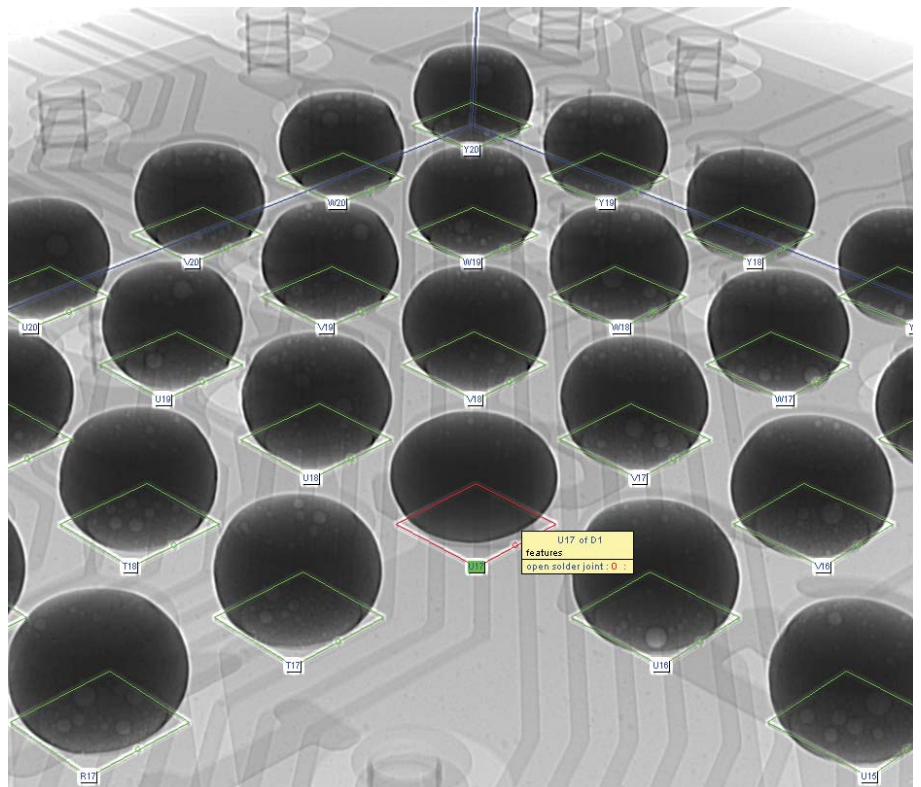


Fully automated X-ray inspection with extremely high defect coverage

GE  
Measurement & Control Solutions  
phoenix|x-ray

# phoenix x|act

Simple and fast CAD-based automated X-ray inspection ( $\mu$ AXI) for extremely high defect coverage with high magnification and repeatability



Easy and fully automated X-ray inspection of PCB assemblies



GE imagination at work

# phoenix x|act inspection software:

Powerful x|act software package for fast and simple CAD-based programming with extremely high defect coverage

GE's product line phoenix|x-ray provides calibrated high precision offline  $\mu$ 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, 360° rotation and oblique viewing up to 70° with a very high repeatability ensure that the highest quality standards can be met. The x|act software package can be used for manual failure analysis as well as for automated X-ray inspection.

## Inline or offline inspection?

With conventional in-line AXI, the inspection depth is normally determined by the throughput of the SMT line. Essentially, X-ray inspection takes much more time than AOI. The higher the defect coverage, the more inspection time is required. For zero defect production line inspection with small fields of view with micrometer resolution, 360° rotation and oblique viewing up to 70° are essential. To satisfy these higher defect coverage requirements,  $\mu$ AXI has to be performed alongside the production line.

## Efficient CAD programming - minimized setup time

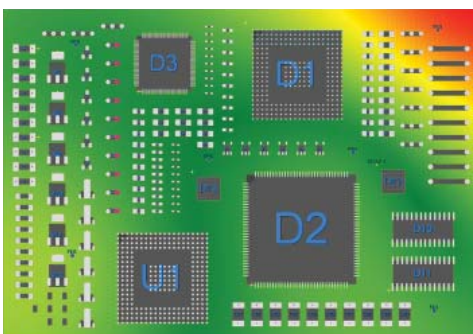


Fast and easy programming: just assign the inspection strategies and let x|act generate the automated inspection program

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.

- Import of CAD-data
- Easy and pad-based offline programming
- Specific inspection strategies for different pad types
- Fully automated generation of inspection program even in oblique view and multiple angular positions per component
- Full program portability for all x|act compatible phoenix|x-ray systems

## 3D auto-referencing - optimized positioning accuracy



Visualization of board distortion

Automated measurement and compensation of height differences and distortion:

- x|act systems come standard with high precision CNC manipulation
- Local 3D height and distortion referencing by X-ray images
- Highest precision through use of multiple fiducials
- Automated correction of image chain distortion
- Extremely high positioning accuracy even at oblique viewing and rotation



# Features & Configurations

	phoenix x act base	phoenix x act operator	phoenix x act pro
Manual inspection	x	x	x
Image processing	x	x	x
Easy macro programming	x	x	x
Measurement functions	x	x	x
Semi-automatic inspection modules	x	x	x
Xe <sup>2</sup> 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 modules:	
BGA check strategy	automated analysis of BGA solder joints
PTH check strategy	automated analysis of PTH solder joints
customized check strategies	customization of image processing for automated analysis
View based modules:	
bga module	automated analysis of BGA solder joints incl. automated wetting analysis together with ovhm (oblique view at highest magnification)
vc module	automated inspection of IC die attach and area soldering in power electronics
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	Xe <sup>2</sup> module for automated analysis of QFP solder joints
qfn module	Xe <sup>2</sup> module for automated analysis of QFN solder joints
pth module	Xe <sup>2</sup> 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

## phoenix x|act pro - Your Advantages

- Extremely high defect coverage to assure highest quality requirements
- Live CAD overlay with PAD-ID and inspection results – at any time and at any viewing angle
- Minimum setup time due to easy and fast CAD-data import and programming
- Time and money saving by using fully automated inspection strategies
- Once programmed, the inspection program is portable to all x|act compatible phoenix|x-ray systems



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