



# Test & Inspection

**Solutions for SMT Manufacture**

[www.nordson.com/TestInspect](http://www.nordson.com/TestInspect)

  
**Nordson**  
TEST & INSPECTION



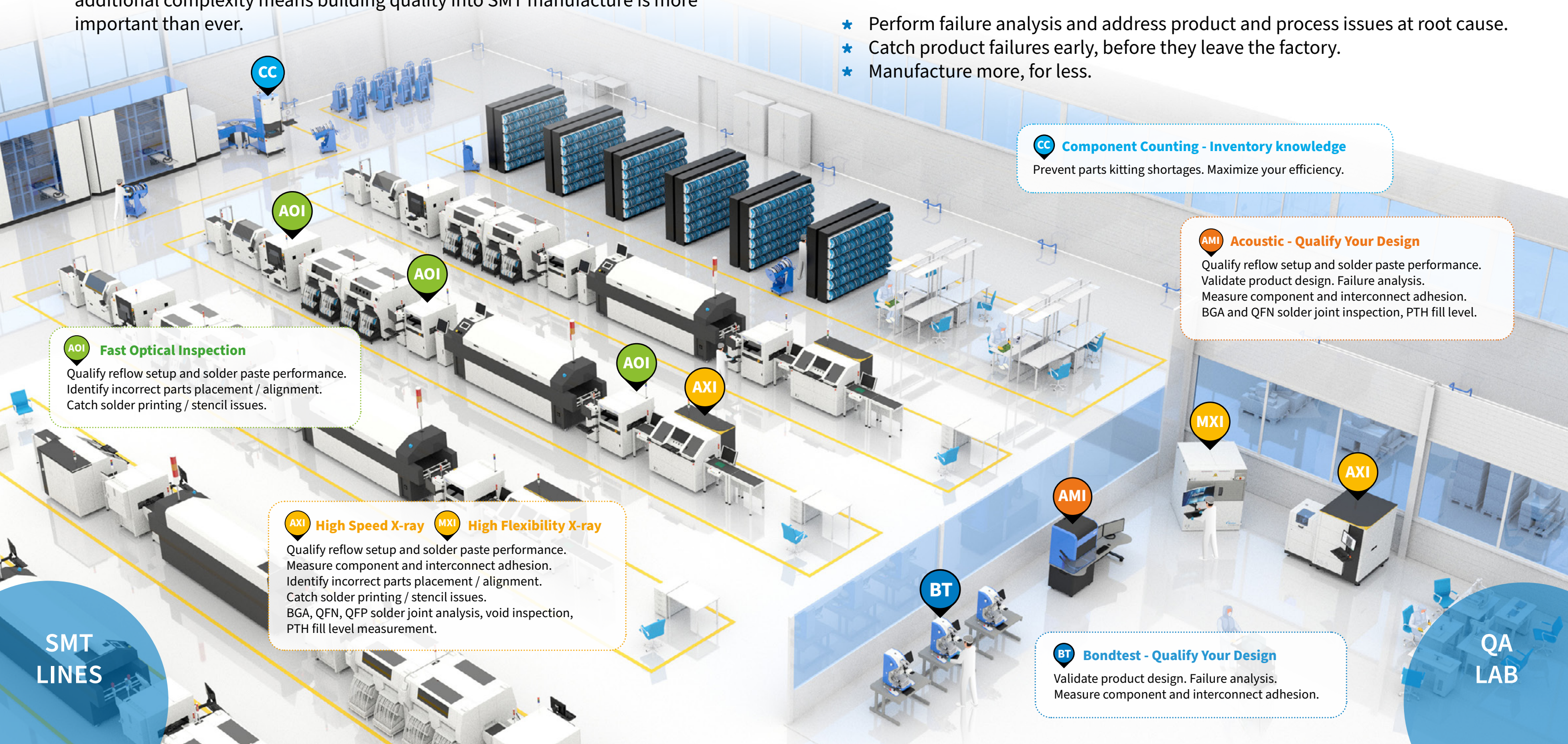
# Optimize Your SMT Process

The electronics industry is an exciting marketplace. Component sizes are getting smaller, enabling more compact and powerful products. However, this additional complexity means building quality into SMT manufacture is more important than ever.

# Improve Yields & Productivity

Nordson provides an industry leading portfolio of TEST & INSPECTION solutions for building quality into your manufacturing line.

- ★ Perform failure analysis and address product and process issues at root cause.
- ★ Catch product failures early, before they leave the factory.
- ★ Manufacture more, for less.



CC

## CC Component Counting - Inventory knowledge

Prevent parts kitting shortages. Maximize your efficiency.

AOI

AOI

AOI

AXI

## AOI Fast Optical Inspection

Qualify reflow setup and solder paste performance. Identify incorrect parts placement / alignment. Catch solder printing / stencil issues.

AXI

## AXI High Speed X-ray

MXI

## MXI High Flexibility X-ray

Qualify reflow setup and solder paste performance. Measure component and interconnect adhesion. Identify incorrect parts placement / alignment. Catch solder printing / stencil issues. BGA, QFN, QFP solder joint analysis, void inspection, PTH fill level measurement.

AMI

## AMI Acoustic - Qualify Your Design

Qualify reflow setup and solder paste performance. Validate product design. Failure analysis. Measure component and interconnect adhesion. BGA and QFN solder joint inspection, PTH fill level.

MXI

AXI

AMI

BT

BT

## BT Bondtest - Qualify Your Design

Validate product design. Failure analysis. Measure component and interconnect adhesion.

SMT  
LINESQA  
LAB



# High Speed X-ray

## High-speed, autonomous inline and semi-inline X-ray Inspection systems

Ensure the quality of component placement, solder reflow and selective soldering with Nordson’s range of high speed, autonomous X-ray inspection products. Offering MES/SECS-GEM integration and FLI connectivity to pass component fault locations directly to Nordson manual X-ray for second line, high resolution verification.

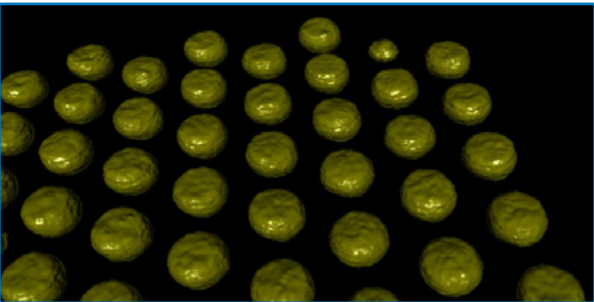
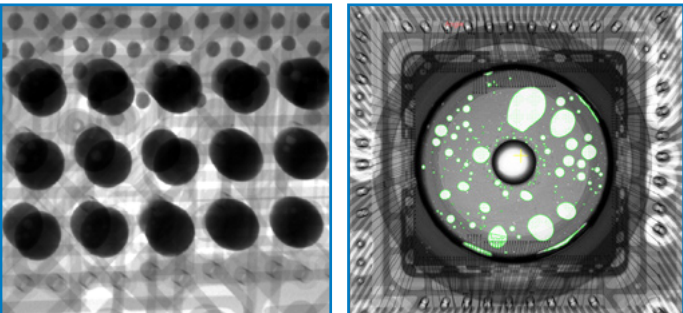
| High Speed   | High Flexibility  | High Angle  |
|--|---|---|
|  |  |   |
| <b>X-series</b>  | <b>X#-series</b>  | <b>XT-series</b>  |
| High speed inline AXI platform   | Flexible inline AXI platform  | Highly flexible autonomous X-ray Inspection system for extreme angle off-axis imaging |
| Sample size: 80-460 x 80-360 mm  | Sample size: 100-510 x 80-400 mm  | Sample size: 100-400 x 50-350 mm  |
| Inspection area: 460 x 360 mm  | Inspection area: 480 x 400 mm   | Inspection area: 400 x 350 mm   |
| Resolution: Up to 3 µm/pixel   | Resolution: Up to 3 µm/pixel  | Resolution: Up to 3 µm/pixel  |
| Imaging techniques: 2D, 2.5D, 3D Planar CT, SFT™                                   | Max. sample weight: 5 kg<br>Imaging techniques: 2D, 2.5D, 3D Planar CT, SFT™        | Max. sample weight: 5 kg  |

Nordson’s autonomous X-ray Inspection strategy uses a dynamic approach, combining the below imaging techniques to ensure the best solution for every inspection task.

### 2D and 2.5D inspection

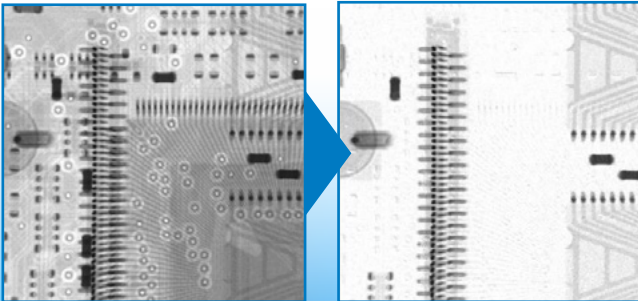
Orthogonal (top-down) imaging for the inspection of simple cases, such as non-overlapping devices.

Oblique view image acquisition enables the inspection of PTH joints, head in pillow (HiP), overlapping parts on double sided PCBs and PoP/SiP design packages.



### Planar CT

The ultimate solution for heavily overlapping devices. In case a simple 2.5D image does not provide a solution, the minimum number (max. 16) of off-axis images are captured, and a reconstruction is performed. Planar CT enables the inspection of horizontal and vertical slice images of the board, hence offering the possibility to separate parts overshadowing each other.



### SFT™ – Slice-Filter-Technique

Patented imaging technique to remove disturbing background structures of the inspection image. SFT™ offers an extremely fast alternative to filter out devices that are not being inspected and provides the possibility to analyze the part of interest.

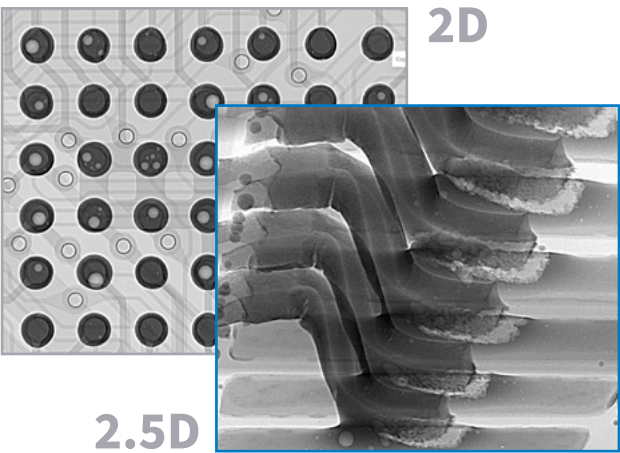
# High Flexibility X-ray

## High flexibility and industry leading resolution

- ★ Manually inspect hidden solder joints to confirm optimal reflow and process setup.
- ★ Verify rework and selective soldering.
- ★ Perform failure analysis and reverse engineering.

Our manual X-ray Inspection products are fast to use with easy to setup automatic inspection recipes. Ideal for high mix, lower volume inspection and ultimate image resolution.

| Flexible Inspection   | High Resolution   | Ultimate Failure Analysis Resolution  | Large Panel Inspection  |
|---|---|---|---|
|  |  |  |  |
| <b>QUADRA<sup>®</sup> 3</b>   | <b>QUADRA<sup>®</sup> 5</b>   | <b>QUADRA<sup>®</sup> 7</b>   | <b>Ruby XL</b>  |
| 0.95 µm Feature recognition   | 0.35 µm Feature recognition   | 0.1 µm Feature recognition  | 0.5 µm Feature recognition  |
| 7,500x Magnification  | 45,000x Magnification   | 68,000x Magnification   | 23,400x Magnification   |
| 510 x 445 mm<br>20 x 17.5" Inspection area  | 510 x 445 mm<br>20 x 17.5" Inspection area  | 510 x 445 mm<br>20 x 17.5" Inspection area  | 964 x 672 mm<br>37.9" x 26.4" Inspection area   |



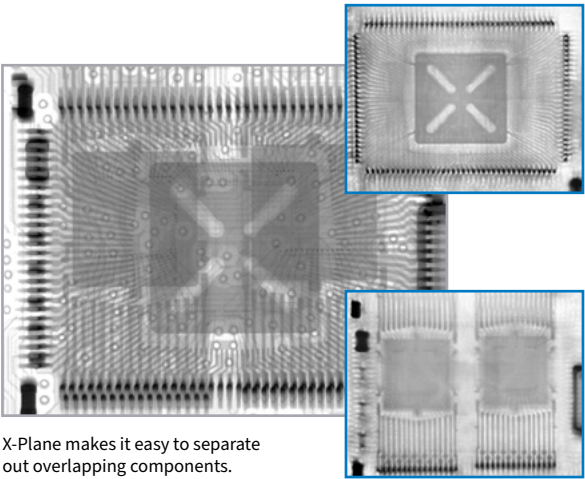
## 2D and 2.5D inspection

2D top down views make it easy to see voiding, and defects such as opens and bridging.

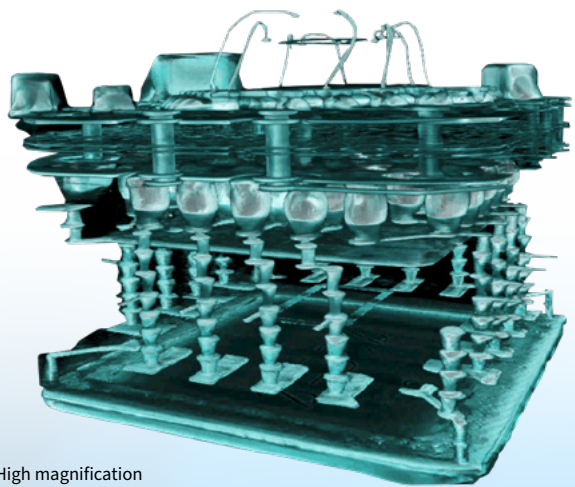
2.5D oblique angle is great for inspecting fill level, identifying head in pillow (HiP) defects and cold joints.

## X-Plane 3D

View individual 2D slices anywhere on the board. X-Plane<sup>®</sup> image slices filter out other components that may obscure the view, for example on the other side of the PCB. Review slices at the top and bottom of BGA joints to see interfacial voiding. Side on slices make it easy to confirm head in pillow defects.



X-Plane makes it easy to separate out overlapping components.



High magnification µCT of two integrated circuits attached to a double sided PCB.

## 3D µCT

The ultimate technique for failure analysis. The µCT accessory is quick to use and allows you to see features that are obscured in 2D and 2.5D images. Open up a whole new world of failure analysis inspection.

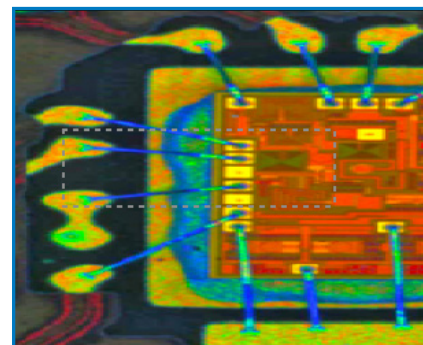


# Optical Inspection & Metrology

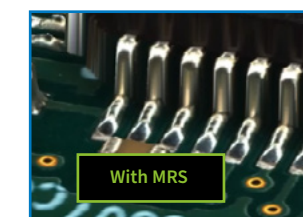
# Powered by MRS® Technology

## Industry leading automated optical inspection systems

Nordson's Optical Inspection and Metrology systems offer superior performance, powered by sophisticated algorithms for the ultimate combination of high-speed, high resolution and high accuracy. Significantly speed set-up, simplify processes, reduce training efforts and minimize operator interaction with advanced ML and AI software for automated optical inspection and coordinate measurements of critical features – saving time and expense. Real-time SPC monitoring provides valuable yield management.



The Multi-Reflection Suppression® (MRS®) sensor's unique architecture simultaneously captures and transmits multiple images in parallel while proprietary 3D fusing algorithms merge the images together resulting in ultra-high quality 3D images, high-speed inspection and metrology, and improved yields and processes. MRS technology delivers unmatched accuracy by meticulously identifying and rejecting reflection based distortions caused by shiny components and surfaces. Effective suppression of multiple reflections is critical for highly accurate inspection and measurement, making MRS technology an ideal solution for a wide range of applications including those with very high quality requirements.



### AOI, SPI and CMM



#### SQ3000+

Advanced SMT, advanced packaging, and other high-end inspection and metrology applications

High speed, high accuracy and an even higher resolution 5µm, sensor

5µm MRS® Sensor Technology

### AOI, SPI and CMM



#### SQ3000

SMT and SEMI inspection and metrology applications

High speed, high accuracy and high-resolution

MRS® Sensor Technology

### CMM



#### SQ3000-CMM

SMT and SEMI inspection and metrology applications

High speed, high accuracy and high-resolution for coordinate measurements

MRS® Sensor Technology

### SPI



#### SE 3000

SMT inspection applications

High speed, high accuracy and high-resolution for dedicated SPI applications

Dual-Mode MRS Sensor Technology

### High Resolution



#### M2

Microelectronics and wafer inspection

Submicron resolutions to 0.35 µm

Metrology and AFVM tools

High resolution dual sensor 2D or 3D

### High Speed



#### FX-940

SMT, THT and conformal coating inspection

RGB, UV or multi side light

3D +2.5D +2D technology

### Dual Side Inspection



#### FX-942

SMT, THT and conformal coating inspection

Dual side up to 10 cameras configuration

2.5D +2D Technology

# Qualify Your Design

# Test Your Design

# Maximize Efficiency

## Discover solder voids, underfill voids and counterfeit devices with Acoustic Products

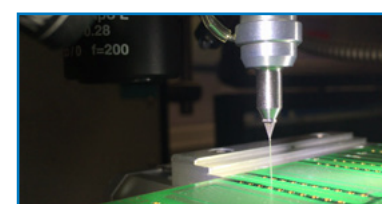
Nordson's acoustic product line is the most trusted authority for non-destructive internal analysis, assuring accuracy and providing the vital data needed for failure analysis decisions throughout the production process.



## Ramp up new product designs into manufacture, fast

Nordson Bondtesters allow you to accurately measure the strength of component adhesion to the PCB.

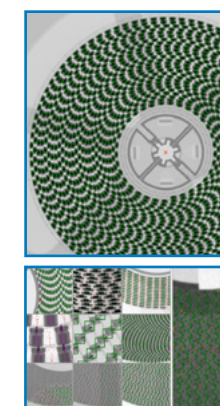
Qualify new designs prior



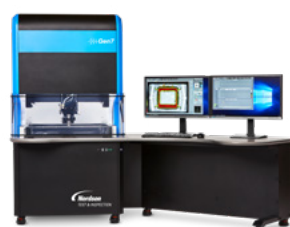
to manufacture with the fully featured 4000Plus™, and scale up to production with the 4600 Automatic Bondtester.

## Prevent component shortage line stops with X-ray counting

Inventory knowledge is essential for modern industry. Whether you are a manufacturer, supplier or broker, live assurance of correct inventory in the MRP system minimizes stock, labor, errors and costs ensuring customer confidence and trust. The Assure X-ray Component Counter keeps SMT lines running by ensuring sufficient components are available before the production run.



### Complex Advanced Imaging



#### GEN7™ C-SAM®

Complete analysis faster than ever with advanced hardware, new features, and analysis.

Best image control and gain with automatic pulser selection for either high or low frequency applications.

350 x 350 mm Inspection area

Fastest acquisition time with five individual linear motors

Save time, edge finding and auto focusing capabilities with auto scan

Direct online support and user application support

### Flexible Inspection



#### D9650 C-SAM®

Flexible configuration for a variety of applications

Ideal for FA, process development, material characterization, low volume production or other lab inspections.

314 x 314 mm Inspection area

Fast acquisition time with a linear scanning motor

Save time, edge finding and auto focusing capabilities with auto scan

Direct online support and user application support

### Qualify New Product Design



#### 4000Plus

Test new ideas and conditions with unique test modes

160mm x 160mm precision test area

200kg shear, 50kg pull at up to 5mm/s

SMD shear/pull, hot bump pull (HBP), and track peel individual components, flex or PCBs

### Automate The Production Test Cycle



#### 4600

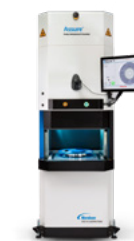
Component quality control without errors and with higher repeatability

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

### Advanced Automatic Counting



#### Assure™ Pro X-ray Component Counter

>99% counting accuracy on most components

Same features as standard Assure with included benefits of automated, intelligent barcode label reading and identification. Prevents operator error

### Fully Automatic Inline Counting



#### Assure™ Flex X-ray Component Counter

>99% counting accuracy on most components

Complete reel counting flexibility. Complete counting solution for every workflow, from walk up operator loading to inline operator free

Direct connection to storage towers/rooms



# Trust Our Experts

## Regional support, quick reaction

Nordson's regional service and application centers together with our established support network guarantees a fast, local response.



## Nordson product care and health plans

Maximize system uptime and throughput with Nordson's comprehensive range of care and health plans.



## Knowledge

Get the most from your equipment with on-site and regional product training. Nordson regional service and support partners are extensively trained, qualified and audited to a high level providing responsive, accurate support.



## Find out more with the X-ray inspection guide

The comprehensive guide shows you how to find defects quickly using X-ray inspection. Make pass/fail judgements on a range of commonly found defects, and understand where in the production process the defect may have occurred.



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

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