CASE STUDY

P&P Optica

Pork Processor Maximizes Bone Detection with PPO's Cutting-Edge Technology

A leader in premium pork products faced ongoing challenges with bone fragments in their final products, leading to customer complaints and the potential loss of a top customer. Despite using both X-ray systems and inspectors, they struggled to consistently meet the acceptable bone threshold required by their largest client. The company turned to PPO for a more effective detection solution to address this.

The Challenge

The company's production process involved automated deboning lines, where the layout and mechanical processing sometimes led to bone fragments in the final product. The company had regularly exceeded its customers' bone tolerance limits, and its top client was preparing to implement a chargeback system due to repeated issues. Traditional X-ray systems were missing bone fragments, while human inspectors couldn't keep up with the high production volume. Additionally, the X-ray system tended to reject large quantities of product (~200 lbs per detection), making it difficult to find the detected bone pieces and recover usable meat.

The Solution

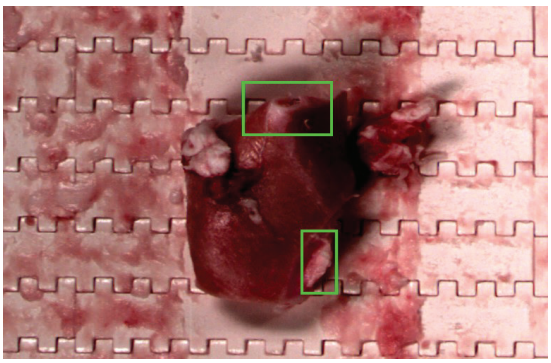
The company worked with PPO to implement a hyperspectral imaging system specifically designed for detecting bone in pork. PPO worked closely with the client's team to build multiple custom bone detection models—something that had never been done at this scale in pork processing. Before deploying the system PPO's software team trained AI models using thousands of product samples, refining the system's ability to recognize bone material as well as many other foreign materials, based on real-world conditions. Once installed, the PPO system continues to learn from in-plant data. This continuous improvement allows the customer to enhance detection accuracy, optimize yield, and minimize unnecessary waste—ultimately strengthening their quality assurance processes and maintaining customer trust.

In this solution, two specialized bone models were created alongside detection models for foreign materials:

- One model focused on detecting exterior bone fragments.
- The second model identified marrow presence within the meat.

Implementation & Results

PPO's system provided real-time insights, allowing the plant team to adjust their processes based on detected bone levels. The system's precision also enabled them to isolate contaminated sections, significantly reducing unnecessary product waste.



By integrating PPO's hyperspectral imaging technology, the customer achieved:

80% Bone Detection Rate: Early estimates indicate that PPO's system is catching about 80% of bone fragments.

Reduced Product Waste: Unlike the previous system which rejected ~200 lbs per detection, PPO's system rejected only ~3 lbs, making recovery much more efficient.

Improved Process Insights: When bone levels spiked, the company could trace the issue back to specific deboning lines—such as the ham line—allowing them to improve efficiency and reduce overall bone contamination.

Preventing Chargebacks: By keeping bone levels below the customer's threshold, the company mitigated the risk of financial penalties and preserved a critical business relationship.

Conclusion

Through the adoption of PPO's advanced bone detection models, the company transformed its quality control processes, significantly improving bone detection accuracy while minimizing product loss. Beyond superior bone detection, PPO's Smart Imaging System excels at detecting low-density foreign materials like rubber, wood, and plastics. It also assesses quality factors such as composition and freshness while providing real-time data for improved reporting, enhanced quality, and streamlined production.

FSQA Supervisor on PPO's detection solution: "The false rejection rate and weight is mind blowing. We're used to the FOSS system which kicks out an average of 200 lbs each time! With PPO, the average kickout is about 3 lbs and it's easy for our inspectors to find what's been kicked out. We're very pleased with the PPO system."