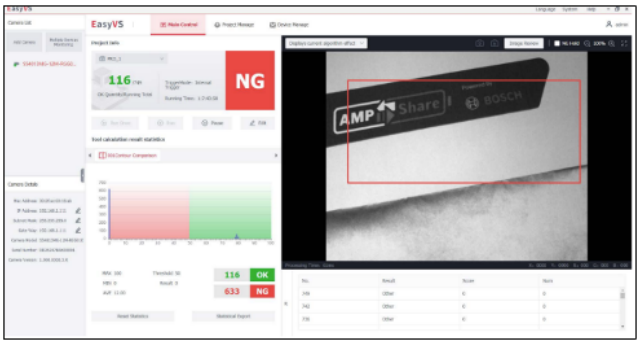
ELECTRIC & ELECTRONIC

Accuracy in Automated Shape and Label Inspection

Problem Identified

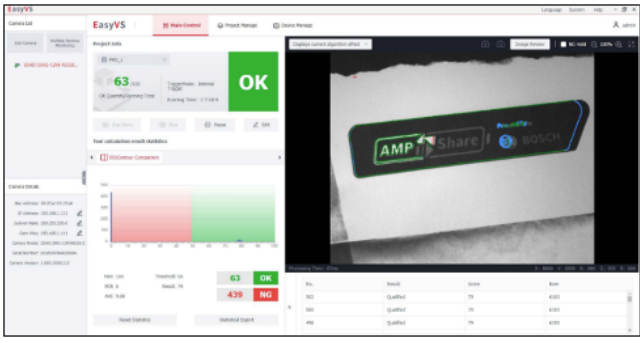
The manufacturing process faced challenges in differentiation product shapes and distinguishing between various part models, such as different capacity packs with and without border markings. Traditional visual checks often lead to misclassification, resulting in false acceptance of incorrect parts and rejection of good ones. This inconsistency created risks of assembly errors, quality issues, and delays in production. The lack of clear imaging and limited processing functions further reduced the reliability of inspection results.

Solution Provided



An automated image processing solution was introduced to address shape differentiation and model verification. The system applied master image comparison techniques, ensuring that deviations in part shape and labeling were accurately detected. Key improvements included enhanced detection of nonconforming parts and refined algorithms for distinguishing between border and non-border product variations. Unlike manual inspection, this solution minimized human error and improved repeatability.

Results & Summary



The implementation showed that shape detection was highly reliable, successfully distinguishing acceptable parts from nonconforming ones. Although some limitations were observed with low-contrast images, overall inspection accuracy improved significantly compared to manual methods. Misclassification rates decreased, and the system provided more consistent and data-driven quality checks. This improvement helped streamline production, reduce rework, and strengthen quality assurance processes.

This success case highlights by applying advanced image processing, the solution effectively addressed critical challenges in product differentiation and quality control.