

# Prove Your Quality

**EXPLORER™**



# EXPLORER™ one

**X-ray Inspection**

[www.nordsondage.com](http://www.nordsondage.com)

**Nordson**  
DAGE

# The Electronics People

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.

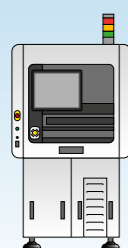
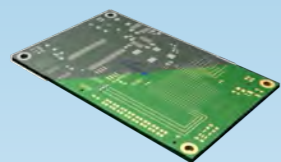
Nordson offers a wide range of products which are focused on providing process, test and inspection solutions for the electronics and semiconductor industry. Whether you need to prepare a PCB using Nordson MARCH plasma treatment technology, or check for package level delamination with Nordson SONOSCAN acoustic inspection, we provide best in class technology solutions for PCBA and package level electronics manufacture, and the global support network to keep you running and minimize downtime.

Guaranteed support from Nordson's worldwide network



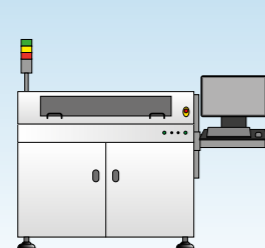
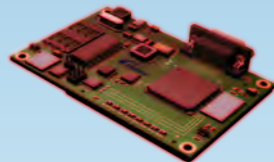
## Nordson MARCH

Plasma treatment and processing equipment for the packaging of microelectronics from wafer level through to PCB.



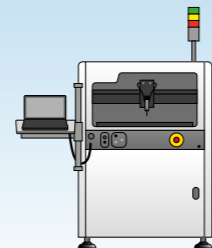
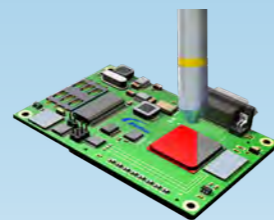
## Nordson SELECT

Selective soldering systems including standalone, in-line and multi-station modular systems for demanding soldering applications.



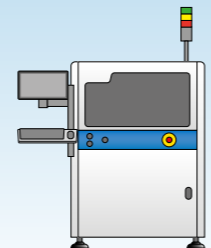
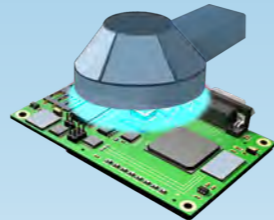
## Nordson ASYMTEK

Automated fluid dispensing and conformal coating systems for a wide range of electronics applications.



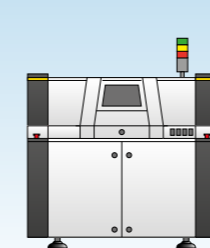
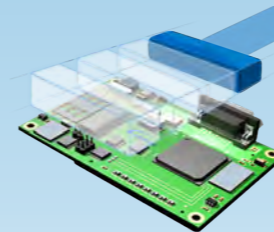
## Nordson YESTECH

Advanced automated optical metrology inspection solutions for PCBA and microelectronics production.



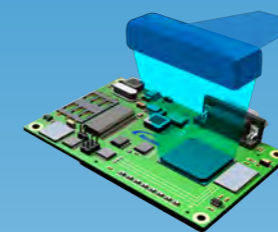
## Nordson MATRIX

High speed in-line X-ray inspection solutions for ensuring the quality of critical electronics devices, components, printed circuit boards, castings and medical parts.



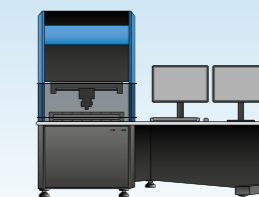
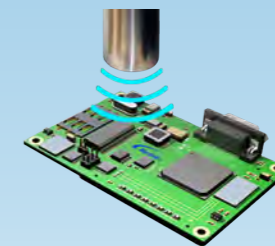
## Nordson DAGE

High resolution X-ray inspection solutions for semiconductor and PCBA production quality control, and failure analysis.



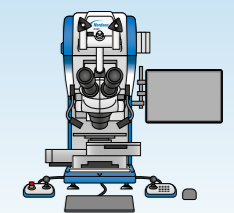
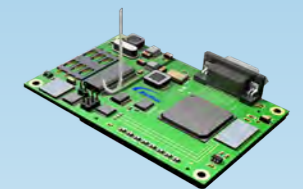
## Nordson SONOSCAN

Acoustic micro imaging solutions for detecting hidden cracks, voids and delamination in electronics and semiconductor products.



## Nordson DAGE

Bond testing and materials testing quality control solutions for semiconductor and PCBA production, and failure analysis labs.

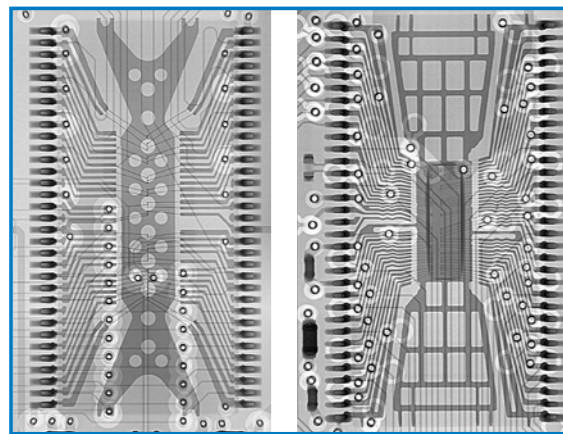




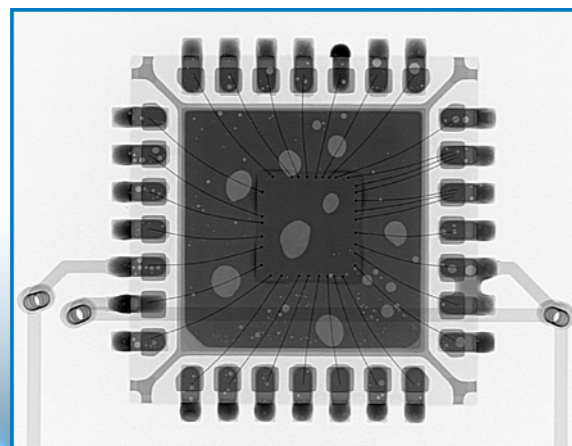
# Prove Your Quality

Ever increasing requirements for durability and reliability, along with a continuous drive to smaller components means that ensuring quality product manufacture is now more important than ever.

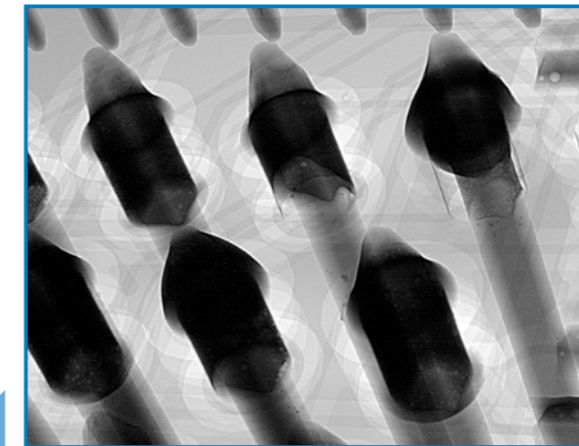
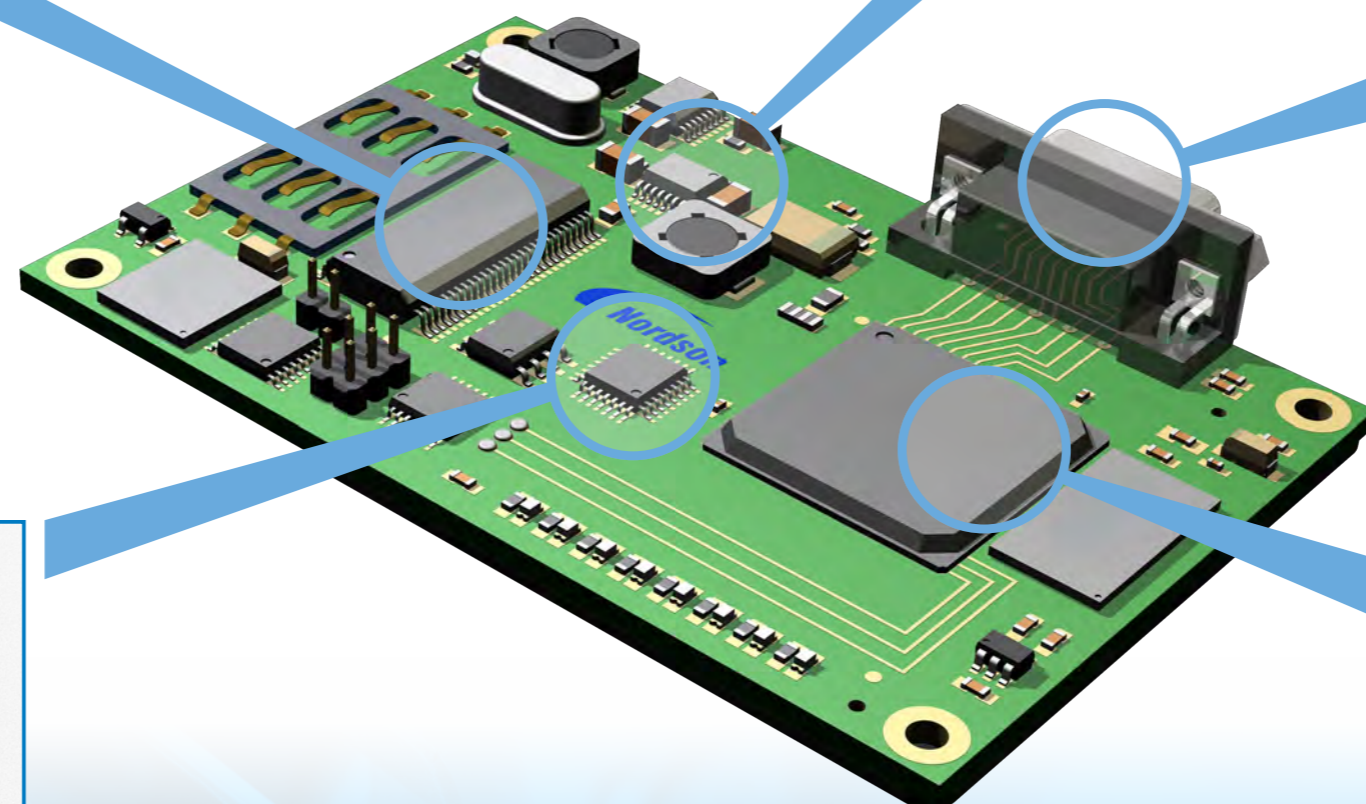
Explorer™ one X-ray inspection delivers proof of the quality of your product before it leaves the factory. Reduce costly returns from the field and the associated damage to reputation and future business.



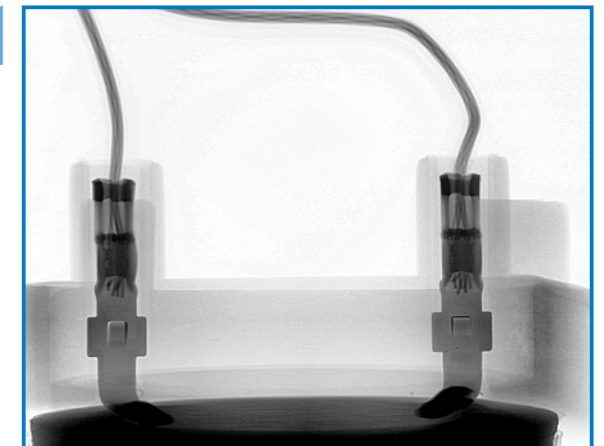
Keep your supply chain free of counterfeit components. X-ray inspection shows you inside semiconductor packages so you can compare with known good images.



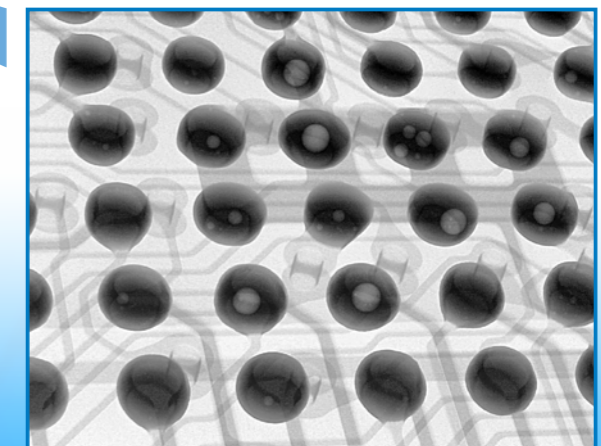
Inspect QFN and QFP solder quality and pad voiding.



Measure PTH solder filling and voiding.



Inspect cable quality.



Confirm BGA reflow quality, quantify voiding and find defects such as head in pillow, bridging and open joints.



# Turn Images into Solutions

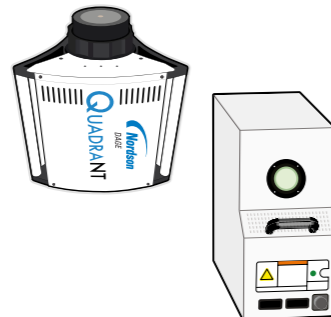
Explorer™ one enables you to quickly understand the quality of your products by delivering the clearest X-ray images. Market leading image quality makes it quick and easy to locate and qualify potential defects and make pass/fail judgements fast.

## Unique, integrated technology

Explorer one features proprietary technology at every step of the image chain, from generating and detecting X-rays through to image enhancement and measurement. Every component has one purpose: to create the highest quality images for electronics inspection.

## Quadra® X-ray tube technology

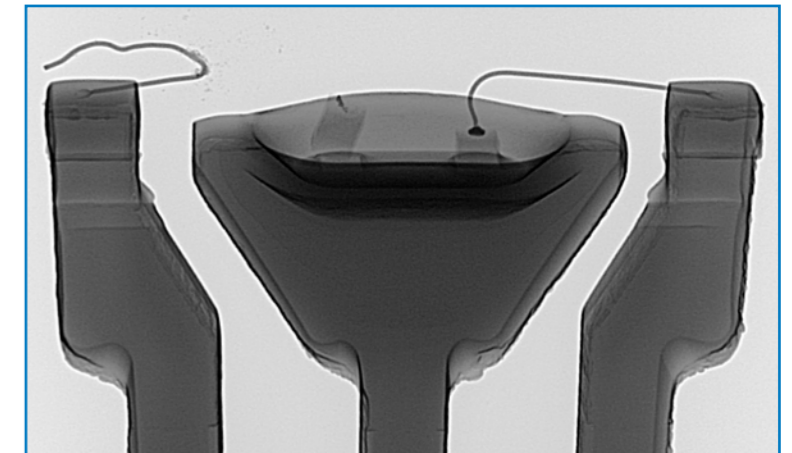
High quality images begin with the X-ray source. Explorer one uses QuadraNT® X-ray tube technology, also used in our Quadra series of X-ray inspection tools, to deliver market leading image quality at every power level, maintenance free.



## Designed for electronics

See features as small as 2 µm. This is the difference between detecting a bond is present and seeing it in high detail.

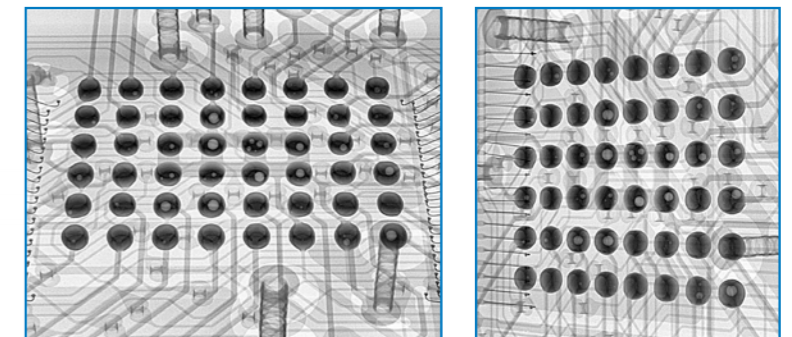
The AspireFP® one flat panel detector, developed specifically for Explorer one, is optimized to give the highest contrast in electronics samples.



Multicolor LED with blown bond wire and detached die.

## Bring out the finest details

Over 30 advanced filters bring out the sharpest images and show the finest details, allowing you to find features and defects faster.



Oblique views from below (left image) and from the side (right image) make it easy to confirm BGA reflow quality.

## Up is always up

Never lose your way. Explorer one's unique dual axis oblique viewing keeps the board orientated up, whichever side you look at it from. The sample is never rotated.





# Simplicity as Standard

Quickly inspect a high mix of electronics products. Explorer™ one enables operators and occasional users to perform quality inspection quickly, easily and with minimal training so you can maximize your throughput.

## Fast

Explorer one gives the real-time image feedback you need to navigate around products and find defects fast.

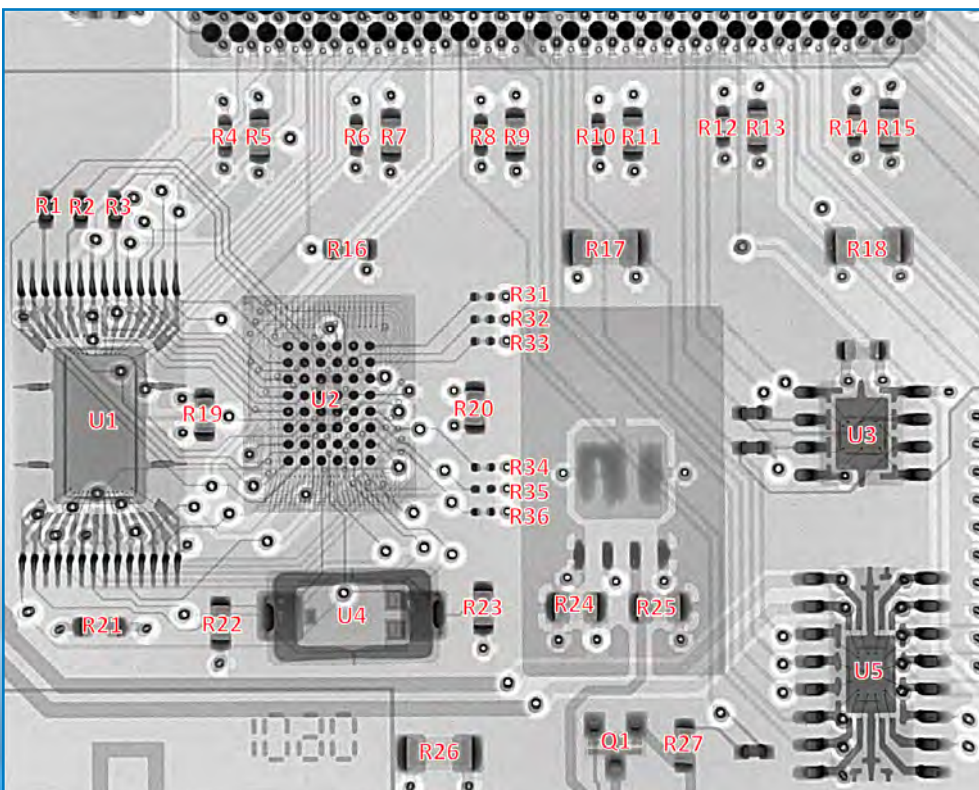
## Automated inspection routines

Save time inspecting batches of boards with automatic inspection routines. Program a routine once, using component layout design data to assist, then simply insert the board and click to go.

Reports, generated in seconds may be saved locally or on a central database.

## Compliance

In-built tools for dimension measurement, BGA void analysis, bump diameter and roundness and through hole filling make quick work of finding and characterizing defects, helping you achieve **IPC-A-610** and **IPC-7095** compliance.



Never lose your way with the component location overlay. Move straight to any device on the board with a single click. Know which part you are inspecting as you move around.

# Super Compact Footprint

Our smallest, lightest X-ray inspection system yet, Explorer™ one balances board size and system footprint, giving you a system which is easy to site and quick to install, so you can be up and running fast.

## Make the most of your space

Our unique double oblique angle detector geometry inspects 300 x 300 mm boards from every side without requiring a size restricting circular rotation table.

## Peace of mind

Nordson's worldwide support network ensures help is always at hand, so you get the most from your Explorer throughout its entire lifecycle. Nordson's regional service centers and established support network offers a fast, regional response.

## Reduce your downtime and costs

Explorer one is a maintenance free, oil free X-ray inspection system. Regular preventative maintenance visits are not required to guarantee optimum X-ray performance. Simply inspect and radiation check annually.





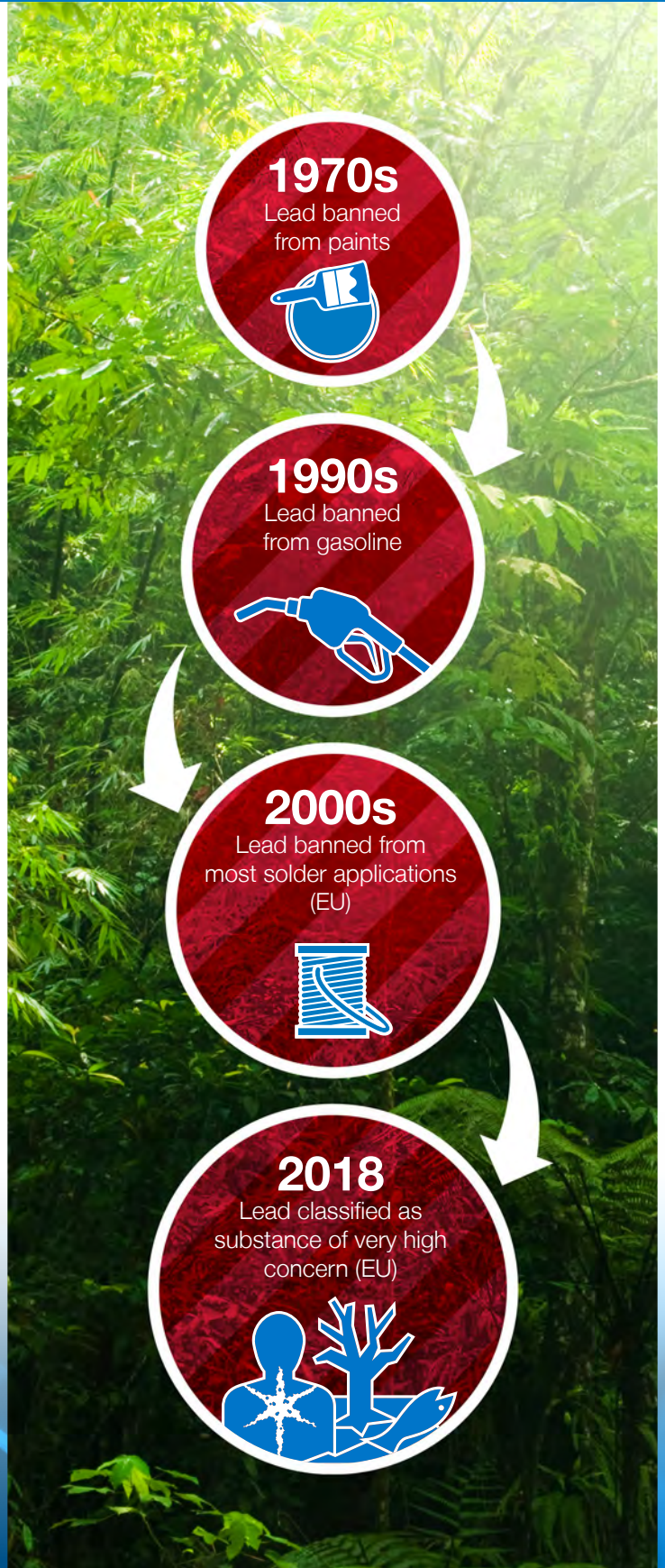
# EnviroShield™ Technology

Lead containing compounds have been progressively withdrawn from use in consumer products over recent years, and specific initiatives such as the EU RoHS directive continually seek to minimize lead and other hazardous substances from entering the environment.

Despite this trend, lead is still in widespread use for shielding X-ray radiation, and is permissible in the EU through a RoHS exemption. However, as we developed Explorer™ one we saw an opportunity to make a fundamental change for the better. We developed EnviroShield™.

EnviroShield is a new proprietary (patent pending), lead free X-ray shielding technology from Nordson DAGE. It is non-toxic and easy to dispose of at end of life. We hope EnviroShield in Explorer one will help us divert hundreds of tonnes of lead from being used in the future.

At Nordson DAGE we already take steps to promote a supply chain that is free of conflict minerals. With EnviroShield technology, you can now help reduce the amount of lead consumed in the future.



**1970s**

Lead banned from paints



**1990s**

Lead banned from gasoline



**2000s**

Lead banned from most solder applications (EU)



**2018**

Lead classified as substance of very high concern (EU)



# Begin Your Journey

Start your X-ray journey with Nordson DAGE. Explorer™ one and Quadra® 3 make quick work of production PCB inspection. Quadra 5 and 7 feature superior magnification and power for advanced PCB, package and wafer level inspection, and failure analysis.

Quadra and Explorer both feature the intuitive, point-and-click Gensys® X-ray Inspection Software. If your operators are trained on Explorer one, they will already be able to operate Quadra.

2  $\mu\text{m}$ 

## EXPLORER™ one



90 kV 10W

Compact

0.95  $\mu\text{m}$ 

## QUADRA® 3



160 kV 10W

Heated stage

VEPLANE

0.35  $\mu\text{m}$ 

## QUADRA® 5






160 kV 20W

Heated stage

VEPLANE

QUADRA $\mu$ CT0.10  $\mu\text{m}$ 

## QUADRA® 7





# 4K UHD

160 kV 20W

Heated stage

VEPLANE

QUADRA $\mu$ CT



# Specifications at a Glance

## EXPLORER<sup>™</sup> one

| X-ray Tube               |  | QuadraNT <sup>®</sup> filament free transmissive  |
|--------------------------|--|---|
| Feature recognition      |  | 2 µm  |
| Output power             |  | 10 W  |
| Voltage                  |  | 30 - 90 kV  |
| Detector                 |  | AspireFP <sup>™</sup> Flat Panel Detector   |
| Resolution               |  | 1.4 MP  |
| Frame rate               |  | 10 fps  |
| Digital image processing |  | 16 bit  |
| Inspection               |  |   |
| Oblique angle view       |  | 2 × 60° - No sample rotation required   |
| Inspection area          |  | 300 x 300 mm (12" x 12")  |
| Magnification            |  | Up to x 400   |
| Display                  |  | Single 22" WUXGA 1920 x 1080  |
| Operation                |  | Mouse point and click   |
| Software                 |  |   |
| Navigation               |  | Navigation map showing active region, split screen for comparing multiple regions, 360° feature orbit       |
| Image enhancement        |  | Image averaging, exposure control, contrast filters, live enhancement filters                               |
| Measurement              |  | Dimension measurement, void analysis, plated through hole fill level, pad analysis, BGA and QFN measurement |
| Automation               |  | Automated inspection recipes, barcode reader (optional) for sample tracking, component location overlay     |
| Safety features          |  | Anti collision, low X-ray dose mode   |
| Platform                 |  | Windows <sup>®</sup> 10   |
| Installation             |  |   |
| Footprint (W x D x H)    |  | 1.05 x 1.30 x 1.38 m (41.3" x 51.2" 54.3")  |
| Weight                   |  | 750 kg (1,650 lbs)  |
| Power                    |  | Single phase 220-230 Vac, 50/60 Hz, 16 A  |
| Air supply               |  | Not required  |
| X-ray safety             |  | < 1 µSv / hour, meets all international standards   |

|                        |   |
|------------------------|---|
| <b>Americas</b>        | + 1 760 930 3307<br>sales@nordsondage.com       |
| <b>Europe</b>          | +44 1296 317800<br>globalsales@nordsondage.com  |
| <b>China</b>           | +86 512 6665 2008<br>sales.ch@nordsondage.com   |
| <b>Germany</b>         | +49 89 2000 338 270<br>sales.de@nordsondage.com |
| <b>Japan</b>           | +81 3 3599 5920<br>sales.jp@nordsondage.com     |
| <b>South East Asia</b> | +65 6552 7533<br>sales.sg@nordsondage.com       |
| <b>Taiwan</b>          | +886 2 2902 1860<br>globalsales@nordsondage.com |
| <b>United Kingdom</b>  | +44 1296 317800<br>globalsales@nordsondage.com  |



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