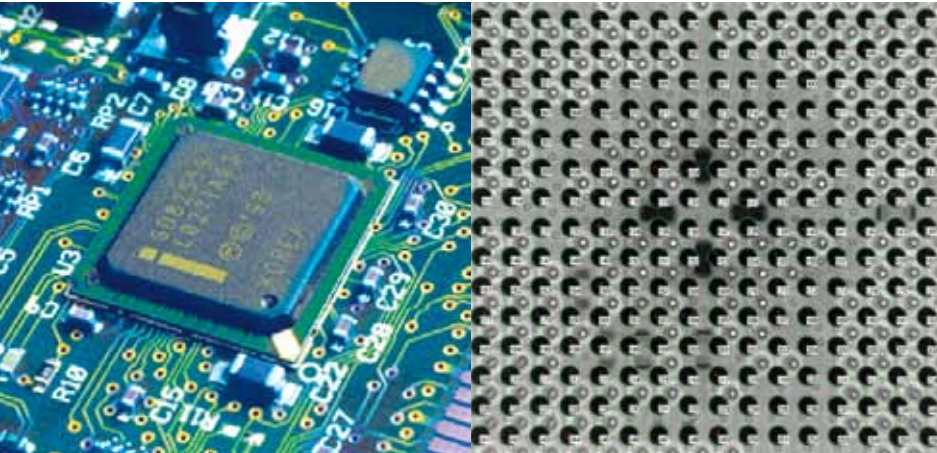


# Application:

## 2D inspection of ball grid array solder joints



- Inspection item:  
Assembled printed circuit board (PCB)
- Material:  
Solder including lead-free

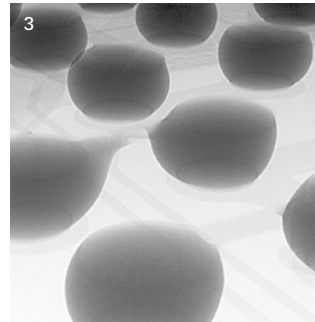
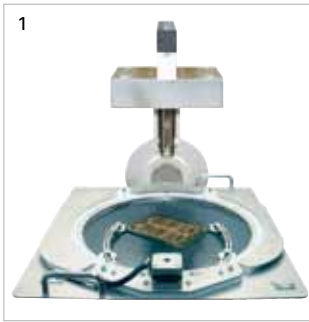
### Inspection task

The demand for shrinking devices with an increasing number of interconnections on smaller PCB surface area led to the implementation of ball grid arrays (BGA). These presented a great challenge for inspection of PCB assembly and semiconductor packaging.

BGAs are integrated circuit packages where solder joints are located on the bottom of the device. Therefore the solder balls are mostly hidden and more difficult to inspect. For process control, quality assurance and especially for electronics in safety critical applications, inspection of these components is absolutely vital.

2D microfocus X-ray inspection technology from YXLON enables a fast and detailed assessment of BGA solder joints used in applications ranging from R&D prototypes to high-volume production. It enables detection of typical defects, such as voiding, shorts caused by excess material, opens due to insufficient material, micro-cracks and ball deformations – all of which are typical causes for electronic system failure or reliability problems.

YXLON. X-ray technology at its best.



- 1 Y.Cougar SMT manipulation
- 2 Y.FGUI – Feinfocus Graphical User Interface with BGA Analysis
- 3 BGA inspection at oblique view
- 4 Y.Cougar (I.), Y.Cheetah

## X-ray Inspection

In PCB assembly, X-ray inspection enables the assessment of hidden BGA solder joint integrity. YXLON offers highly advanced microfocus X-ray technology within its range of Feinfocus Solutions. These commonly feature the Y.FGUI – an extremely easy-to-use software for system control and image analysis. For 2D inspection of BGAs, the Y.FGUI software offers a tool for BGA Analysis that automatically evaluates overview or high magnification images for a comprehensive set of defects and provides pass/fail

results based on predefined test thresholds. Results are visualized in the X-ray image and provided in tabular format. Oblique viewing even at highest magnification provides images of outstanding quality and resolution for in-depth inspections. Even smallest structures can be resolved with high contrast and without perspective distortion. BGA Analysis can comfortably be integrated in easily trained automated inspection routines for the application even by less experienced operators.

Parameter	
X-ray source	Microfocus transmission tube
Detector	Flat-panel detector
Image processing system	Y.FGUI – Feinfocus Graphical User Interface
Systems	Y.Cougar, Y.Cheetah

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