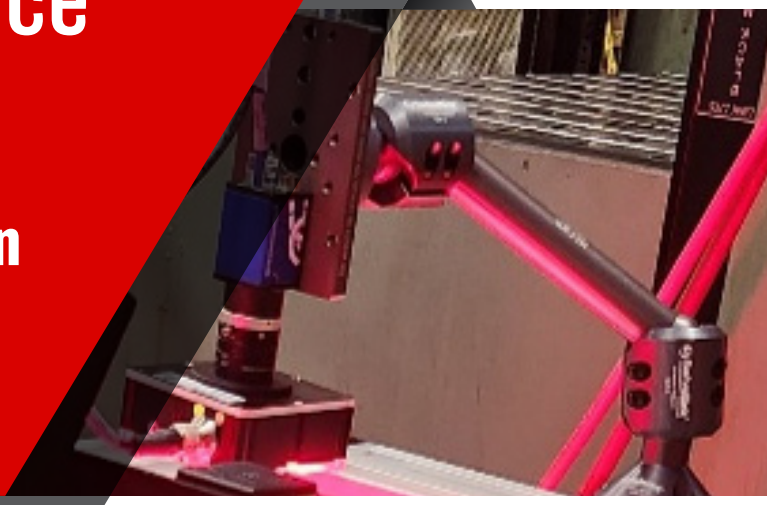
TRI-PHASE AUTOMATION

Engineering Excellence

SUCCESS STORY

Precision Vision Inspection for High-Accuracy Manufacturing



THE COMPANY

D&H Machine is a precision manufacturer producing finished components that require consistent quality verification before leaving the production line. To maintain high standards and reduce the risk of defective parts reaching customers, the company needed an automated inspection process that could reliably evaluate each part in real time as it moved through production.

OVERVIEW

D&H Machine required an automated inspection system capable of evaluating finished parts as they moved along a conveyor. The system needed to accurately inspect each part from multiple angles while maintaining production flow and minimizing manual inspection. Tri-Phase designed a solution that combined machine vision, motion control, and automated sorting logic to ensure consistent quality decisions without slowing down throughput.

CHALLENGE

The inspection process required accurate evaluation of finished parts as they moved continuously along a conveyor system. The system needed to capture reliable visual data from multiple angles of each part while maintaining precise timing with conveyor movement. It also had to operate at production speed without introducing bottlenecks or slowing throughput. In addition, the system needed to clearly communicate inspection results to operators in real time and maintain dependable synchronization between imaging, conveyor motion, and control logic. Even minor inconsistencies in timing or image capture could impact inspection accuracy and overall production flow.

SOLUTION

Tri-Phase designed and built a fully integrated machine vision inspection system tailored specifically to D&H Machine's production process. The solution combined synchronized imaging, conveyor control, and operator feedback into one cohesive platform.

Multi-Angle Vision Inspection System:

Four industrial cameras were positioned around the part to capture multiple inspection angles. This ensured full visual coverage and enabled accurate evaluation of finished components regardless of orientation.

PLC-Integrated Conveyor Control:

The vision system was fully integrated with a PLC controlling a VFD-driven conveyor. This allowed the system to maintain precise synchronization between part movement and inspection timing.

Automated Pass/Fail Decision Logic:

Each part was evaluated in real time. Passing parts continued down the conveyor automatically, while failing parts triggered a red alert light, immediately notifying operators for intervention.

RESULTS & OUTCOMES

The completed system improved inspection consistency, streamlined production flow, and reduced reliance on manual quality checks. By automating decision-making at line speed, D&H Machine achieved a more efficient and reliable inspection process.

IMPROVED INSPECTION ACCURACY

Multi-camera vision coverage ensures consistent evaluation of parts from all required angles.

REAL-TIME PRODUCTION DECISIONS

Parts are classified instantly, allowing seamless pass-through or immediate operator notification.

INCREASED LINE EFFICIENCY

Automated inspection reduces bottlenecks associated with manual quality control processes.

SIMPLIFIED OPERATOR RESPONSE

The system provided instant feedback on product quality, ensuring that every bag met the required specifications before it continued down the production line.

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