

# ELECTRIC & ELECTRONICS



Enhancing Sensor Quality Control with AI-Powered Defect Detection.

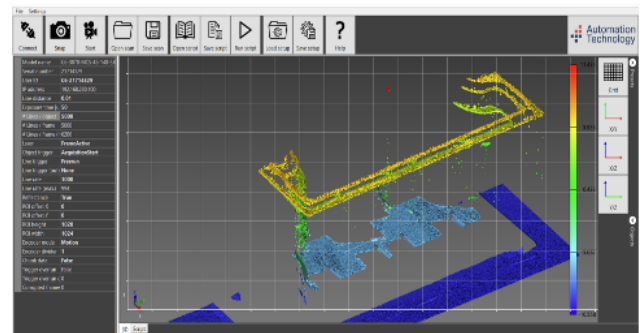
## Problem Identified

In the electronics manufacturing process, maintaining precise adhesive application and ensuring component integrity is critical for product reliability. The existing inspection system struggled to measure glue height accurately leading to potential quality inconsistencies. Furthermore, when inspecting extremely small components such as BGA surfaces measuring only 3 mm x 3 mm, the current sensor failed to capture detailed and accurate 3D profiles. These limitations increased the risk of defects, rework, and reduced production efficiency.



## Solution Provided

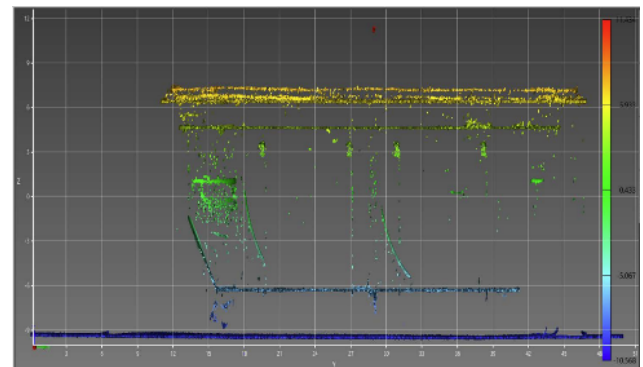
A high-resolution 3D sensor system was introduced, capable of capturing precise height measurements for glue application and providing detailed 3D imaging for micro-scale components. For glue inspection, the sensor measured a target height of 0.5 mm with exceptional accuracy, meeting the strict tolerance requirement. For BGA inspection, the new sensor delivered sharper and more accurate surface profiles compared to the existing system.



This advanced technology enabled reliable detection of minute height variations and surface irregularities, ensuring better quality control.

## Results & Summary

The implementation of the advanced 3D sensor system resulted in significantly improved inspection accuracy for both adhesive application and micro-component profiling. Glue height measurements consistently fell within the required tolerance, reducing the likelihood of assembly defects. The improved imaging resolution for BGA surfaces enabled better detection of irregularities, minimizing the need for manual re-inspection.



Overall, the solution enhanced product quality, reduced rework rates, and improved production line efficiency. This case study demonstrates how advanced 3D sensing technology can resolve critical quality control challenges in electronics manufacturing.