Yoghurt Container Maker Turns to Visual Inspection System to Increase Quality Control

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ASC

COGNEX

Jalna POT SET —YOGHURT—

Background

Jalna, a McLaren family-owned business since 1978, is an Australian company focused on producing the highest quality Pot Set Yoghurt. Jalna is no stranger to the food manufacturing process and has continued to produce the purest yoghurt in traditional pots for over 60 years. Their success stems from their commitment to quality control and the delivery of the most natural of products using sustainable, cost-effective methods.

In keeping with their spirit of innovation and commitment to quality, Jalna requires quality at every step of the process, which includes the containers used to package their main product—yoghurt. The task of providing the containers en masse falls to Jalplas, a subsidiary of the Jalna group.

While container production may seem trivial in the larger production picture, health and quality control results are dependent on the direct control of each step of the process. For Jalplas, delivering the perfect container is not a trivial thing. A single imperfection can create sealing or hygiene issues that are incompatible with Jalna's impeccable standards for food production.

Historically Jalplas has relied on manual inspection for a large portion of their quality checks. As a result of this, minor defects were not able to be 100% detected, resulting in negative feedback regarding the quality of their plastic container packaging. The defects—split finishes, crumbles, deformations, blisters, thin walls, etc.—led to wastages, loss of product, and longer production cycles. Even more concerning is that certain container defects may pass through undetected into the final line, contributing to efficiency issues, failed quality checks, and other issues for Jalna. In a worst-case scenario, if damaged containers were to go undetected, there could be issues with shelf life and freshness, and even serious consequences such as product recalls—at a significant cost to Jalna.

Therefore, improving container inspection was urgently required to reduce costs and wastage, and protect their brand perception and image.

System Requirements

Jalplas approach to safeguarding the standards of quality involved the introduction of ASC to augment their quality control processes for their containers. As market innovators, Jalplas understood their requirements started with production and continued all the through to cosmetics and labeling.

Quality starts with details. Only a correctly placed label passes cosmetic controls and prevents a container from being removed from the final production line. On larger containers, handles are incorporated requiring specific orientation and placement for effective use. Avoiding disruption due to faulty handle placement is another crucial detail within the manufacturing process.

Stringent specifications meant delivering quality within the bounds of tight tolerances and that meant providing accurate production line inspections that meet Jalna and the end customer's needs.

System Description

ASC developed a visual inspection system on fundamentally sound principles. For Jalplas, the system meant a good container could easily go through the customer's line without causing disruptions.

Cognex cameras were required to be installed to provide consistent inspection and real-time feedback on the quality of each batch. Achieving this task required ASC to locate and develop multiple positions within the plastic molding and assembly line for the cameras.

Control cabinets were required to provide operators access to production programming. This entailed determining the right location within the production line for the positioning of the cabinet and its front facing viewing screen.
Cable routing needed to be discrete and out of sight throughout the entire system, which was facilitated by the use of effective device networking.
Reliable data collection and remote communication were required to ensure product conformity and performance improvements.
In addition, a future-proof design was needed to ensure flexible utility, minimal downtime and improved production output.

> "When it comes to dairy manufacturing, there is a single universal law across the industry - hygiene."

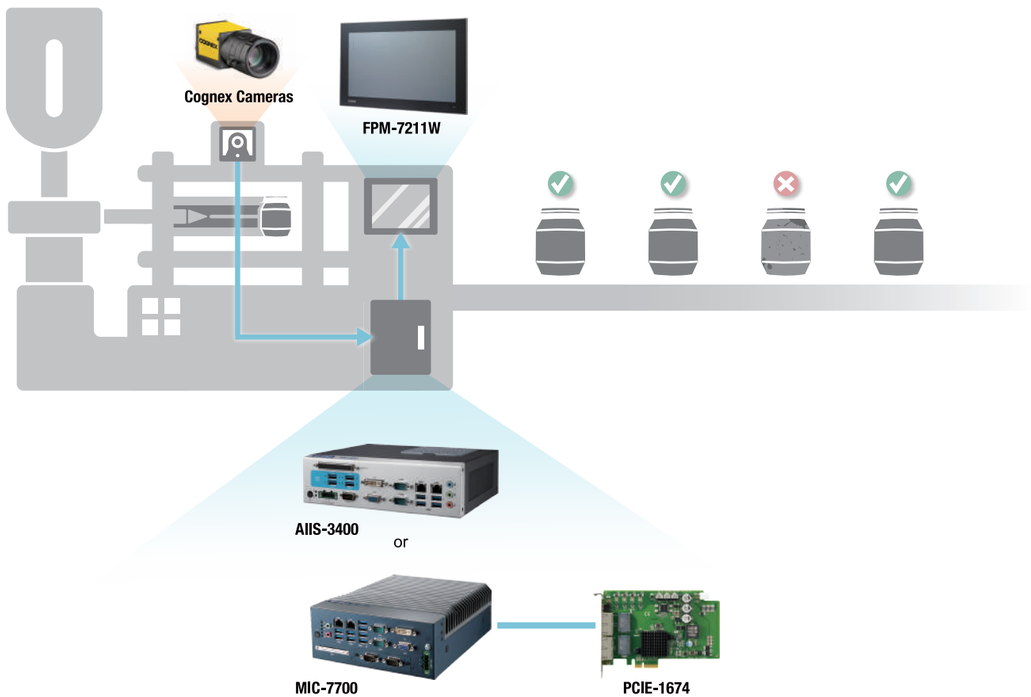
Project Implementation

In implementing the system for Jalplas, ASC developed a specific visual inspection solution for each production machine. Molding machines and specific products had distinct considerations to be addressed. ASC's camera deployment varied to meet these unique requirements. Ensuring connectivity and implementation, AIIS-3400 compact vision systems power by a MIC-7700 compact fanless system and PCIe-1674 frame grabber card to optimize the manufacturing process. Control access was easily established through an industrial widescreen display (IP65 certified) using a slim FPM-7211W enclosure.

System Components:

- Advantech AIIS-3400, compact vision system
- Advantech MIC-7700, Intel® 6th/7th Generation Core i desktop compact fanless System
- Advantech PCIe-1674, frame grabber card
- Advantech FPM-7211W, industrial monitor with PCT touch
- Cognex cameras

System Diagram



Conclusion

High-quality food container manufacturing can easily be achieved through the optimization of the manufacturing process. Controls are put in place to detect and eliminate any defective products. By implementing an automatic inspection system an effective method to inspect each container was carefully checked and the whole manufacturing process was streamlined.

The detection of defects was not the only outcome of the system. The inspection system also brought about the means to identify equipment issues. These could be tracked directly to the source and resolved fast to prevent trickle-down problems.

A secondary benefit came from the accumulation of data. Previous data collection was done by people manually tracking and logging processes. The ASC/Advantech system provided timed stamped images of defects for further analysis and refinement.

The inspection system played a vital role in Jalplas solving a critical issue in the detection and elimination of defects by an effective system of communication from start to end of the manufacturing life cycle.

By allowing ASC technicians remote access (Advantech PLC, AIIS-3400/MIC-7700) they were able to monitor the system in real-time and perform inspection adjustments. In conjunction, manufacturing operators were able to alter production schedules based on surveillance results. The technical teams could analyse surveillance data to ensure production performance, keeping manufacturing efficient and within precise quality control standards.

The testing of containers is a necessary requirement for the food and beverage industry. The packaging and containers affect safety, quality, and product perception. The result of the ASC/Cognex/Advantech inspection system formed an integral part of the client's ability to deliver the products to market while minimizing total costs and increasing flexibility without compromising quality controls.