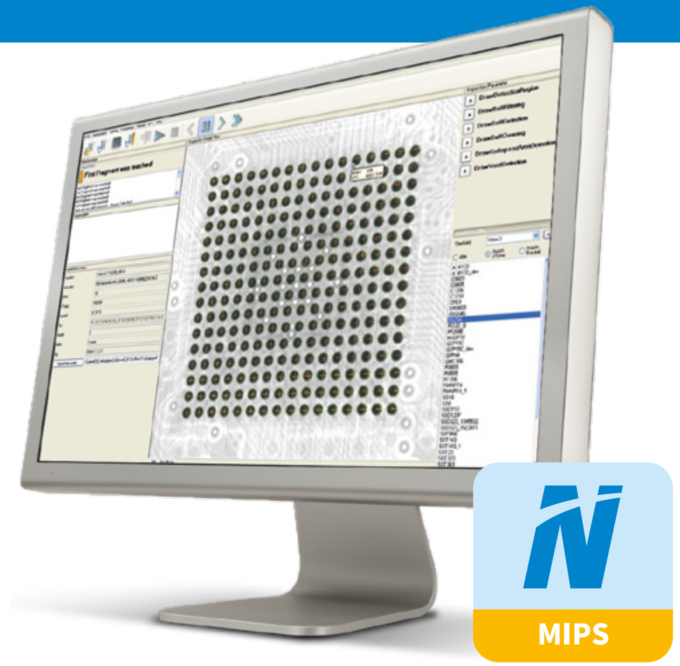
APPLICATIONS



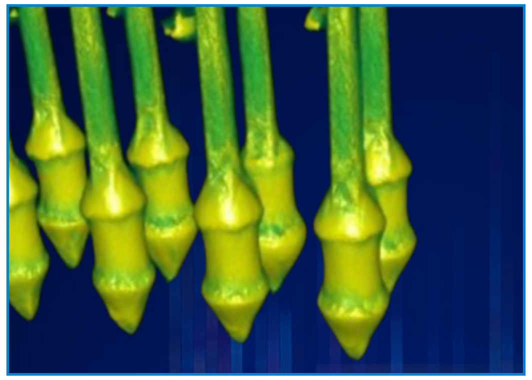
MIPS Software

The MIPS software suite provides a complete and overall solution for a wide variety of X-ray applications.

MIPS software lineup contains specific components for different tasks from the very beginning of the inspection process (CAD creation and import) to the very end (statistical data analysis). This approach leads to a flexible and effective software environment which aligns perfectly with the outstanding capabilities of the Nordson's AXI product portfolio.



MIPS DPCT



Dynamic Planar CT - The next generation of 3D planar inspection

- Accelerated Acquisition - >2× faster than Planar CT.
- Enhanced Data Quality - clear layer separation.
- Superior Reconstruction - brand new 3D algorithm.
- Greater UPH - dramatically increased throughput.
- Larger FoV - increased coverage & shorter cycle times.
- Lower Radiation Dosage - reduced time of exposure.
- Reduced Complexity & CoO - no specialized clamping needed.

Accelerate Your Results

INTELLIGENCE MIPS

AI AutoReview for MIPS Software

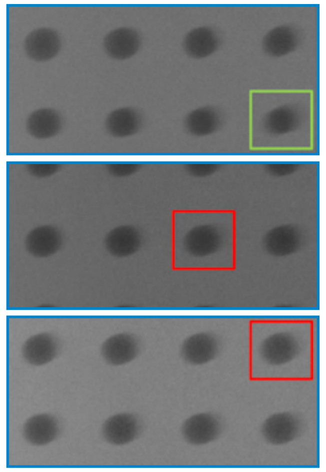
Leverages machine learning and AI to reduce false calls.

- Increased Operational Efficiency - significantly reduce overkill & thus operator workload.
- Greater Confidence - defect classification based on statistical probability (quantitative).
- Better Consistency - reduced variation & subjectivity across operators & lines.
- Continuous Improvement - AI model refinement over time with additional data.

Real Defect detected by AI

False Call filtered out by AI

False Call filtered out by AI



SIGHT AXI

Nordson Sight - Fast, scalable Statistical Process Control (SPC) software

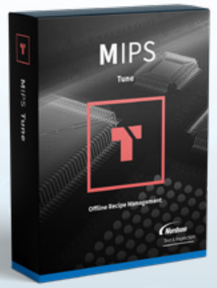
- Analyze - with defect data driven statistics & yield monitoring.
- Visualize - graphs, charts & CAD defect mapping.
- Evaluate - monitor KPIs in real time or over time with trend analysis.
- Report Out - extensive range of customized reporting.
- Warning Notifications - alarms & alerts triggered by definable criteria.
- Focus on what matters to you - customizable dashboard layout & content.
- Deep Dive - significantly more drill down functionality than available via MES.

MIPS SUITE

X-ray Control

AXI System Operation

- AXI execution
- Defect identification
- On the fly recipe creation
- Host communication & environment integration



Tune

Offline Recipe Management

- Offline Recipe Management
- CAD management
- Create & edit recipes
- Defect analysis setup

Verify

Defect Verification

- Inspection result reporting
- Online performance statistics
- Component sentencing
- Multi-platform inspection support (AOI + AXI)

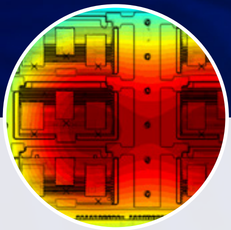
Image Browser

2D & 3D Viewer

- Measurement overlays
- Metadata interrogation
- Image post-processing

Latest Software Release Features

MIPS 5.9



DOSE ESTIMATION

Advanced radiation dose estimation & simulation for X-ray inspection

- Reliable Dose Simulation – verified with two-factor dose measurement testing
- Inspection Recipe Specific – estimates dosage from defined inspection settings
- Accelerates inspection development – with optimization for radiation sensitive devices
- Key Outputs – calculates peak radiation value, location & heatmap on sample CAD
- Traceability – dose data transferred via reporting throughout inspection(s)

MULTI-LINE VERIFY 2.0

Defect verification across multiple lines from a central hub

- Increased Operational Efficiency – centralized verification control
- Greater Overview – wider factory quality control visibility
- Cost & Space Saving – removes the need for a Verify station per line
- Time & Resource Saving – frees up line operators for other tasks
- Cross Platform Support – AOI + AXI verification together in one
- Shared work-balancing – N:N lines & Verify stations
- Quality 4.0 – via SECS/GEM feedback

ON-LINE VERIFY

Verification online at the operator's fingertips

- Embedded Integration – with MIPS Verify on the system workstation, streamlining inspection
- Cost & Space Saving – eliminates the need for a dedicated standalone Verify stn.
- Get Closer to Your Manufacturing – supports advanced engineering modes & first article inspection
- Improved Efficiency – eliminates transport of large verification datasets (3D volumes) over networks

RECIPE COMPARE 2.0

Track & highlight changes between different recipe versions

- Ease of Use – removes the need for detailed manual logging
- Support for HTML reporting format – in addition to existing xml
- Readability – simplified presentation with interactive elements
- Traceability – documented change log to support audit activities

For more information, speak with your Nordson representative or contact your Nordson regional office

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CERTIFIED ISO 9001
UKAS MANAGEMENT SYSTEMS 001
THE QUEEN'S AWARDS FOR ENTERPRISE: INTERNATIONAL TRADE 2020

Nordson Test & Inspection products are patent protected and covered by the patent listed at www.nordson.com.

www.nordson.com/TestInspect

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Nordson
Test & Inspection