

Siscan 3D confocal sensors at EPCOS

Accurate bump measurement

Increasing product miniaturization as well as the need for improved production yields and lower scrap/rework rates have driven a growing demand for advanced vision-based measurement precision in the semiconductor industry. When EPCOS introduced wafer processing at its Munich production facility in 2004, the company also chose to rely on the 3D measurement technology from Siscan to measure the height of bumps on flip chips used in mobile phone production.



The Siscan wafer inspector MC128 takes wafers out of a cassette with up to 25 wafers, places them onto a wafer chuck for measurement, and returns them again – fully automatically

In 1999, when Siemens delivered its first optical measurement systems to the EPCOS plant in Munich, Germany, the first generation of Siscan 32-channel sensors were used to inspect the height of solderbumps of integrated modules designed for installation in consumer electronic products and mobile phones. Bump heights are a critical factor for ensuring a reliable solder bond for further chip processing.

With the introduction of wafer processing at the plant in 2004, Siscan technology also played a key role. A 3D confocal sensor Siscan MC64 formed the core of the new surface acoustic wave (SAW) component measurement system, with which wafer transfer, however, was still conducted manually.

Rising production output

Output at the EPCOS plant continued to steadily rise. As a result, a new fully automatic Siscan wafer inspector MC128 was added to production in July 2006, equipped with an advanced 3D confocal 128-channel sensor.

The system automatically measures components on a wafer. Featuring an integrated wafer-handling robot, it is able to remove up to 25 wafers from a cassette, place them on a wafer chuck for measurement, and then return them again to the cassette. Thus, the system achieves a very high level of throughput at 100% inspection.

In terms of accuracy, the system conducts bump measurements with a repeat accuracy in the sub- μ range at 3σ . Consequently, it is ideally suited to handle the increasing measurement precision demands of the industry. The Siscan wafer inspector MC128 can also easily be taught to perform new bump measurements. Its adaptability is well-suited for the production environment.

Continued cooperation

Recently, the Siscan team was commissioned to upgrade the inspection module delivered to EPCOS in August 2004 with a handling system. It has also supplied an additional Siscan wafer inspector MC128 that was delivered in May 2007. ■

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