AOS Technologies AG

Application note No. 39

PRODUCT LEAFLET | TECHNICAL SPECS | APPLICATION NOTE

Application

■■■■■	Industry
□□□□□	Research
□□□□□	Automotive
□□□□□	Defense

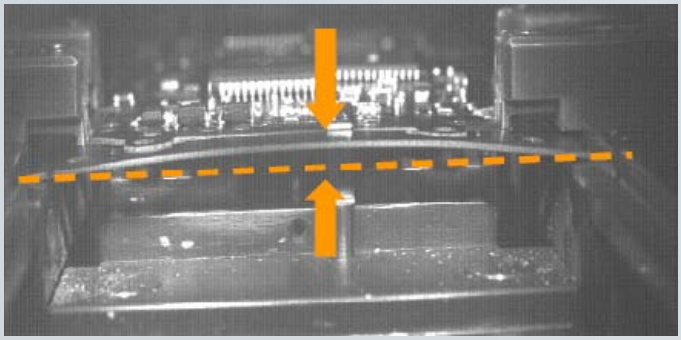
Separation of individual printed circuit boards ("pcb") from their panel

Subject

Pcb, the 'basis' of all electronic devices to which the electronic components are soldered to, are made in larger groups called panel, holding usually between 2 and 25 individual pcb's. After soldering the electronic components to the – still linked together – pcb's, the individual pcb's are cut from the panel with a mechanical press. The 'cutting' is a combined process of cutting and breaking through the epoxy material. Function tests of the pcb's showed that always the same few components – often near the previous 'bridges' were broken or damaged during the cutting process. Even worse, in many cases the component or its solder joint was not clearly and permanently broken, but rather damaged, so it might have passed a function or quality check, but fail later if installed in the final appliance.

It was suspected that the pcb deformed heavily and in an unexpected way during the cutting process, applying too much mechanical stress to certain components and their solder joints.

Note: the above scenario became really critical when the manufacturer changes the soldering from traditional to the RoHS-complient 'led-free' soldering, where partially damaged solder joints are even more critical to detect but at the same time more likely to happen.



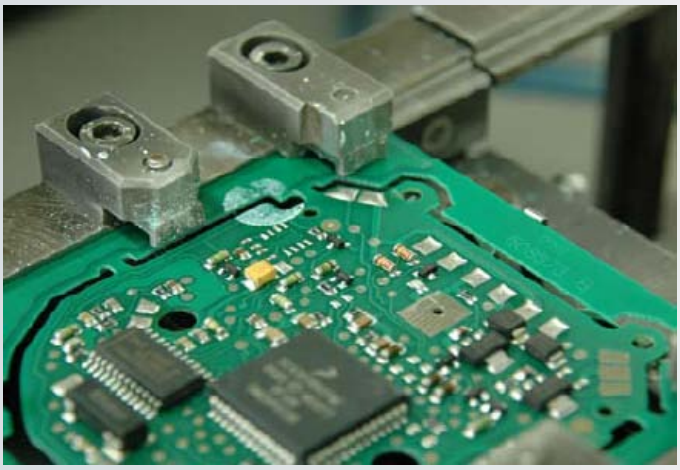
pcb deformation during separation (as seen by the high speed camera)

Solution

A high speed camera was used to monitor the deformation of the pcb during the cutting process.
The insight gained by the high speed sequences allowed to optimize the cutting edges as well as the supporting counterplate to minimize the deformation and therefore the damages to the components and their solder joints.

Customer benefits

- Less faulty pcbs and a substantially lowered percentage of damaged components and solder joints
- The risk of a faulty pcb passing the test but failing was instantly minimized



pcb in panel - prior to separation

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S-PRI high speed camera

Your AOS Partner:

Specifications are subject to changes without prior notice – v0810

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Scope of supply

- S-PRI high speed camera with option 1 (gain control)
- 25mm lens
- tripod
- SmartLED compact light kit

Competitive advantage:

- small, compact camera size allows the camera positioned near the object, making sure the camera really sees the object
- solid, extruded all-aluminium housing, protecting the camera against mechanical impacts and malfunctions due to excessive electromagnetic noise
- simple to setup (1 data cable, 1 I/O-cable)
- simple control software, ready to provide images within 1 minute. Also ideal for occasional users
- Only a small camera fits to the cutting device, allowing an undisturbed sight to the cutting edges.

Customers:

- Electronic companies manufacturing their own pcb's, especially companies manufacturing safety-related electronics like smoke/fire detectors, automotive breaking systems, gas boiler controls and others)
- Companies manufacturing pcb's for above mentioned customers