



White Paper

Expanding the Value of Digital Sorting with Information Analytics

In the world of technology, hardware is an equalizer if processors are leveraging similar solutions, provided by suppliers with similar capabilities. In such an environment, what creates a competitive edge is learning to use that hardware more effectively. To the extent that greater intelligence drives this success, the pursuit is on, and digital sorters can help.

“Information Analytics” is the next wave in digital sorting. With it, we’re using digital sorters to sort while simultaneously using them to collect, analyze and share data across the processor’s enterprise. By turning data into knowledge that can be acted on in any number of ways, processors can better manage raw materials and optimize processes to produce the desired product quality while increasing yields and reducing costs.

More than Sorting

Digital sorters have a unique opportunity to offer intelligence at the same time they sort. They “see” 100 percent of the product flowing on the line. When harnessed, they can capture vast amounts of sort data and product data whether that data is used in the sort process or not. With their powerful computing power and easy connectivity to networks and other plant equipment, sorters equipped with Information Analytics offer new tools to optimize processes. The question becomes how to best utilize this enormous capability.

Customized Intelligence

Information Analytics is a massively flexible suite of software capabilities tailored to meet the specific needs of each processor. With it, the sorter is directed to collect the data that most interests the processor, analyze that data, if needed, and share the intelligence in a manner that maximizes the value to each user.



Data Becomes Knowledge

Given the versatility of Information Analytics, the variety of solutions it generates and the specific benefits it derives is virtually unlimited. Think of what you could do if you knew more about your product and processes. Here are some ideas:

Compare data to gain insights about processes, locations, operators and more. For example, collect product data from two sorters at different points on the line and better understand how a transformational process in between (like freezing) is affecting the product. Or, use this data to isolate a potential source of foreign material (FM). Consider data from different lines to learn where underperformance is and drive it out. Compare data from one facility to another to find differences and use the knowledge to improve operations. Compare data by shift and identify operators that need more training.

Use Information Analytics to create smart alarms. If the sorter sees certain conditions, such a spike in the incoming defect load or other out-of-bound conditions, it can send real-time emails, text messages or other alarms so the problem can be addressed as soon as possible. For example, ejection rates that are too high or too low can point to an upstream line problem that needs fixing. Smart alarms can be predictive too, identifying a trend that's moving in a problematic direction, and sending an alarm before out-of-tolerance conditions develop.

Data collected, analyzed and shared by sorters can optimize raw material utilization. Incoming product quality data can be collected and reported by batch, supplier, field, etc. This can support a payment plan that rewards quality with price, either improving the quality of raw materials to generate high quality finished product or saving money, or both.



Process control is a classic example of what Information Analytics can enable. A whole potato sorter (WPS) can collect dimensional data, even if it is not used in the sorter's accept/reject decision, and use it to optimize feeding of the downstream cutting operations. Or, a WPS can detect remaining peel and control the upstream peeler to increase or decrease its dwell time, as required.



Beyond these real-time links, process control can be improved by Information Analytics via insights that come from the intelligence in offline batch reports that statistically manipulate the data into actionable intelligence. Some customers may want to know the standard deviation of their product length and width over a shift, while others want to know the distribution of critical, major and minor defects or FM. One customer measures the sorter's belt coverage to calculate an approximation of the line's throughput.

In addition to using Information Analytics to better manage raw materials and processes upstream and downstream of the sorter, it can be used to better operate the sorter equipment itself. For example, Sort-to-Grade (STG) for potato strips collects data, statistically manipulates the data and uses it to optimize its accept/reject decisions. With it, sorters grade by count, accepting or rejecting each defective piece to control the quality of the output to a defined grade, specified by the processor. When the grade allows for the presence of some defects, STG allows the processor to meet the grade requirements while maximizing yield. Simplified-Length-Control™ (SLC) is an STG-like software solution that focuses on managing the length of the French fry. STG and SLC can increase yield by one to three percent by reducing unnecessary rejects while improving the consistency of final product quality and dramatically simplifying the operator's experience.

Other valuable data collected by the sorter can enable the FMAAlert™ function, which captures and saves a digital image of every object of interest identified as a critical foreign material, to improve FM tracking and control. These images help processors quickly identify critical quality problems and take corrective action. Or, monitoring its eject-valve activity, a smart sorter can send an alarm if a condition is met such as frequent activity in one ejector or section of ejectors, which could indicate a sanitation issue such as a dirty belt or sensor window that needs cleaning. Sorters can even be programmed to auto-calibrate to maintain performance as production conditions change.

Enabling Information Analytics

The flexibility of Information Analytics enables a smart digital sorter to be customized to collect, analyze and share the data in a manner that maximizes the value of the sorter to each customer. All three aspects – data collection, information analysis and connectivity/ data sharing – are tailored to the customer requirements.

Equipped with Information Analytics, the sorter continuously collects and stores a variety of information about the sort process and the product flowing through the sorter, whether that data is used to make sort decisions or not. Both real-time and batch data can include the objects' dimensions; color and other image information; good product, defect and foreign material (FM) details; every aspect of the sorting operation such as detection activity of specific defect categories, ejection activity and more.

The sorter can leverage its powerful analytical capabilities to process the collected data to drive more intelligent sort operations and/or generate custom, configurable statistical reports from that analytical process.

Data can flow directly from the sorter to the food processor's SCADA system as well as upstream and/or downstream equipment, thanks to a sorters' OPC-compliant infrastructure. Additionally, the sorter can send statistical information to databases or CSV files, which can then be accessed, manipulated and used in a variety of ways. Sorters can be integrated flexibly with web browsers, Ethernet/IP and Modbus devices and/or any brand of PLC and protocol for reporting and/or remote management purposes.



Remote Access

Empowering the remote operation of a sorter is an indirect benefit of Information Analytics. The intelligence that Information Analytics delivers to remote operators allows them to understand what's happening on the line without being present. The operator can also access and fully operate the sorter's user interface from a remote location. Since Information Analytics establishes connectivity between the sorter and the customer's network for data sharing, that connection goes both ways to permit a wide variety of remote activities.

What's New?

Some examples of what can be accomplished with Information Analytics are not new ideas – they are field proven by the most technologically sophisticated potato processors in the world. What's changing is that the trend to harness a digital sorter's intelligence is now catching on with more processors, and demand is rapidly rising. To satisfy these customers, Information Analytics, a powerful suite of new software capabilities, has been created to streamline the customization process.

With Information Analytics, digital sorters sort while simultaneously collecting, analyzing and sharing data across the processor's enterprise. By turning data into knowledge that can be acted on, potato processors are better able to optimize their operations to achieve their desired product quality while increasing yields and reducing costs.

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