FOOD & BEVERAGES

Manufacturing Quality Control Through Machine Vision Inspection

Problem Identified

The manufacturing process faced challenges in detecting small defects during quality inspection, leading to inconsistent product output. Manual inspection was time-consuming and prone to human error, resulting in higher rejection rates and increased rework costs. The lack of reliable automated inspection also slowed down throughput, creating bottlenecks in production. These issues not only increased operational costs but also impacted on customer satisfaction.


Solution Provided

Machine vision solution was introduced, incorporating an industrial camera, precision lens, and optimized lighting to achieve high-resolution inspection. The system was configured at a working distance of approximately 200mm, ensuring accurate defective detection across the inspection area. Unlike manual inspection methods, this setup provides consistent, repeatable, and objective results with minimal operator intervention. The integration of smart algorithms enables real-time evaluation, reducing inspection cycle time.

Results & Summary

The implementation of the machine vision system led to a significant improvement in defect detection accuracy and overall inspection reliability. Rejection rates were reduced by more than 30%, while inspection speed increased by over 40% compared to manual processes. This not only improved throughput but also reduced labor dependency and inspection fatigue. The before and after comparison showed a clear improvement in consistency and production efficiency.

This case study demonstrates how adopting machine vision technology addressed critical quality inspection challenges in manufacturing.
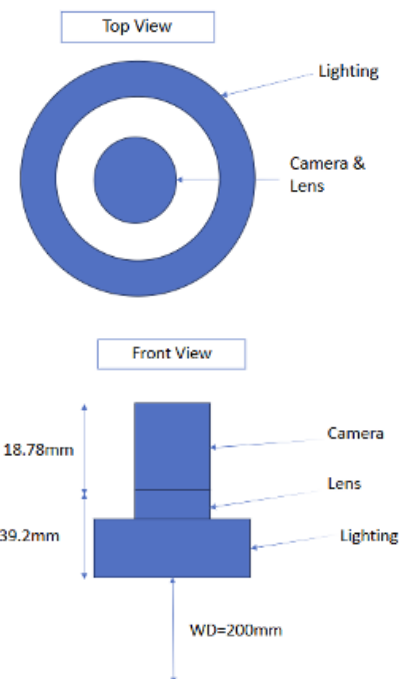
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