Providing the ultimate combination of high-resolution, high accuracy and high speed to improve yields, processes and productivity.

Test & Inspection

Solutions for Semiconductor

Best-in-Class Test, Inspection and Metrology Solutions

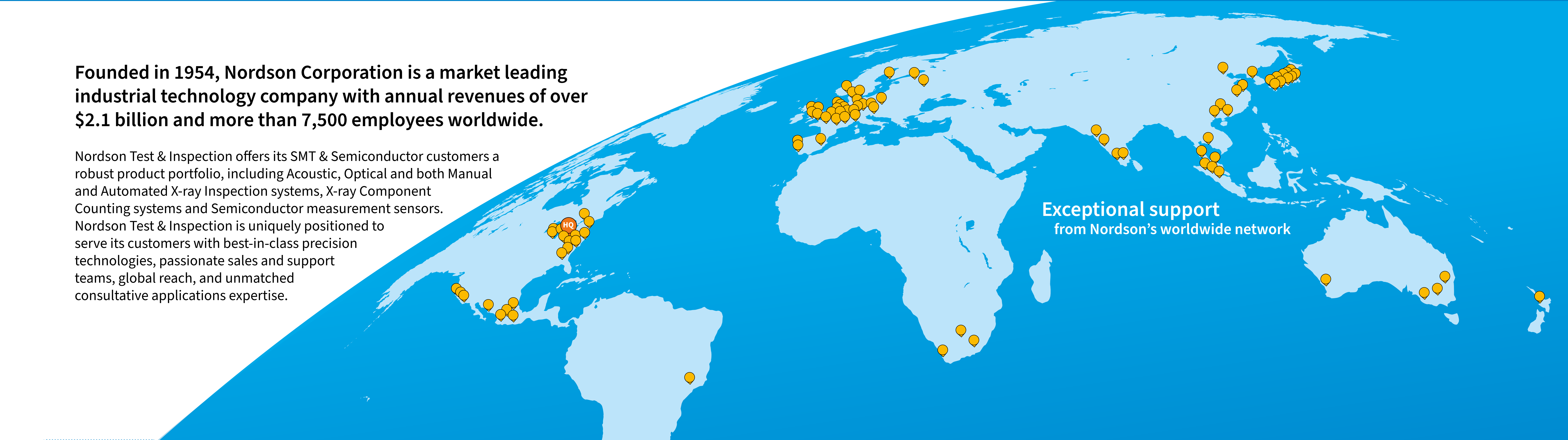
www.nordson.com/TestInspect

Nordson
Test & Inspection

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.



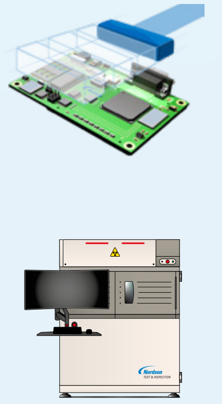
Exceptional support
from Nordson's worldwide network

Nordson
Test & Inspection

MXI Products

Making the Invisible, Visible

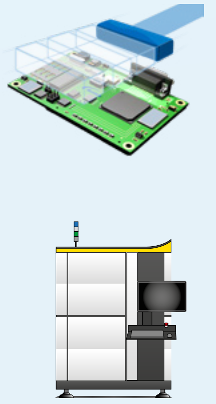
Manual
X-ray Inspection



AXI Products

High Speed High Flexibility

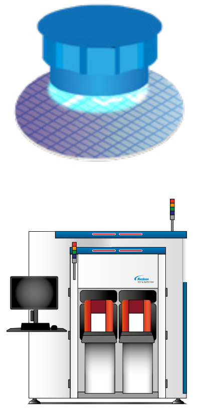
Automated
X-ray Inspection



AXM Products

Measuring the Invisible

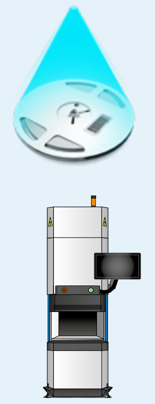
Automated
X-ray Metrology



CC Products

Count On Us™

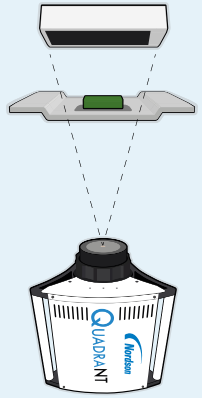
X-ray Component
Counting



XT Products

High Speed High Resolution

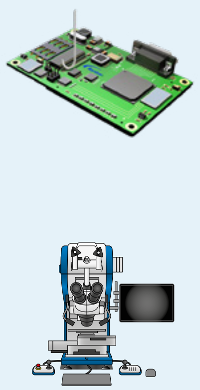
X-ray
Technologies



BT Products

Test Your Design

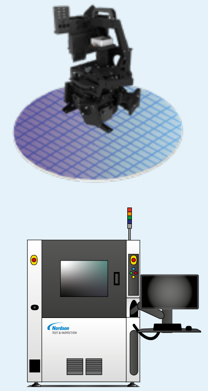
Bondtesters



AOI Products

Proprietary Advanced Technology

Optical Inspection
& Metrology



WS Products

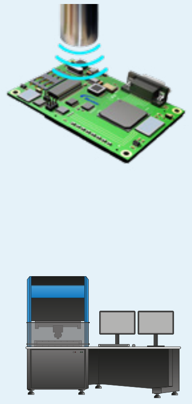
Improve Your Yields

Semiconductor
Metrology Sensors

AMI Products

Qualify Your Design

Acoustic
Inspection



Nordson T&I Best-in-Class Test, Inspection & Metrology

Providing the ultimate combination of High Resolution, High Accuracy and High Speed to Improve Yields, Processes and Productivity

Semiconductor Front End

WaferSense® Semiconductor Front-End Measurement Sensors

When you need the most efficient and effective measurement devices for semiconductor tool set-up and maintenance processes, count on Nordson Test & Inspection for chamber gapping, leveling, wafer handoff teaching, vibration, airborne particle, relative humidity and resistance measurement.

Semiconductor fabs and OEMs value the accuracy, precision and versatility of the WaferSense and ReticleSense measurement portfolio to enable improvements in fab yields and equipment uptime.

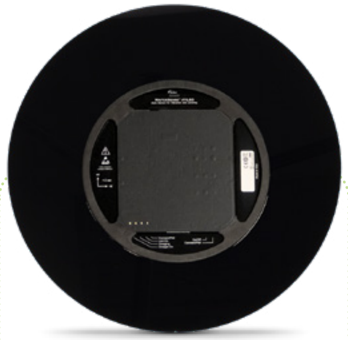
Auto Multi Sensors

Speed measuring leveling, vibration and humidity with a thinner, lighter, all-in-one multi sensor

Monitor humidity when wafers are in the FOUP

*AHS also available for RH

*Also available in reticle-shape AMSR



Auto Vibration and Leveling Sensor

Speed simultaneous vibration and leveling measurements

Speed equipment qualification and shorten equipment maintenance cycles

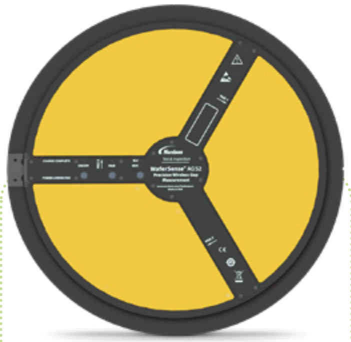
Airborne Particle Sensors

Quickly identify, monitor and troubleshoot airborne particles down to .14 micron

Easily identify when and where the particles originate and measure the effectiveness of cleaning adjustments in real time

IPS - 24/7 detection of small particles in gas and vacuum lines

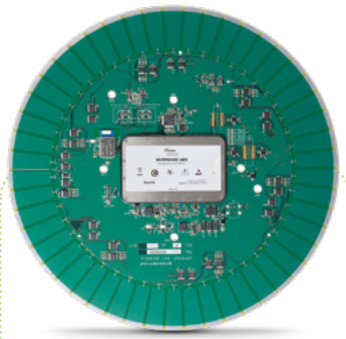
*Also available in reticle-shape APSR



Auto Gapping System 2

Speed non-contact gap measurements and parallelism adjustments under vacuum for semi processes such as thin film, deposition, sputtering and etch

Improve uniformity, tool availability and repeatability

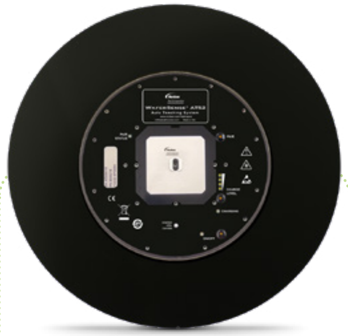


Auto Resistance Sensor

Shorten equipment maintenance cycles with 4-wire resistance sensor

Predict when a tool needs maintenance with quantitative analysis of measured mean resistance over time

Improve cell-to-cell process uniformity with objective and repeatable resistance measurements



Auto Teaching System

“See” inside equipment to capture dimensional offset data (x, y and z) to quickly teach wafer transfer positions

Lower particulate contamination with accurate wafer hand-off calibration, proper alignment and set-ups

*Also available in reticle-shape ATSR

Auto Centering System

“See” inside equipment to capture dimensional offset data (x, y and z) to quickly center wafer transfer positions

Semiconductor Mid End

Ultimate Combination of High Speed, High Accuracy and High Resolution

Widest Portfolio of Best-In-Class Test, Inspection & Metrology Solutions for Mid End Semiconductor Wafer-Level and Advanced Packaging Applications.

The hot topic in semiconductor engineering right now is 3D design. While this is being tackled in a few forms, the need to go 3D is simple – the reduction of distance and therefore of the resistance/temperature. This is one of the main factors driving the density devices and with that the challenges in inspection. Given that, high resolution imaging is clearly required as well as multiple techniques and technologies.

AOI

NanoResolution MRS Sensor

Fast, 100% 3D/2D automated inspection and metrology

Multi-Reflection Suppression® (MRS®) technology

For features down to 25 micron at 25 WPH, 2-3X faster than competitive technology

AXM

XM8000

Unprecedented, automated in-line X-ray metrology and defect review

Powered by QuadraNT™ X-ray and AspireNT™ detector technology

For optically hidden features including voiding and fill levels, overlay, critical dimensions and more, with high throughput

MXI

Quadra Pro

Superior 3D/2D manual inspection

Powered by QuadraNT™ tube and Onyx® detector technology

For voiding inspection with sub-micrometer accuracy for features down to 100µm. Higher resolution, faster frame rate and lower noise

AMI

SpinSAM

Fast, acoustic 100% inspection.

Powered by SpinSAM™ transducer technology

For applications down to 75µm with >95% detectability at 40WPH with 100µm resolution

AMI

AW300

Fast, acoustic 100% inspection.

Powered by C-SAM® transducer technology

For applications down to 75µm with >95% detectability at 5.8WPH with 100µm resolution. Widest frequency range ever achieved in a production environment

BT

4800 Integra Plus

Factory-integrated test solution with automate shear and bump pull testing

Powered by Core Cartridge Technology

For automated bond testing with maximum throughput in an operator free environment

Semiconductor Back End

Solutions for Back-End Semiconductor Applications

Widest Portfolio of Best-In-Class Test, Inspection & Metrology Solutions for Back End Semiconductor Applications with the ultimate combination of High Speed, High Accuracy and High Resolution.

AOI

SQ3000S

Superior, 100% inspection and metrology

Powered by Multi-Reflection Suppression® (MRS®) technology

World's first and only in-line system with CMM capability

For semi packaging, socket metrology, wire bond and die, solder balls and bumps, microsensors, IC, LGA, epoxy and underfill, substrate epoxy, photoresist on substrate

SQ5000Pro

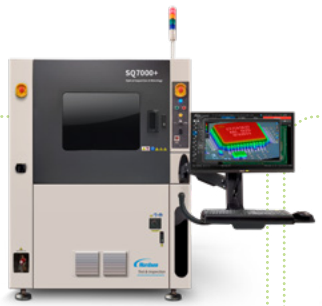
Superior, 100% inspection and metrology

Powered by Multi-Reflection Suppression® (MRS®) technology

World's first and only in-line system with AOI, CMM & SPI capability

High Resolution & High Speed sensors

For semi packaging advanced /next-generation applications



SQ7000+

Superior, 100% inspection and metrology

Powered by Multi-Reflection Suppression® (MRS®) technology

World's first and only in-line system with CMM capability with an even higher resolution

For semi packaging advanced /next-generation applications

SQ3000M2

Superior inspection and metrology

Powered by advanced Focus Variation measurement sensor technology with proprietary high-resolution optics

For advanced microelectronics including wirebond, die placement and substrate applications.

Optical Sensors & Metrology

High Speed 3D inspection is mandatory in an industry where continuous decrease in the size of electronics packaging, combined with the increase in density is the daily challenge. Nordson Test & Inspection Solutions are using multi-view 3D sensors and parallel projection makes defect detection as fast and as accurate as it is necessary for today's security.

AMI

DF2400

Superior, high-speed acoustic automated in-line inspection

Powered by Waterfall transducer and FACTS^2

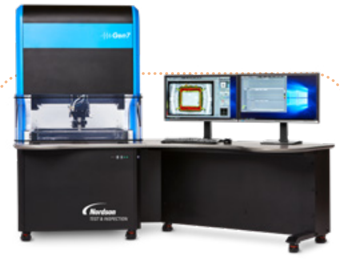
For simultaneous inspection of two trays or modules with precision of +/- 0.5µm. Multiple scanning heads improves throughput ~2-7x previous tools

D9650

Superior lab-based acoustic microimaging inspection

Powered by C-SAM technology

Delivers unrivalled accuracy and robustness for failure analysis, process development, material characterization and low volume production inspection



Gen7

Superior lab-based, operator controlled and fully automated in-line acoustic inspection

Powered by C-SAM technology

For detecting delamination, voiding with the most sophisticated microscope for lab analysis and specialized high-resolution applications

Semiconductor Back End

Solutions for Back-End Semiconductor Applications

Non-destructive testing on semiconductor devices, during their manufacture and their subsequent use in PCB's has become ever more important for checking product quality without compromising productivity.

AXI

XS

Superior automated X-ray inspection system

Powered by NT4 X-ray tube and CMOS DFP detector

For semiconductor samples, wire bonds, flip chip, voiding for single/multi-panels or samples in trays

AXI

X#UHP

Superior automated X-ray inspection system

Powered by QuadraNT™ and Aspire™ technology

For component level inspection and high-power electronics modules up to fully assembled modules
Focused platform with versatile fields of use

MXI

Quadra Pro

Superior 3D/2D manual inspection

Powered by QuadraNT™ tube and Onyx® detector technology

For voiding inspection with sub-micrometer accuracy for features down to 100µm.
Higher resolution, faster frame rate and lower noise

X-ray & Test Systems

The use of X-ray inspection not only provides a non-destructive test but also allows investigation within optically hidden areas such as the wire bonding within packages and the quality of post solder reflow of area array devices like flip chips.

BT

STELLAR 4000

The bondtest platform for all manually operated pull and shear production bond testing.

Configure as a simple bond wire pull tester, or upgrade for ball shear, die shear, bump pull, and tweezer pull testing.

4000Plus

Superior bond testing and R&D prototype characterization

Powered by Core Cartridge Technology

For wire and die adhesion and pull strength testing capable of a multitude of test types including micro-materials and standard bond tests for R&D or quality control

4600

Component quality control without errors and with higher repeatability

430mm x 320mm ultra-high precision test area

20kg shear, 10kg pull at up to 5mm/s

Shear/pull on multiple components in a batch, all operator-free

Nordson Software Solutions

INTELLIGENCE

Nordson Intelligence - Accelerate Your Results. Designed for production, for flexible, rapid changes

A family of algorithms delivering significant throughput improvements and detection capabilities not possible through traditional approaches. Nordson Intelligence provides users the autonomy to enhance their inspection results, and quickly deploy solutions for different types of applications.

WS **AOI** **AMI**

SPECTRUM

N-Spectrum

Extremely intuitive software. Real-time numerical and visual feedback for applications including chamber gapping, leveling, wafer handoff teaching, vibration, airborne particle, relative humidity, and resistance measurement. Review functionality integrated. Replays log file data for review and analysis.

AOI SPI CMM

N-AOI SPI CMM

Advanced 3D AOI software suite is packed with ultra-fast programming capabilities, auto tuning and enhancements which speed up the process. CMM Coordinate measurement (CMM) software provides, 100% metrology-grade measurement on all critical points, including coplanarity, distance, height and more. SPI Software Suite offers seamless integration of all applications, teach, inspection, defect review and real-time SPC.

SPINOPS

N-SpinOps

SpinOps Software Suite uses optimized digital imaging algorithms analyses and verify the leading image quality. Its programming offers a fully automated inspection and defect analysis as well as a seamless host communication with remote set-up and control.

SONOLYTICS

N-Sonolytics

Sonolytics software suite provides a complex acoustic echo analysis and locates defects in multi-layer samples. It is developed for complex device analysis, control of water, heating and de-gassing functions based on the highly qualified images.

SIGHT

Nordson Sight - Control Your Process

Nordson Sight™, a complete SPC solution, offers full-fledged machine-level to factory-level SPC capability, historical analysis and reporting tools. Nordson Sight provides complete traceability for effective process verification and control resulting in improved yields.

AXI **MXI** **AXM** **BT**

MIPS

N-MIPS

Modular and easy to handle software for quick program generation Unique and automated calibration procedures ensuring machine-to-machine program portability Highly customizable algorithm library for full defect coverage. Full palette and combination of inspection techniques. Comprehensive statistical tools for process control and good/bad sorting. Smart factory integration and reduce false calls.

REVALUTION

N-Revalution

Proprietary software technology developed for high end semiconductor application. Sophisticated algorithms create faster and extremely high resolution 2D/3D images with Nordson's next gen X-plane mode. CT-like X-plane models with high resolution, sample details and reduced artefact. Advanced reconstruction engine incorporating shudder correction.

AXM

N-AXM

Software created specifically for Advanced Semiconductor 2.5D and 3D Packaging with full factory host support (SECS/GEM). Utilising algorithms leveraging Nordson's proprietary Artificial Intelligence (AI) and Machine Learning (ML) Technology. Providing fast, repeatable, automated defect detection and metrology for wafers, panels and trays containing singulated packages or dies.

PARAGON

N-Paragon

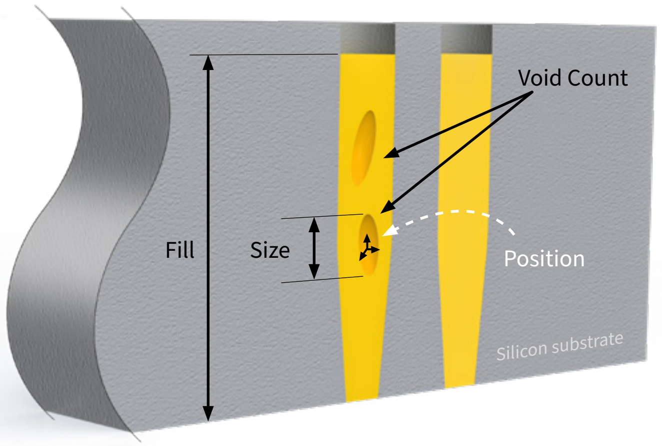
Intelligent bond testing software with a quick access to advanced functionality: automatic GR&R calculation, built-in diagnostics, a unique database search engine wizard and a superior reporting.

AXM Products

Applications

TSV Metrology

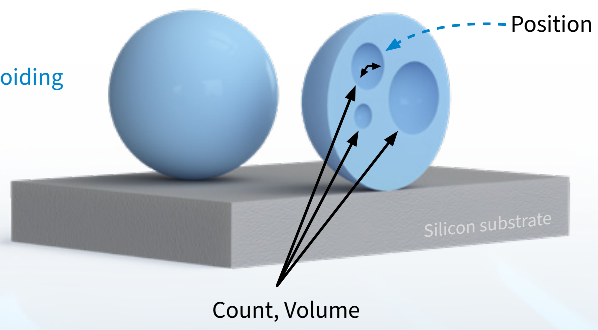
Nordson XM8000-7 delivers high throughput metrology of TSVs. Advanced 3D techniques are used to analyze shape, fill and voiding at sub-micron levels.

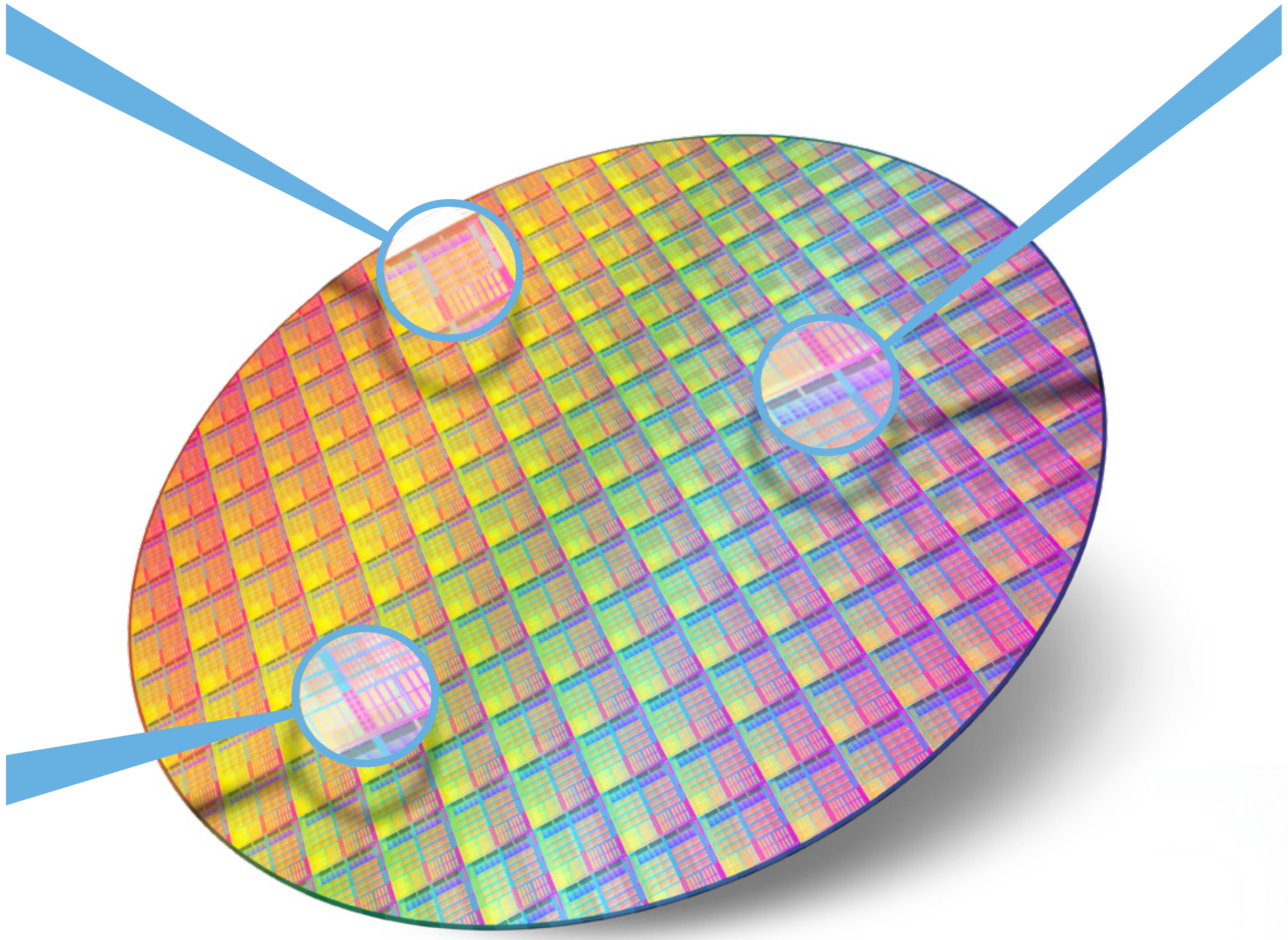


Wafer Bump Metrology

Nordson XM8000-5 measures wafer bump characterization including voiding, presence, position, shape, size and bridging. Unlike optical tools, XM8000-5 can measure voids within the wafer bump.

Presence
Profile
Position
Percentage Voiding



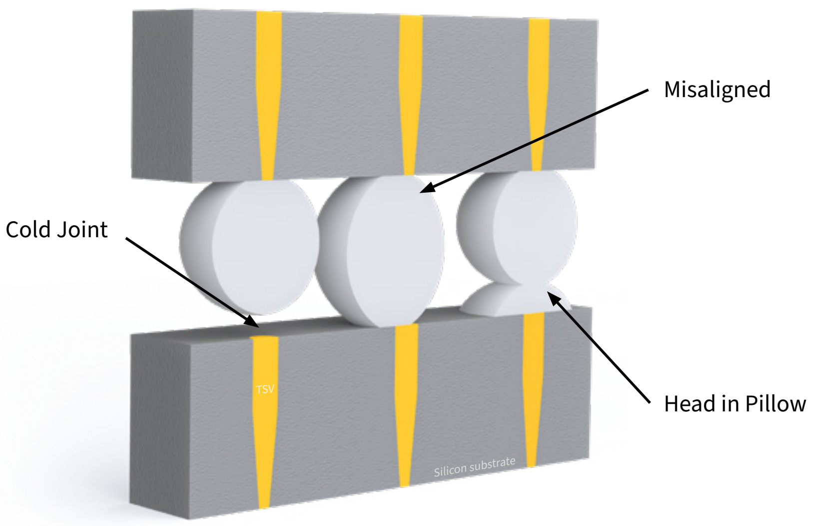


Wafer Level Packaging

Nordson XM8000 enables in depth analysis of all forms of wafer level packaging. This analysis is customized for such defects such as Cold Joints, Head in Pillow (HiP), misalignment and missing features.

The intelligent, self learning capability of XM8000 allows unrivaled detection of micro defects in complex packages.

Layer Alignment

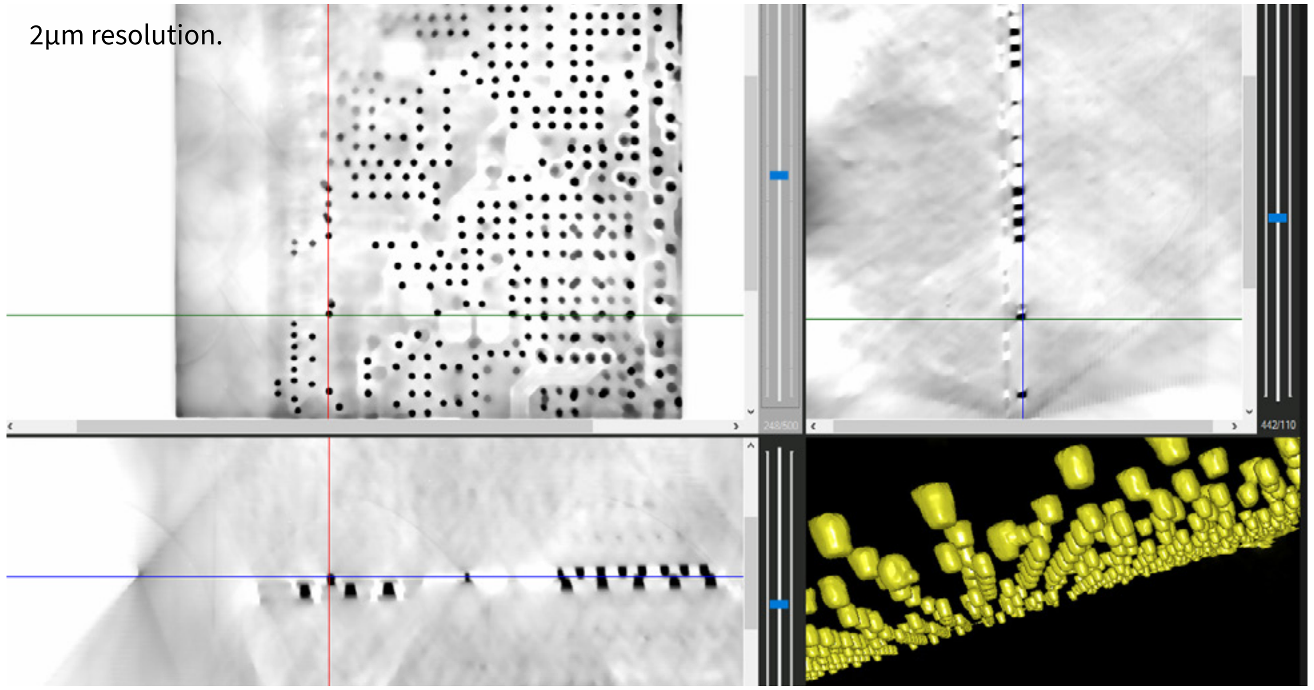


MEMS
FPGA
RF
CIS
Memory
Photonic

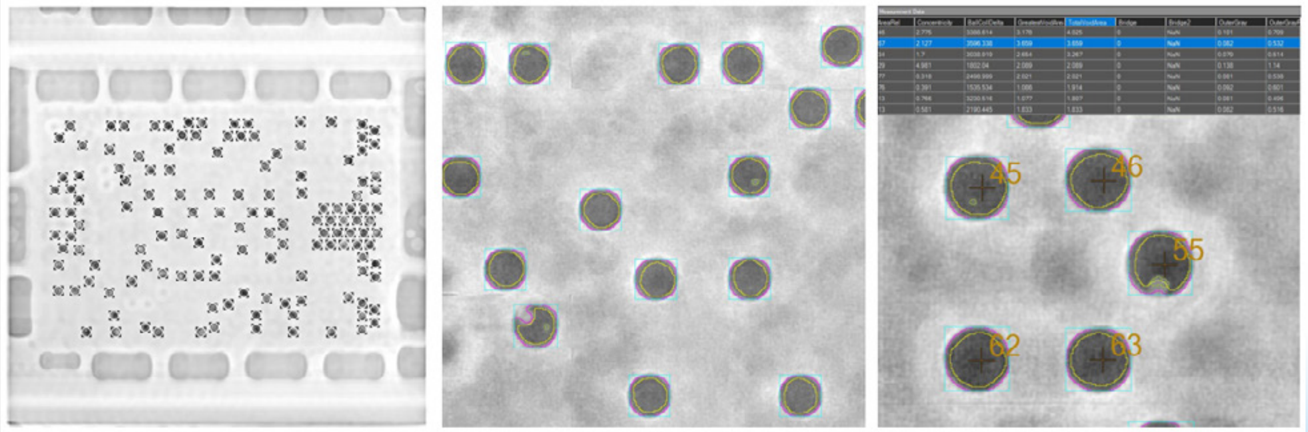
AXI Products Applications

Dynamic Planar CT - Flip Chips

2µm resolution.



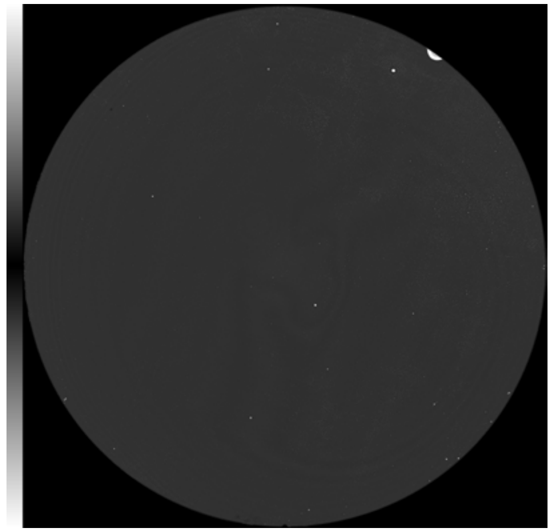
Dynamic Planar CT - uBGA, Flip Chips



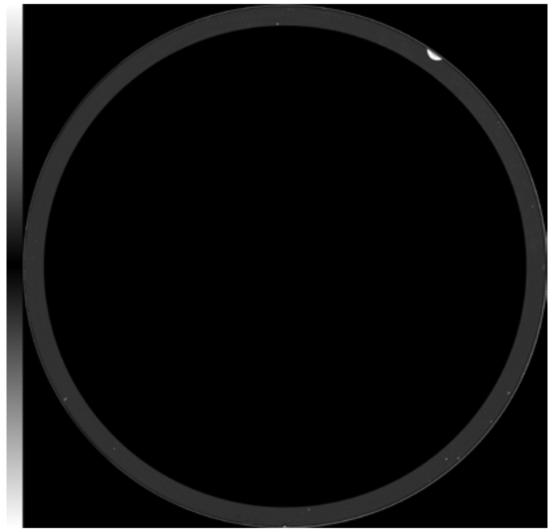
AMI Products Applications

Edge Scan

A revolutionary feature that allows for higher resolution where it is needed at the perimeter of the wafer. This targeted approach improves efficiency allowing for faster detection of defects at the edge of the wafer.



100µm full area wafer scan @ 41 WPH



100µm Edge Scan @ 95 WPH

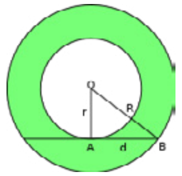
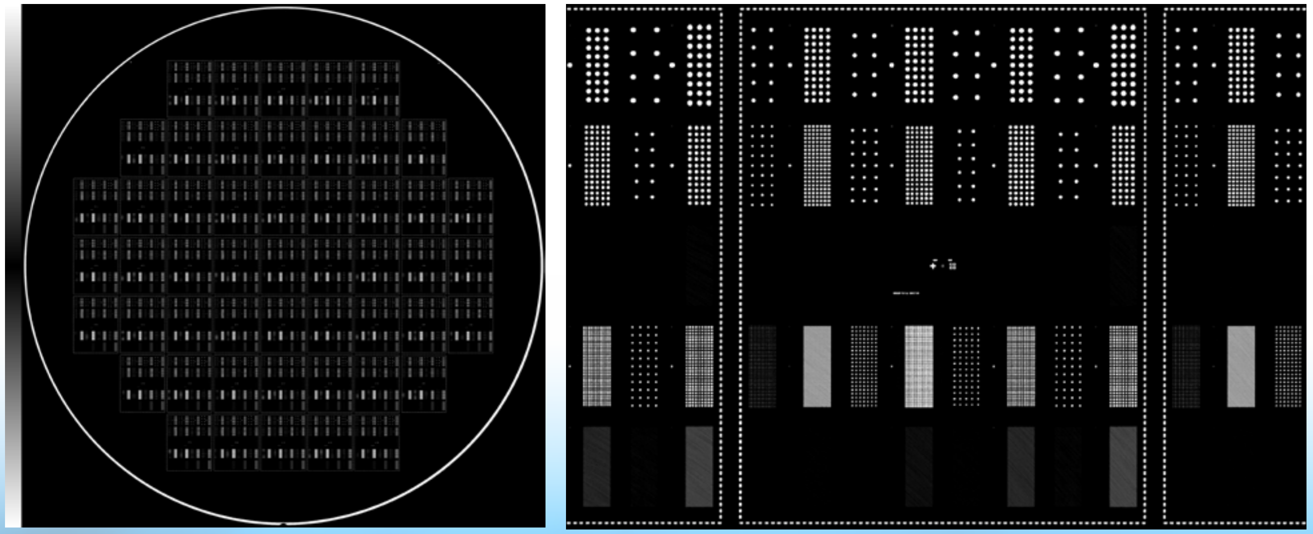


Image Generation



Transducer: H115/050 • Scan Size: 302x302 mm • Pixel Pitch: 25µm • Scan Time: 76min 47sec

Competitive Advantages

Technology Leadership

Differentiated technology; Best-in-Class Test, Inspection & Metrology systems and sensors.

Proprietary technology ~250 active or pending patents in the portfolio.

Algorithm expertise.

Widest portfolio of superior solutions across the SMT and Semiconductor segments.

Market creator & Technology pioneers.

Innovator, continued investment in technology road-maps.

Operational Excellence

Global footprint, Global manufacturing.

Strategic business discipline.

Commitment to Environment, Social and Governance (ESG) pillars:

- Commitment to reducing carbon footprint.
- Corporate social responsibility, corporate donations & employee wellness.
- Solid governance policies and procedures.

Customer Intimacy / Centricity

Market creator solving customer challenges.

Meaningful customer relationships focused on meeting/exceeding customer needs into the future.

In-depth application expertise.

Dedicated customer support.

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

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