AUTOMOTIVE

Machine Vision for Plastic Moulding Inspection

Problem Identified

The industry faces recurring challenges in ensuring consistent quality for plastic molded parts. Manual inspection methods often led to inaccurate OK/NG classification, overlooked surface defects, and misidentified part numbers. These inefficiencies resulted in production delays, increased rejection rates, and higher operational costs. Furthermore, variability in human judgement created inconsistencies in meeting customer quality standards. In an environment with high production volume, these issues have become a bottleneck that affected both delivery timelines and customer satisfaction.

Solution Provided

An automated machine vision inspection system was implemented using a monochrome camera, 360° lens, ring and backlight illumination, and advanced image processing software. The system extracted part numbers using OCR (optical character recognition) and compared captured images against a master reference to detect defects. This solution replaced manual checks with data-driven accuracy and repeatability, ensuring faster cycle times and reducing reliance on manpower. Unlike traditional approaches, it integrated seamlessly into the production like for real-time OK / NG classification.

Results & Summary

The deployment of the vision system successfully eliminated human error, significantly reduced false acceptance and false rejection rates, and ensured compliance with customer specifications. Defective detection was improved through reliable imaging and precise OCR leading to higher yield rates and reduced rework. Ultimately, the company achieved greater operational efficiency and lower quality-related costs while boosting customer confidence in product reliability. In addition, the system provided valuable inspection data that could be used for process monitoring and continuous improvement initiatives.

This success case highlights how machine vision technology can transform plastic molding inspection by addressing accuracy, consistency, and efficiency challenges.