

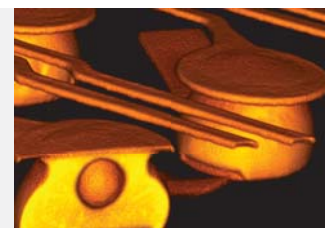
nanome|x – the ultimate X-ray solution

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.

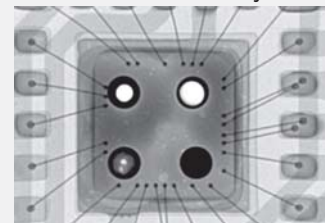


Setting new standards

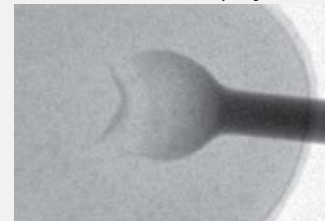
- ▶ 180 kV/ 15W high-power nanofocus tube
- ▶ 2-Megapixel digital image chain
- ▶ 24" TFT monitor
- ▶ x|act software package: easy and fast CAD based programming for high-resolution automated X-ray inspection (μ AXI) with high magnification and repeatability
- ▶ Outstanding ease-of-use
- ▶ Detail detectability down to 0.2 microns
- ▶ 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 detector with 30 fps) for brilliant live images
- ▶ 4-Megapixel digital image chain available
- ▶ Upgradeable to nanoCT[®]



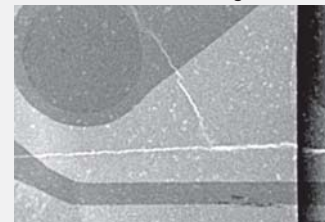
nanoCT[®] of CSP solder joints



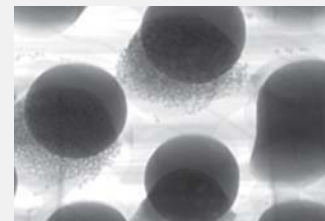
QFN: two open joints



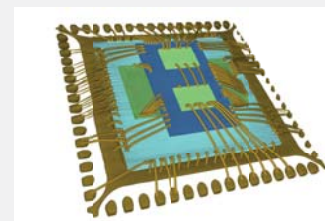
Wedge-bond



Cracked die



BGA: insufficient reflow



nanoCT[®] of stacked dies

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.

x|act

meeting zero-defect quality standards

As a solution for μ AXI with extreme high defect coverage, phoenix|x-ray provides its high precision off-line μ AXI 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 μ AXI 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

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 reconstruction software deliver unrivaled, highest-quality inspection results with nanoCT® image resolutions.

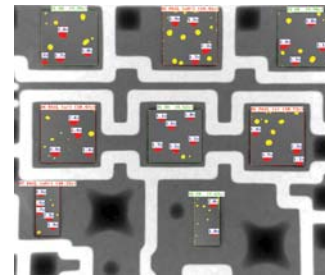
The 3D nanoCT® image on the right side shows, that each individual die attach is clearly visible and can be examined for voids.



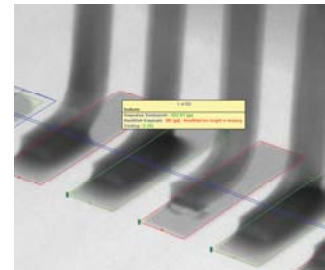
microfocus: focal spot 5 microns



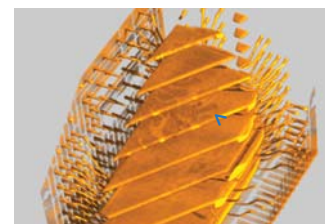
nanofocus: focal spot <1 micron



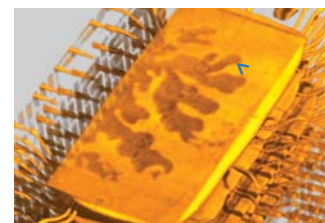
Automated multiple die inspection



Live CAD overlay with inspection results



3D nanoCT® of stacked dies



Pores in a single die attach