GE
Measurement & Control Solutions

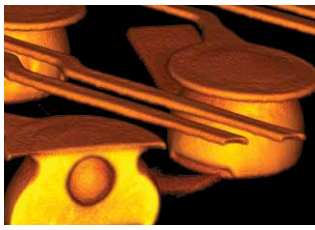
nanome|x – the high-end 2D and 3D X-ray solution

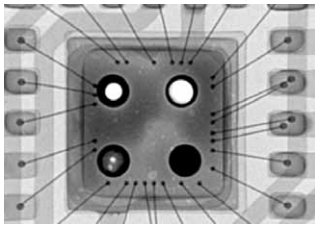
This automatic X-ray system of superior specifications satisfies even highest demands for the inspection of high-end interconnections in the semiconductor and SMT industry. The high-performance nanofocus tube (4-in-1) covers the full range from submicron resolution to high-intensity applications. The digital realtime image chain provides an excellent contrast resolution and enables oblique views up to 70 degrees and magnifications well above 24 000x. The nanome|x offers unique performance and versatility and can be used for 2D X-ray inspection as well as for full 3D computed tomography. With the new x|act software package the nanome|x is the system of choice to ensure meeting actual and future zero defect requirements.

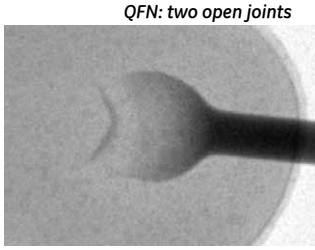
Setting new standards

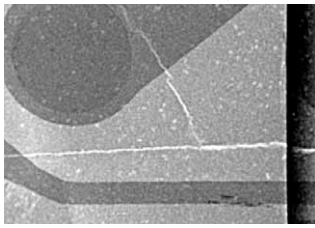
- 180 kV / 15 W high-power nanofocus tube
- 2-Megapixel digital image chain
- 24" TFT monitor

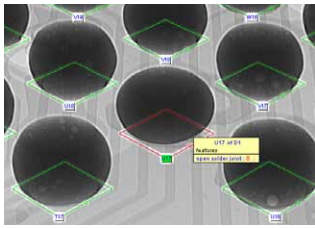
- x|act software package: easy and fast CAD based programming for high-resolution automated X-ray inspection (µAXI) with high magnification and repeatability as well as live CAD pad information overlay
- Detail detectability down to 0.2 microns (200 nanometer)
- Optical zoom up to 24,000x
- Oblique views at angles between 0 and 70 degrees
- Dual detector (digital image chain and active temperature-stabilized digital DXR detector with 30 fps) for brilliant live images at 1,000 x 1,000 pixels
- Optional 4-Megapixel digital image chain
- Optionally upgradeable to nanoCT® for CT scans within just 10 seconds
- Optional diamond|window for up to 2 times faster CT data acquisition

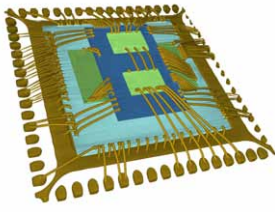

nanoCT® of CSP solder joints


QFN: two open joints


Wedge-bond


Cracked die

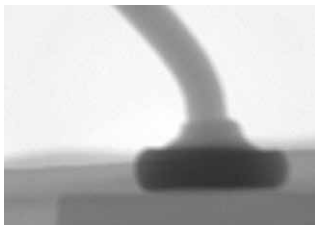

Live data overlay of a defect BGA ball


nanoCT® of stacked dies

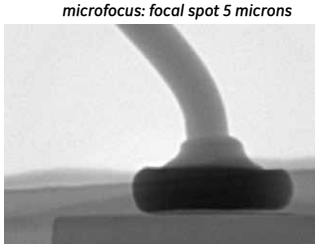
GE
Measurement & Control Solutions

nanofocus X-ray inspection of high-end interconnections

Electronic packages are sophisticated electronic devices with complex, internal features. In order to meet the quality requirements of the industry, X-ray inspection solutions must not only be capable of delivering detail detectabilities in the submicron range but also of detecting hidden defects and flaws. With its nanofocus technology, the nanome|x provides focal spot sizes in the submicron range to ensure very little geometric fuzziness and greater resolution allowing it to resolve image features as small as 200 nanometers. The two images on the right side clearly show: the smaller the focal spot, the sharper the image.



microfocus: focal spot 5 microns



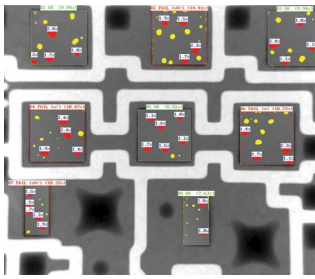
nanofocus: focal spot <1 micron

phoenix x|act

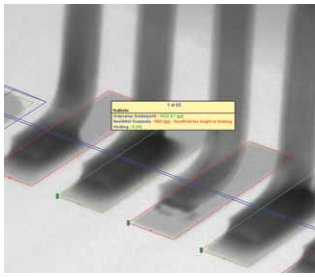
meeting zero-defect quality standards

As a solution for µAXI with extreme high defect coverage, phoenix|x-ray provides its high precision off-line µAXI system nanome|x including the unique x|act software package for fast and easy offline CAD programming. Outstanding precision and repeatability, small views with resolutions of only a few micrometers, 360° rotation and oblique viewing up to 70° ensures meeting highest quality standards. Besides the automated X-ray inspection, the µAXI system can be used for manual failure analysis or 3D computed tomography as well.

- Efficient CAD programming - minimized setup time
- 3D auto-referencing - optimized positioning accuracy
- Live 3D CAD overlay - easy pad identification even in oblique viewing and rotation



Automated multiple die inspection

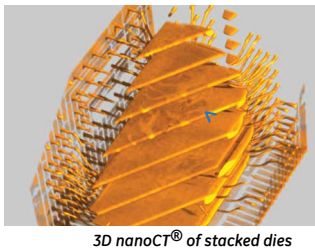


Live CAD overlay with inspection results

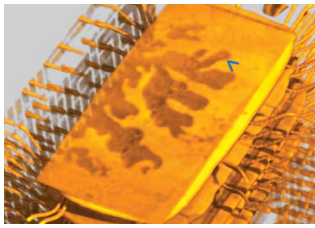
nanoCT®

high-resolution 3D imaging

For high resolution 3D analysis of smaller samples, the nanome|x system can be upgraded for full 3D computed tomography. High power nanofocus X-ray technology paired with a fast digital detector technology as well as reconstruction software deliver unrivaled inspection results with nanoCT® image resolutions.
The 3D nanoCT® image on the right side shows, that each individual die attach is clearly visible and can be examined for voids.



3D nanoCT® of stacked dies



Pores in a single die attach

GE imagination at work

GE Sensing & Inspection Technologies GmbH
phoenix|x-ray
Niels-Bohr-Str. 7
D-31515 Wunstorf | Germany
Tel.: +49 5031.172-0
Fax.: +49 5031.172-299
phoenix-info@ge.com

Further offices:
phoenix-stuttgart@ge.com
phoenix-muenchen@ge.com
phoenix-france@ge.com
phoenix-asia@ge.com
phoenix-usa@ge.com
www.ge-mcs.com/phoenix

GEIT-31202EN (1111)