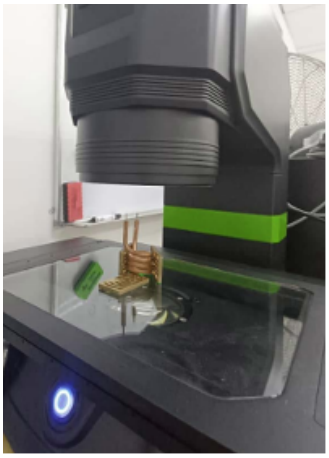
AUTOMOTIVE

Quality Inspection of White Connectors

Problem Identified

The inspection of connectors faced challenges in detecting small features and radius, particularly CR3, due to poor lighting contrast. Manual inspection methods were inconsistent, as operators struggled to detect minute dimensional differences by eye. Variability between inspectors led to frequent measurement errors and increased rejection rates. Such inefficiencies hinder productivity and raise the risk of defective products reaching customers.

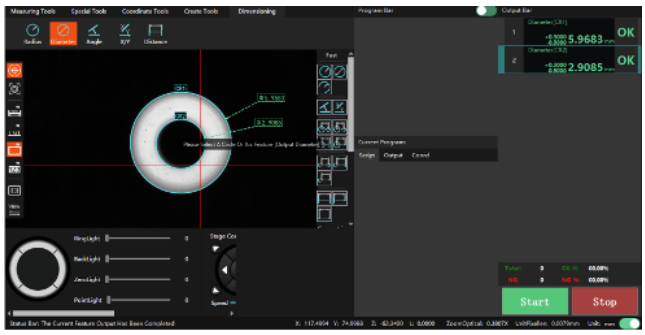


Solution Provided

A machine vision solution was implemented to inspect connectors from both top and bottom perspectives. To resolve contrast issues, specialized lighting was introduced to highlight subtle surface features and radius, making them more distinguishable. This approach allowed for precise extraction of critical measurements while reducing reliance on operator judgment. The automated system ensured repeatability and standardized inspection across production.

Results & Summary

The vision system captured most connector dimensions reliably, with accuracy improving substantially after lighting optimization. Automated inspection provided faster results compared to manual checks, enabling quicker quality feedback. The reduction in human error improved confidence in product quality while lowering inspection costs. Manufacturers experienced greater consistency and efficiency in their connector production lines.



This case study shows how vision inspection with customized lighting transforms connector inspection by improving accuracy, speed, and consistency.