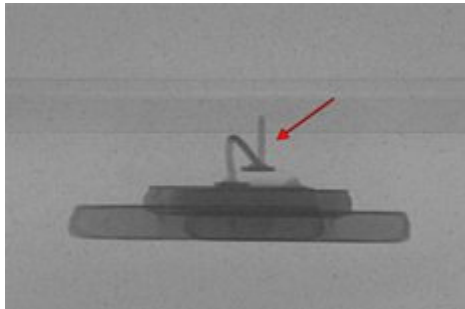


## X-ray

# Back-end inspection of semiconductor packaging

The finest structures only a few  $\mu\text{m}$  large can be analyzed inside a housing via high-resolution X-ray systems. Defects in the production process can be detected and the process optimized as a result.



- Semiconductor packaging
- Copper wire / gold wire
- Broken or chipped bonding wires
- Missing bonding wires
- Touching bonding wires

### Analysis of gluing surfaces

At first the individual dies are glued onto a housing. The first source of defects is incomplete gluing surface or a tilting of the die. What can occur then is that dissipated heat is not diverted from the die and the component is destroyed due to internal overheating. The quality of the gluing surface can be tested using void calculation. The glued-on die is subsequently electrically bound to the housing. This process step is called bonding. Gold wire is used for bonding; for reasons dealing with costs, the use of copper wire is on the rise.

Typical defects during bonding are broken or chipped wires, excess wires, missing wires and ball bonds that have lifted. It can also happen that bonding wires unintentionally touch each other. Most of the time, no difference can be made between these defects in a function test. Using the Feinfocus technology in the X-ray systems Y.Cheetah and Y.Cougar, these defects can be detected, allowing measures for improvement to be integrated into the production process.

Yxlon offers you a wide range of X-ray techniques. Yxlon designs solutions that replace X-ray films, provide radiography and fully automatic defect recognition in X-ray images, as well as computed tomography services for scanning inspection items ranging from micro-CT to CT using a linear accelerator.

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