CASE STUDY
SMART 3D LASER LINE PROFILING

FOR ACCURATE AND EFFICIENT INLINE GEOMETRIC MEASUREMENT OF HIGH-VARIABILITY FOOD PACKAGING

JLS®

www.jlsautomation.com

JLS Automation supplies simple, easy-to-use hygienic robotic packaging solutions for the food industry that solve complex packaging challenges. Designed for sanitary environments, JLS custom vision-guided primary and secondary robotic packaging systems are user-friendly, easy to operate, fast to start-up, and ensure both worker and food safety. Their proprietary robotic tooling and high-speed leak detection systems have been awarded several patents. JLS prides itself on offering unrivaled partnership and aftermarket support to its customers.
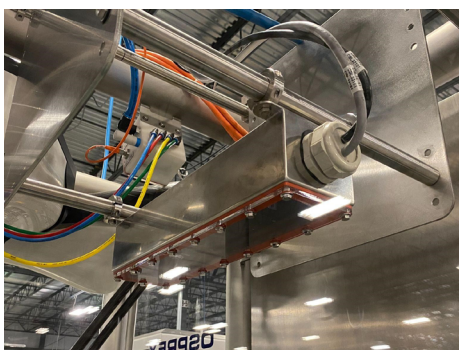
The Application

In this application, JLS vision-guided robotic packaging systems are used for inline product dimensioning and sorting of a wide variety of package sizes and types.

The Challenge

JLS has provided vision-guided Osprey case packing systems for many years using conventional 2D vision with smart cameras. The systems perform well, but JLS is always looking to improve their product offering, so they conducted a review of alternative technologies and suppliers in 2021. One of the greatest challenges is the range of package colors that need to be handled by individual systems, and the frequency that the graphics change.

The Solution

Implementing 3D vision with LMI's Gocator 2170 laser profiler brings a fundamental improvement to JLS' machines. The identification of packages using 3D height information eliminates the problem of trying to identify a package based solely on 2D intensity data used to distinguish the object's color from the background. The 3D geometric information provided by the Gocator 2170 sensor is more robust and prevents potential confusion caused by any variation in the background.

"JLS selected the LMI Gocator sensor to keep us at the forefront of our industry. It provides solid performance, which allows our customers to consistently meet their production requirements."

— Craig Hafner, VP Technology, JLS Automation

THE GOCATOR® ADVANTAGE

- Fast profiling speeds up to 5 kHz

- Generates high-resolution dimensional data of packages (length, width, height, volume)

- High repeatability for reliable measurement over time

- Factory pre-calibrated, ready to measure out-of-the-box

- Easy web based interface for maximum ease of use and operations efficiency

- Onboard software with built-in measurement tools, no third party software required

The Result

JLS' first system shipped to the customer and was commissioned without any issues or even adjustments on-site. The company is also experiencing additional advantages as they implement more Gocator sensors. One of their common systems for chub case packing required change parts to control the background color to deal with the wide range of package graphics. This change part is now eliminated. Another system handles stand-up pouches. The profile of these packages obtained with a 2D camera does not provide information on which end of the package is the bottom. The 3D data from the Gocator sensor readily determines this information to ensure that the package is oriented correctly when picked by an industrial robot.

The use of 3D also eliminates the need for external lighting. This provides a cost benefit, and also improves the sanitary design of our machine. Any component that is eliminated is a component which does not require cleaning or inspection.

A final advantage of the 3D technology is that it works in physical units (mm) instead of pixels and avoids the need to compensate for lens distortion and parallax effects. This improves the accuracy of their product detection and handling.

Next Steps

Due to the success in our Osprey systems, JLS is expanding the use of LMI 3D sensors to their Talon line of primary product handling systems, including a large sandwich assembly line using 8 sensors. The size and shape of the different ingredients varies significantly on this line and will benefit from the height and volume inspections provided by the 3D sensors.

JLS is also building a library of common applications that will accelerate system setup and testing time prior to shipment of equipment.