



Case Study

SHILOH FOODS SWITCHES TO X-RAY INSPECTION TO RAISE QUALITY FOR ITS CASSEROLE PRODUCTS TO NEW LEVEL

Savannah, TN —“If you are going to stay on top of food production, this is what you need,” says Ken Kreider, vice president of operations, Shiloh Foods, Inc., referring to Loma Systems Inc.’s state-of-the-art AXIS X-ray inspection equipment.

The journey started about a year ago, when Shiloh Foods reevaluated its HACCP program. Up until that point, the company had been packaging its side dishes in either paperboard or plastic containers and had been relying on pipeline metal detectors, also from Loma, to detect metal fragments.

“Once we decided to add foil trays to our product line, that’s when we turned to X-ray technology,” Kreider says. (The catalyst was a new bread and potato-based dressing product line which cannot be mixed or agitated, but instead, needs to be ladled into the foil trays.)

Shiloh’s product line consists of approximately 30 different types of side dishes, which it calls “casseroles.” Included are: mashed and sweet potatoes, broccoli and cheese, corn pudding, squash, carrot soufflé and “red, red” apples, to name a few.

Since many of the ingredients start off as agricultural products, the remote possibility exists that small pieces of contaminants such as gravel, glass, stones, dirt clumps etc., can follow the product through the food processing chain. Metal detectors do not have the capability of identifying those types of contaminants, but X-ray inspection units do. Further, x-ray technology can easily and accurately find small pieces of metal within a metallic or aluminum trays.



Loma’s state-of-the-art AXIS system relies on .8 mm linear array technology to scan product up to hundreds of times per second as it passes through the aperture. When placed together, these “slices” form an X-ray image and create a data matrix on X and Y coordinates for analysis. When an abnormal density characteristic is detected, it is highlighted on the live X-ray image and the system automatically rejects the product for further operator or quality assurance analysis.

What differentiates Loma’s AXIS units from other X-ray inspection machines is its flexible software that automatically searches for anomalies within a set of live data. Once that data is analyzed, it is discarded and the process is repeated providing consistent and accurate sensitivity while eliminating false rejects.

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Further, the unit features a large monitor with a live X-ray image, which displays detected contaminants in color. Also standard are QA reports, batch reports, fault reports, rejected image capture facility and optional communication connections.

The detection parameters for Shiloh's Axis unit were:

Stone and glass: 3 to 7 mm

PVC, Teflon® and natural rubbers: 4 to 8 mm

Ferrous, non-ferrous, stainless steel: 1.00 to 2 mm

We installed the AXIS X-ray unit about a year ago. And we have been very pleased with its performance," Kreider says.

Since that time, Shiloh has been running all of its products through the Axis X-ray unit—not just those in foil trays. The packaging mix for the product line consists of 2-, 4.5-, 5- and 7-pound foil trays; and 1- and 3-pound sizes in either plastic or paperboard containers. The tray sizes vary from 8 –13" long and 6 –11" inches wide.



Erik Brainard, X-ray product manager for Loma Systems explains that a high-powered Axis 500 unit has been installed at Shiloh. "The power requirements necessary to properly operate an X-ray unit depend on the product density—the denser the product, the more X-ray power is needed to get through," Brainard says.

And although Shiloh's current product formulations are not at the high end of the density scale and do not require the highest range of power, the unit was configured to take into account potential changes in product formulation. The Axis' variable power feature enables it to use just the right amount of X-ray penetration for each application.

Additionally, the unit features Intralox conveyor belting.

"Because Intralox belts have varying degrees of density, some competitive units cannot be calibrated properly to adjust for the variances. Our software has been programmed to cope with the variances and not lose sensitivity," says Erik Brainard, X-ray product manager, Loma Systems.

The design of unit also offers maintenance cost-savings for Shiloh. "All you have to do is clean the belt at the end of the shift," Kreider explains. "We've experienced quite a bit of cost-savings when compared to our pipeline metal detectors which require more labor intensive sanitation."

In addition to the occasional non-food, agricultural field particulate, the unit is also able to detect "product clumps." These are situations where ingredients such as salt, sugar, etc., were not properly blended during the processing stage. This is another way that the Axis X-ray unit can help elevate Shiloh products to a higher quality level.

Kreider also stresses the ease of operation. Sensitivity for each product is preprogrammed into the unit. Product changes are fast and easy using the unit's touch pad control system.

And not only are production and quality benefits being realized since the unit was installed, but sales efforts have also been positively affected.

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“By telling our customers that we have installed an X-ray unit, it shows them the high level of commitment we have to a quality product. Since, many companies out there do not yet use this state-of-the-art detection technology, we feel we have an advantage over the competition,” Kreider explains.

Shiloh Foods distributes its casserole products to both institutional and retail outlets under its own and private labels. Additionally, the 12-year old firm is also known as the largest producer of hush puppies in the world.
