LMI TECHNOLOGIES

ENGINEERING POSSIBILITIES

QUALITY CONTROL & PROCESS OPTIMIZATION IN ELECTRONICS MANUFACTURING

Quality control in the electronics industry is a demanding process, presenting a unique set of challenges that require specialized inspection capabilities.

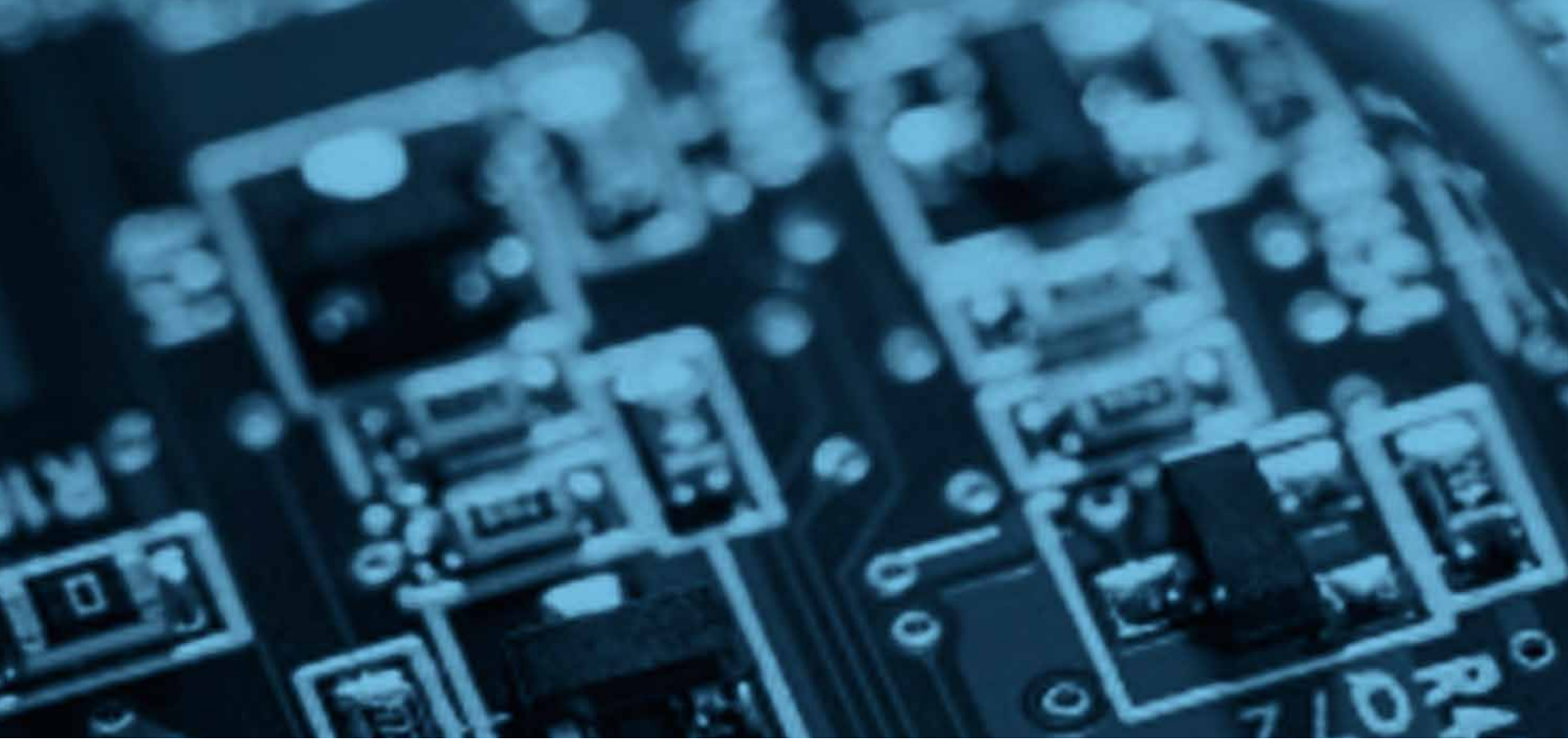
Industry Landscape

Electronics OEMs need to be able to measure and track defects throughout production. This includes rapidly and accurately identifying flaws, reasons for failures, and error trends in order to ensure product quality and overall yield — for example, whether or not it is a specific vendor, a certain material or an individual part of the process that is causing poor results.

Automated Quality Control for Electronics

Quality control in electronics must be established from the supplier of component parts to in-line product assembly and finished goods in order to ensure high yield and exceptional quality. As part of this process, electronics OEMs must implement in-line inspection solutions that monitor and report on large volumes of data regarding out of tolerance parts in real-time.

Downtime in a high-volume, automated production environment due to part non-conformance can lead to unacceptable business losses. Rapid scanning, real-time defect analysis and built-in pass/fail controls are therefore a critical requirement in the electronics assembly process.



INDUSTRY INSIGHTS

Electronics manufacturing is experiencing an explosive growth phase, which has resulted in a number of industry trends that directly affect product inspection and quality control.

Short Product Development Lifecycles

New electronic technologies are constantly being released. Demand is high for these products, and consumers are always looking for newer, better features. Electronics quality control has to be able to keep pace with these short product development cycles or manufacturers are unable to compete.

Stringent Quality Control Standards

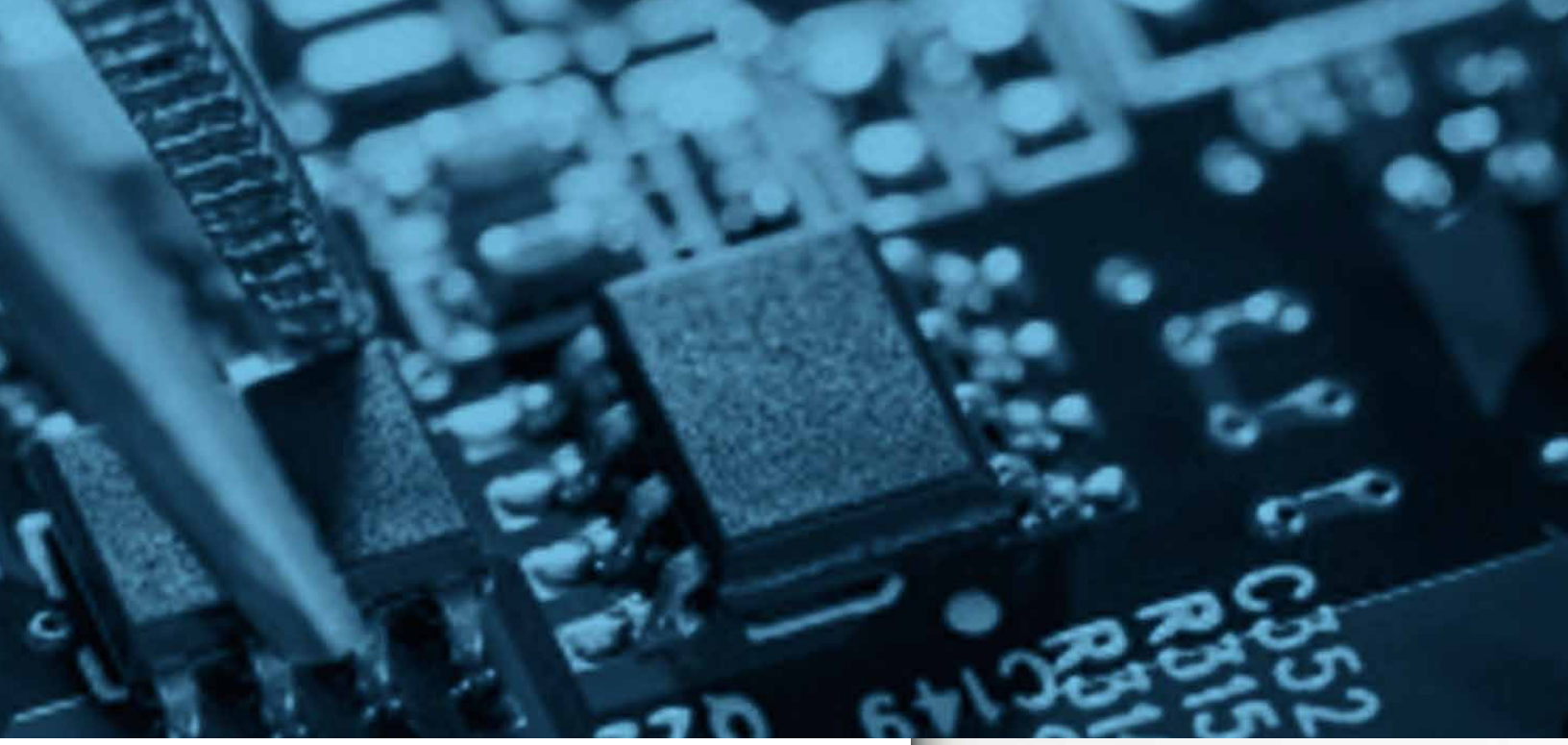
Almost every product on the market today relies on critical assemblies of electronic components. The consequences can be significant if these key manufacturing processes fail. Poor inspection methods often lead to massive legal costs and damaged brand reputation.

Entire Supply Chain Compliance

Electronics OEMs have to achieve compliance for all of their manufacturing processes, including guidelines for chemicals, materials-handling and disposal. The situation becomes even more complex because they must also ensure every vendor and supplier throughout their supply chain meets the same strict standards.

Need for Increased Inspection Efficiency

The electronics market is very crowded, and as the cost of final products continues to drop, profit margins decrease. Continuously improving quality control efficiencies in order to minimize operational costs is a must in order for manufacturers to stay competitive.



INSPECTION APPLICATIONS

Solder Paste Inspection

Solder paste inspection (SPI) involves identifying any imperfect solder volume or alignment process variations. When done correctly, SPI significantly improves solder print quality and yield and assures the efficient production of high quality, high performing PCBs while minimizing costs due to repair.

Connector Pin Coplanarity Inspection

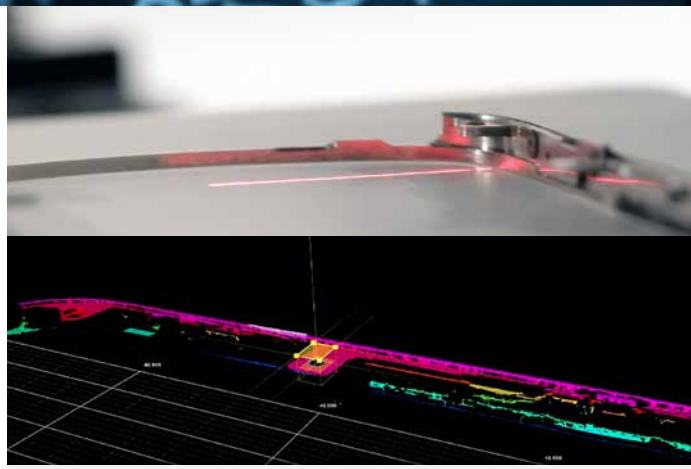
Coplanarity of connector pins is critical for proper board functioning. Each pin needs to stand in the same plane as all the others, because if one is significantly higher or lower than the established plane, it can result in critical malfunctions.

PCB Inspection

PCB boards typically feature challenging surfaces, angles, steps and structures. Whether it is evaluating circuit board flatness or microstructures on the board itself, precise measurement is crucial to ensuring reliable operation.

Cell Phone Assembly Inspection

Cell phone inspection requires a high degree of repeatability and micron accuracy when measuring surface fasteners that interlock in order to form seamless assemblies.



WHY USE 3D INSPECTION TECHNOLOGY?

- Contrast invariant, ideal for inspecting low contrast objects
- Volumetric measurement provides shape and position related parameters
- Immunity to ambient light makes it a more reliable sensing technology
- Delivers expanded inspection capabilities on top of 2D for more robust quality control

3D SMART SENSORS

IDEAL FOR ELECTRONICS QUALITY CONTROL

Ease-of-Integration

All-in-one 3D smart sensors offer a web-browser driven point-and-click environment for rapid configuration, built-in measurement and rich I/O for communicating results. A compact, industrial housing supports easy mounting in electronics factory machinery.

Real-Time Data Processing

3D smart sensors offer real-time measurement capabilities that can produce the same reliable and repeatable results, in the same amount of time, even under the heavy data loads and part shape variation of small electronics parts.

Networkability

Network savvy, all-in-one 3D smart sensors connect with factory infrastructure to report results, web browsers for diagnostics and monitoring, the Internet for upgrades, and even with other sensors to exchange or combine data.

Built-In Measurement Tools

All-in-one 3D smart sensors provide a full set of built-in application-specific tools for greater control over the small parts inspection process, such as the ability to isolate a specific data area and filter out any noise or outliers, and the ability to adapt to and measure different materials such as reflective and nonreflective.

Extensive Communication Support

All-in-one 3D smart sensors provide extensive communication support for a range of interface protocols, ensuring that System Integrators can interface with PCs, robots and PLCs — offering flexible connectivity with TCP, EtherNet/IP, Modbus, ASCII, digital output and more.

Gocator 2320 for small parts inspection

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