



Consumer Food Packaging



Company Eliminates Mixed Pallets

with Automated Verification System



CUSTOMER CASE STUDY

Manual system and processes replaced to achieve 100% accuracy

RockTenn and MeadWestvaco (MWV) merged in July 2015 to become WestRock, the second largest packaging company in the world, with 42,000 team members in over 275 operating and business locations in 30 countries.

WestRock (formerly RockTenn) is one of North America's leading producers of corrugated and consumer packaging and recycling solutions. Based in Norcross, Georgia, a suburb of Atlanta, WestRock employs approximately 26,000 people and operates more than 240 facilities in the United States, Canada, Mexico, Chile, Argentina and China.

WestRock's Consumer Packaging division operates a network of folding carton plants and paperboard mills, including coated recycled and bleached paperboard. As the second largest North American manufacturer of folding cartons, WestRock Consumer Packaging produces high quality paperboard packaging for a wide range of food and non-food markets, each with unique substrate functionality and distribution requirements.

The Problem:

WestRock Consumer Packaging manufactures, prints, cuts and palletizes consumer food packaging cartons for leading manufacturers. Flat, branded cartons are manually loaded onto folding and assembly lines where they are glued, folded and palletized for Just In Time (JIT) shipments to various food manufacturers, who then fill the cartons and ship to grocers and other food retailers around the world. In food manufacturing, incorrect packaging can bring serious liability, particularly due to consumer allergies. Although WestRock's Claremont, North Carolina manufacturing facility used automated material handling for carton folding, assembly and palletizing, they, along with other WestRock locations, experienced frequent mixed cases on a pallet, resulting in the wrong packaging being sent to food

SOLUTION OVERVIEW

INDUSTRY

Corrugated & Consumer Packaging

PROBLEM

Mixed-case errors causing potentially serious liability concerns and product recalls due to package mislabeling.

SOLUTION

Improve work-in-process system with intelligent, software to provide real-time data on raw materials, production runs, packaging and shipping.

RESULTS

Eliminated production visibility problems and gave supervisors immediate access to production information from all lines with improved accuracy, efficiency and quality control, all while maintaining production levels and achieving 100% shipment accuracy.

manufacturers and opening the potential for large liability. Palletized cartons, packaged flat and on their edge, tend to look the same during assembly. If, for example, a case of pepperoni packaging were to be interspersed with broccoli/cheese packaging, operators could not easily detect the mixed cases in the batch visually.

Mixed case scenarios were happening repeatedly at multiple WestRock locations. With numerous errors and such potential liability at stake, WestRock's largest customer, a leading consumer food manufacturer, required changes to ensure mixed-case pallet errors would be eliminated for good.



Although WestRock implemented a variety of manual processes to solve the problems, including visual "line clears," supervisory sign-off on visual line clears, mandated emptying of all waste after production runs, and eliminating the reuse of old product on a line, etc., the errors still occurred, primarily due to manual processes, human errors and individual facility issues. WestRock's customer wanted to see an automated system put in place to prevent human errors.

Why Inovity?

WestRock discovered Inovity (formerly BarCode ID Systems), from an Internet search for barcoding companies in Atlanta. Along with several other contenders for the business, Inovity began the meeting/discussion process with WestRock and quickly won the business for several key reasons.

Being Atlanta-based, Inovity could provide WestRock with an accountable, hometown provider, since the multi-facility project was driven out of WestRock's corporate location in Norcross, Georgia, a northeastern suburb of Atlanta. Additionally, Inovity' business footprint, which includes sales and system engineering offices in

various locations in the central and eastern regions of the United States, fit closely with the WestRock plants that needed to be automated. Lastly and most importantly, Inovity was not just an industrial automation specialist, but also the only contender under consideration with extensive and comprehensive data collection, data management and industrial automation experience.

During initial discovery meetings, Inovity uncovered that WestRock was lacking visibility into its Work-In-Process (WIP) functionality, which could lead to damaging traceability issues. If they were to experience any printing, manufacturing or material problems, WestRock had to manually review production information with each department manager to get detailed traceability information for any job, other than the raw materials used and the day it was produced.

In order to provide the best solution possible for the mixed-case problem, Inovity suggested additional improvements to WestRock's current WIP system. The solution known as [Automation IQ™](#) or [AIQ](#), would provide WestRock with real-time information about which case, which line, which operator and which raw materials went into a production run, along with where it was packaged, and where it shipped. By selecting Inovity for WIP system integration beyond the initial mixed case problem, WestRock would reap the benefits of improved traceability with immediate, on-demand access to production information.

The Solution:

Inovity visited WestRock's most- and least-automated facilities to understand the gamut of production scenarios. The goal was to provide a solution for the mixed-case problems that would have minimal impact to operators, yet be flexible enough to accommodate other facilities of differing automation levels. Ultimately, if the solution worked to WestRock's liking at the Claremont plant, it would be implemented across all of their facilities nationwide.



WestRock
Consumer Packaging at

Claremont was running long and high speed print jobs on four packaging lines moving at approximately 40 feet/minute, with one foot of distance between cases. Each line had its own robotic case palletizer that required no operator intervention, and workers rotated stations approximately every two hours. Product mixes often occurred when workers or shifts changed, when one job stopped and another started, when operators forgot to clear the palletizing robots, when they failed to eject existing product on the line before they programmed the next job, or for other manual/human reasons.

Inovity implemented programming changes to WestRock's homegrown MRP system, "PFDCS" (Plant Floor Data Collection System), which feeds current job number information to the Automation IQ (AIQ) software, as well as programming changes to WestRock's robotic palletizers and pallet stretch wrap machines. The complete system was designed, built and installed by Inovity.

[Automation IQ](#) is a Windows-based server application that controls peripheral devices such as fixed-mount scanners and digital I/O modules (in this case, two Microscan QX870s and two Moxa I/O Logic E2210s per line), and applies business rules and logic as required by WestRock. Upon receiving input from PFDCS and the fixed-mount scanners AIQ would use the DIO modules to translate Ethernet data messages into control signals which activated light stacks and signaled WestRock PLCs (Programmable Logic Controllers) to either activate diverters, end the robotic palletizing cycle, or stop the stretch wrap machine. The DIO modules were also used to receive control signals, such as resetting after a line stop. The AIQ solution works in detail as follows:



- Capture PFDCS job number and await input from a fixed-mount scanner positioned to scan the job number and unique case ID number from bar codes printed on the side of the shipping cases by an inkjet printing system. Send data to AIQ.
- AIQ compares the scanned data to the job data received from PFDCSAs a configurable system based on rules created for WestRock, AIQ logs information into a database. If a NO READ occurs (box detected but scanner could not decode), it

triggers a yellow flashing light and signal diverter.

- If a second case is a NO READ, AIQ flashes yellow & diverts the case again.
- On a third NO READ, the light stays yellow and a signal is sent to stop the line. Such a scenario could indicate a print quality issue with the inkjet barcodes on the shipping cases.
- On the first MISMATCH read (scanned data is different from job number expected), AIQ flashes a red light, triggers a diverter, stops the line, and sends an email to the quality control manager. The responsible line lead must manually reset the line by pushing a button, which forces the lead to address and/or resolve the problem. While any operator can stop the line, only the line lead has authorization to restart it.
- A MATCH scan triggers a green light and allows the case to pass.
- When workers begin a job from PFDCS and send the value to AIQ, AIQ triggers the robot to eject the pallet if the job number is different from the expected value. Operators can then confirm or change the load pattern.

Between the first fixed-mount scanner and DIO module is an intentionally-designed station for operators to manually inspect cartons. The second scanner and DIO act as a failsafe, because no operator can interfere with boxes on the line after the inspection station. This setup ensures that only the correct cartons and cases proceed to an elevator for robotic palletizing. Incorrect or poor-quality items are kicked-out before palletizing, which improves line productivity since the robots never have to stop.

The Results:

Since implementation of the fully-automated AIQ solution, WestRock's Claremont facility achieved 100% accuracy in packaging shipments to its customers. Personnel from WestRock's largest customer have come to the WestRock facility to observe and evaluate the solution in action—and continue to do so—and are highly pleased with the improvements. The facility is also used as a showcase to attract new WestRock customers.

In addition to the mix-prevention functionality, the AIQ solution from Inovity added traceability improvements that WestRock didn't consider when the project started. Each case is uniquely

identified and production data is captured to reveal the day and time each individual case came off the line and was palletized. They now know which operator was running the line and which cases went onto each pallet, so any quality or performance issues can be addressed specifically.

Although WestRock had full understanding of its raw materials inventory and finished goods counts, they had no visibility of the materials or production status in between. The AIQ solution

has allowed for improved piece-count accuracy and complete visibility of accurate, real-time



production data. Prior to implementing AIQ, WestRock did not know which material runs were complete until an entire pallet was packed, shrink-wrapped, labeled, scanned and added to inventory from any of four lines running simultaneously. If operators went home for the evening and left both partial and full pallets on the line, WestRock had no way of knowing how many cases remained or where in production the job was, nor could they tell with certainty if an order would ship that day. Since they operated with paper tickets, often without true job numbers, they

did not know the status of each order or even what job was running without asking a floor supervisor. Additionally, they did not know their scrap and waste rates. With the AIQ solution along with some adjustments to the PFDCS manufacturing system, WestRock could now determine which jobs were running on what lines and have production counts (cases produced, cases needed, etc.) and finished-case information available down to the second. All production visibility problems were eliminated and plant managers and supervisors could have immediate access to production information from all lines.

Because of the successes at the Claremont facility, Inovity has implemented AIQ at three other WestRock locations in Nicholasville, Kentucky, Conover, North Carolina and Joplin, Missouri. While each plant had unique production setups, AIQ was flexible enough to accommodate greater or lesser degrees of automation present at each location. WestRock is also considering implementation of a similar AIQ solution from Inovity in some of its pharmaceutical packaging plants.

The Automation IQ solution from Inovity provided WestRock with complete production visibility and traceability, and eliminated all mixed-case errors. With improved accuracy, efficiency and quality control, WestRock has maintained production output while achieving 100% accuracy in its food packaging shipments.

Inovity, formerly BarCode ID Systems, is a business process improvement company that transforms technology into powerful, integrated solutions that drive efficiency and reduce costs. As a specialty IT systems integrator, Inovity designs and delivers innovative solutions that connect and relay crucial business information between all points of operational activity, in real time. By emphasizing workforce mobility, ERP data mobilization and business process intelligence, Inovity provides automated technology solutions for manufacturing, distribution, healthcare, field service and retail environments.

Established in 1993, Inovity is privately owned and headquartered in Atlanta, and maintains sales and engineering offices in Atlanta, Chicago, Boston, Greenville, SC, Greensboro, NC, Columbus, OH, Huntsville, AL and Ft. Lauderdale. With innovation at its core, combined with solutions for productivity, agility, efficiency, connectivity and visibility, BarCode ID Systems has become Inovity. Contact Julie A. Leonard, Marketing Director, 800-452-7418, ext. 9045, jleonard@inovity.com, <http://www.inovity.com>.