



White Paper

The Expanding Role of Digital Sorters in Food Processing Lines

The Expanding Role of Digital Sorters

The primary objective of a digital sorter applied to food processing operations has always been to remove all foreign material (FM) and just the necessary amount of product defects to meet quality grade specifications, while minimizing false rejects so the food processor can deliver the necessary product quality at maximum yield. With redesigned mechanical architectures, next-generation sensor technology and intelligent new software, today's state-of-the-art sorters achieve these goals better than ever before – and they do much more.

Powered by Industry 4.0 and IIoT (the Industrial Internet of Things) functionality, modern sorters are increasingly being utilized as data centers at the same time they sort product. Equipped with sophisticated 'Information Analytics' software, a sorter can collect, analyze and share big data across a processor's enterprise to reveal patterns, trends and associations that help optimize operations and create a competitive edge.

Leading the Data Revolution

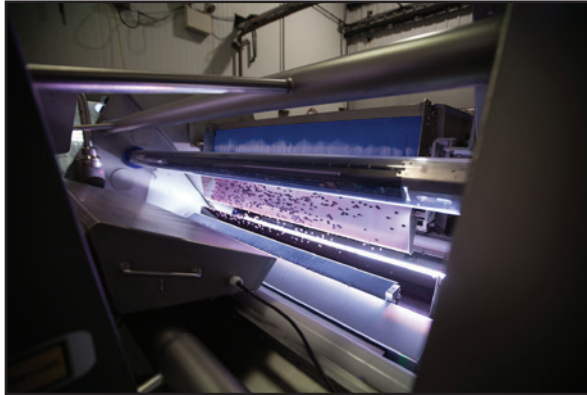
Digital sorters are uniquely qualified to lead the data revolution. They 'see' 100 percent of the product on the line, recognizing color, size, shape, structural properties and chemical composition, depending on the sensor inspection technology in use. Their powerful computers can continuously collect and analyze information about the sort process and the product flowing through the processing line, whether that data is used to make sort decisions or not. Equipped with a versatile infrastructure compliant with various communication protocols including OPC-UA, Ethernet/IP, Modbus and more, sorters can seamlessly integrate with line control and factory automation systems to share data and security enable remote management of their operation. To be an effective smart device within the Industry 4.0 framework, the flexibility to support a variety of data formats and connectivity protocols is essential.

The ease of harnessing large amounts of valuable data on a digital sorter continues to advance, and with larger data sets comes the opportunity to cultivate more valuable insights and actionable information. Highly customizable and ever expanding, product and process information categories of interest can be defined by operation

managers drawing from a wealth of available real-time and near real-time data. By analyzing the information and generating useful reports, raw data becomes knowledge that is harnessed to better manage incoming raw materials and optimize processes upstream and downstream of the sorter



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to achieve the next level in operational efficiencies.

There are almost as many examples of how Information Analytics can be used to improve operations as there are food processing lines. At the front of the line, analyzing the quality of incoming product by lot or by supplier enables payment schemes that reward higher quality. A sorter located after a transformational process can collect data to control and ensure the efficiency of that

upstream process. Or it can offer predictive analysis, issuing smart alarms if certain conditions begin trending in a problematic direction, and human intervention is necessary to restore optimal operating conditions. For food processors that operate multiple sorters on different lines or production facilities, data can be compared to help managers optimize performance across the enterprise.

More Food Sorting Developments

At the same time today's modern digital sorters are beginning to be used as data centers, they continue to sort, with recent advancements enabling new standards of performance and increased ease of use.

For one, innovative new mechanical architectures for belt-fed sorters position bottom-mounted sensors, along with light sources and backgrounds, away from product splatter. This enables the sorter to sustain top and bottom viewing for all-surface inspection of the product stream throughout the longest production cycles in the most demanding environments.

One of the biggest developments in inspection technology comes from multi-sensor Pixel Fusion. This powerful detection function combines pixel-level input from multiple sensor types and locations to produce higher contrasts to find and remove the most difficult-to-detect FM and defects, without 'false positives.'



Greater automation is minimizing the need for labor and enhanced ease-of-use is reducing training requirements. Superior sanitation, simplified maintenance, greater operational efficiencies and lower cost of ownership further differentiate today's food optical sorters from legacy equipment.

In Summary

For processors that want to ensure food safety and optimize product quality while maximizing yield and improving operational efficiencies, the newest digital sorting technology delivers. By expanding a sorter's role as an information center for the processing line, more data-driven decision making creates new opportunities to win new competitive advantages.



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