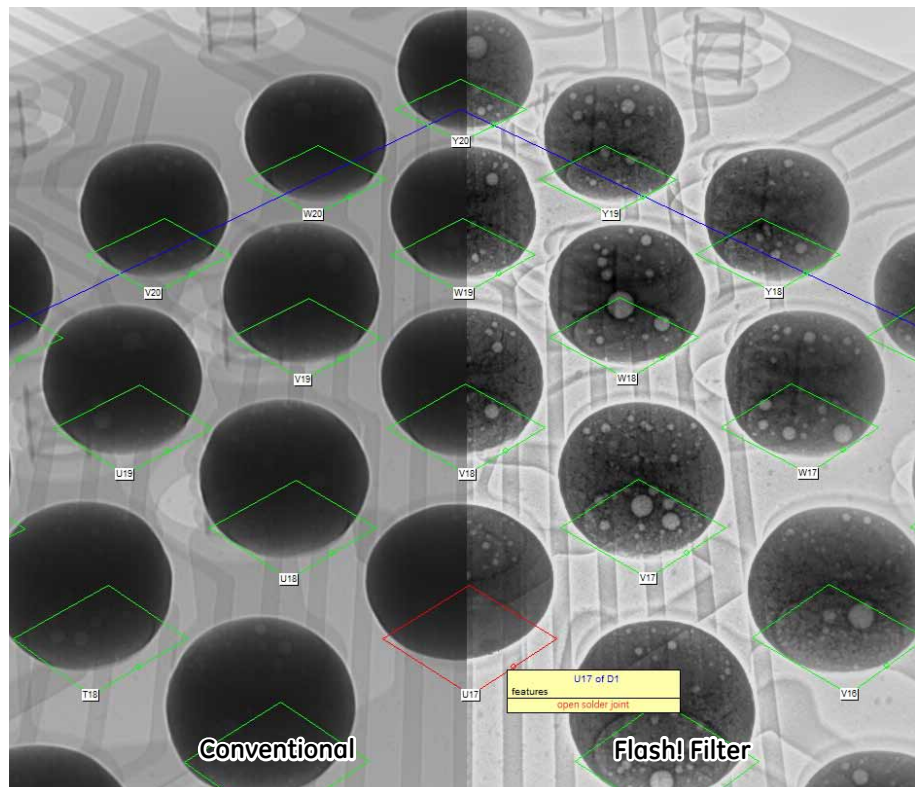


phoenix x|act

Intuitive software for manual and automated
X-ray inspection with high defect coverage



X-ray inspection of PCB assemblies boosted by
Flash! Filters™ technology



GE imagination at work

phoenix x|act:

Powerful software package for manual as well as automated X-ray inspection

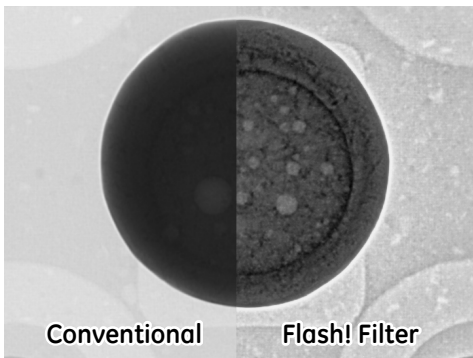
GE's product line phoenix|x-ray provides calibrated high precision atline μ AXI systems for extremely high defect coverage. These systems include the unique x|act software package, which offers fast and easy CAD-based programming. Features such as views with resolution in the micrometer range, rotation and oblique viewing ensure that the highest quality standards can be met. For manual X-ray inspection GE's optional Flash! Filters™ image optimization technology enables faster, more reliable failure detection.

Easy manual X-ray inspection

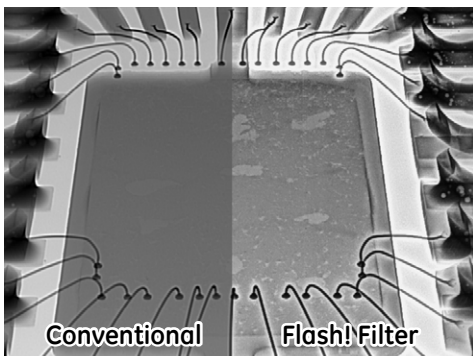
phoenix x|act includes intuitive software tools making X-ray inspection easy. Many features allow even unskilled operators to gain high quality results after minimal training. To reach a high defect coverage after short inspection time, it comes with manifold ease-of-use functions such as:

- Intuitive sample manipulation
- Wizard guided inspection modules for easy setup of voiding calculation or BGA inspection tasks
- Instant clear live imaging with up to 30 fps and automated Flash! image optimization
- Live Pad ID overlay for easy defect identification
- Simplified generation of inspection reports

Flash! Filters™ image optimization



Obvious difference between original X-ray image (left) and Flash! optimized BGA image (right): all voids and the annular ring are clearly visible



Compared with the conventional X-ray image (left), the Flash! Filters optimized image (right) allows easy visual identification of voids in the IC die attach

The Flash! Filters™ technology provides outstanding image enhancement during live inspection tasks. This innovative technology automates the filtering process of all grey scales present in each X-ray image - to optimize contrast

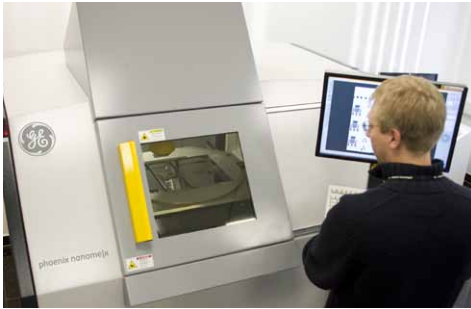
and brightness for the human eye, resulting in faster and more reliable identification of defects.

Combined with GE's advanced DXR detectors, Flash! Filters™ technology leads to significant time savings and defect coverage improvements.

X-ray inspection
boosted by
Flash! Filters™ Technology



Efficient CAD programming - minimized setup time



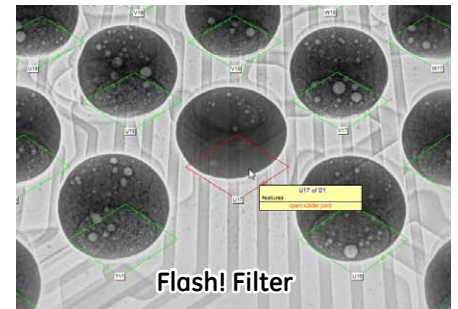
Easy programming: just assign the inspection strategies and let x|act generate the inspection program

x|act provides not only a minimal setup time compared with conventional view based AXI - once programmed, the inspection program is also portable to all x|act compatible systems.

- Easy and pad-based offline programming
- Specific inspection strategies for different pad types
- Fully automated inspection program generation even in oblique view and multiple angular positions

Live 3D CAD data overlay

- Pad ID available at any time
- Easy pad identification even in manual inspection
- High reproducibility on large PCBs
- Perfect orientation through live overlay of CAD-data and inspection results also in rotated oblique inspection views



Flash! Filters optimized inspection results and CAD and result data live overlay in the X-ray live image - at any time and at any viewing angle

x|act-capable μ AXI systems

The unique x|act software package is available in base and uncalibrated operator configuration for the phoenix x|aminer, and additionally also in calibrated operator and pro configuration for the phoenix microme|x and phoenix nanome|x systems. Both systems come standard with an open 180 kV microfocus or nanofocus X-ray tube with 15 or 20 W maximum power in order to achieve a detail detectability down to 200 nanometer with the phoenix nanome|x or down to 0.5 microns with the phoenix microme|x.

The excellent combination of high-resolution 2D X-ray technology and 3D CT in one system, innovative and easy-to-use features and the outstanding positioning accuracy make these systems the effective and reliable solution for a wide spectrum of 2D and 3D inspection tasks: R&D, failure analysis, process and quality control as well as automated offline inspection.

Unique features of the phoenix microme|x and nanome|x

- Live inspection rich in detail due to high dynamic GE DXR detectors with 30 fps and instant Flash!™ Filters image optimization
- 180 kV / 20 or 15 W high-power submicron tube with down to 0.5 or 0.2 μ m detail detectability
- diamond|window for up to 2 times faster data acquisition at the same high image quality level
- Optionally 3D computed tomography scans within 10 seconds



Features & Configurations

	phoenix x act base	phoenix x act operator	phoenix x act pro
Manual inspection	x	x	x
Easy macro programming	x	x	x
Measurement functions	x	x	x
Semi-automatic inspection modules	x	x	x
Flash!™ Filters image optimization	Option	Option	Option
Xe² development toolkit		Option	x
Fully automatic inspection		x	x
Live CAD overlay (ASCII data based)		x	x
CAD-based programming		x	x
CAD-based image processing			x
Statistic review based on inspection results			x
Automated height referencing			x
CAD-based inspection modules:			
BGA, PTH, QFP and QFN check strategies	Automated CAD based analysis of BGA, PTH, QFP and QFN solder joints		
customized check strategies	Customization of image processing for automated analysis		
View based inspection modules:			
bga module (included in basic package)	Intuitive automated analysis of BGA solder joints incl. automated wetting analysis together with ovhm (oblique view at highest magnification).		
vc module (included in basic package)	Intuitive automated inspection of multiple IC die attaches and area solderings in power electronics. Manual inspection even of unregularly shaped area solderings.		
c4 module	Automated voiding analysis of round solder joints with background structure, such as C4 bumps		
ml module	Semi automated inspection of IC multi-layer PCBs		
qfp module	Xe² module for automated analysis of QFP solder joints		
qfn module	Xe² module for automated analysis of QFN solder joints		
pth module	Xe² module for automated analysis of PTH (THT) solder joints		
quality review	Repair station software for visualizing and manual review of results from an automatic program run, e.g. BGA check strategy or vc module		
converter	Conversion of result files, generated by x act, into other formats, required by third party software		
report engine	Helpful tool for easier documentation by integrated and simplified generation of inspection reports		

Your Advantages

www.ge-mcs.com/phoenix

- Combining ease of use with excellence in intuitive X-ray inspection
- Live CAD overlay with PAD-ID and inspection results – at any time and at any viewing angle
- Exclusive Flash! Filters™ technology enabling faster, more reliable failure detection



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