THE CHALLENGE

Customer Health and Safety Risks

Manufacturing a product with a time-sensitive shelf life involves abiding by data requirements to ensure consumer health and safety guidelines.

Compliance Difficulties

New production and packaging processes need real-time visibility into extensive automated track and trace reporting. Along with health and safety guideline challenges, the manufacturer faced inefficiencies created by manual processes around key tracking procedures.

Track and Trace Keeps Consumers Safe and Healthy

Solution: Track and Trace System

An automated track and trace solution was implemented to provide real-time visibility throughout the facility and automate data extraction from the existing batch system. Supply chain visibility with RFID traceability automated data transfers with improved accuracy. To manage the recipes and track material information from ingredient supplier to finished product, a batch tracking software was implemented eliminating product losses and ensuring compliance with FDA regulations.

POLYTRON

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EXECUTIVE SUMMARY

Beverage Manufacturer Implements Automated Track and Trace

Client: Beverage manufacturer

Challenge:
Time-consuming, error-prone manual processes make for difficulties complying with FDA regulations and leave manufacturer vulnerable to costly product losses and consumer health risks.

Solution:
Industry 4.0 IoT solution was implemented to provide real-time visibility throughout the facility and automated data extraction from the existing batch system.

Results:
Supply chain visibility with RFID traceability creates benefits including:

- Data entry labor savings equivalent to one full-time position
- Automated data transfers with improved accuracy
- Facility-wide dashboards and reporting
- Compliance with FDA regulations

Health and Safety Requirements Pose Track and Trace Challenges

The plant manager in a beverage manufacturer was increasingly overwhelmed by the steadily mounting data requirements necessary to ensure consumer health and safety for a product with a time-sensitive shelf life.

Real-time visibility into extensive automated track and trace reporting was also necessary for new production and the packaging processes. The tracking requirements for ingredients, work in progress (WIP), and product were critical to meet FDA regulations and quality requirements.

Compounding the challenges, the manufacturer faced inefficiencies created by manual processes around key tracking procedures:

- Key performance indicator (KPI) reports were generated by running batch reports, extracting relevant data, manually transferring data into an Excel spreadsheet that was published and then retrieved by users.
- Material consumption between the batch system and the material inventory system was also manually reconciled via a similarly labor intensive process of generating batch reports, extracting consumption data, and manually reconciling it with the material inventory system. The reconciliation was then manually entered into the inventory system.

These processes were time consuming, error prone, and provided no real-time updates. The production manager knew that this approach was becoming increasingly unsustainable.

Plus, with product data reporting being conducted post-production, real-time product adjustments and quality issues were left out of the total production equation -- a situation that can lead to costly product losses, and potential risk to consumer health.

Polytron was engaged to implement an enhanced end-to-end track and trace solution. The solution was designed to support the sustainable production of a healthy, quality product.

Key Performance Indicator Dashboards

The first challenge of the project was to provide the manufacturer with much needed plant-wide visibility into KPIs for real-time and historical trending.

The Polytron solution provided an application to match the manufacturer's existing dashboards. This provided real-time visibility throughout the facility and automated data extraction from the existing batch system.

Batch and Material Inventory System

The Polytron solution provided for automated transfer of material usage from SQL batch database to the inventory database. Material consumption exception reporting was then developed to show issues and discrepancies.

Ingredient, Work in Progress, and Product Track and Trace

The third challenge was extensive tracking, tracing, and reporting for new production and packaging processes. The tracking requirements for ingredients, WIP, and product were needed to meet FDA regulations and quality requirements. The manufacturer requested a solution that addressed the following:

- Detailed process tracking and monitoring to manage the product's time-sensitive processing cycle in order to maintain its "freshness."
- Supplier and facility tracking across multiple ingredient suppliers, two processing facilities and a storage facility to manage the entire production cycle.
- Recipe management system with Operator work instructions in the pre-blending areas, which had no Programmable Logic Controller (PLC).
- Automated radio frequency identification (RFID) and/or barcoded tracking of all ingredients and WIP.

Industry 4.0 IoT Solution

Polytron implemented the following solution for ingredient, WIP, and product track and trace:

- A batch tracking software was implemented to manage the recipes and track material lot information all the way from ingredient supplier to finished product in the storage warehouse
- Multiple RFID types were utilized:
    1. Disposable RFID tags were applied to shipping boxes at the supplier
    2. Removable/reusable RFID tags were used for barrels
    3. Permanent RFID tags were mounted on pre-blend bins
    4. Permanent RFID tags with temperature readings were mounted on semi-finished product bins.
- Barcode readers and scales were installed for material tracking.
- Small hand-add ingredients and finished pallets used barcode printers and readers.
- Customized work instruction pages for the pre-blending operators were provided through WIP software.
- Reports were developed for track and trace, scheduling, WIP, and batching.

Polytron was engaged to implement an enhanced end-to-end track and trace solution for a product with a time sensitive shelf life. The solution was designed to support sustainable production of a healthy, quality product.

Results and Benefits

The new track and trace system now delivers:

- Realized labor savings for data entry (equivalent to one full-time position)
- Increased data accuracy
- Automated data transfers
- Real-time production updates
- Quick identification of material consumption discrepancies
- Centralized recipe management
- Electronic work instructions for pre-blend operators
- Facilitation of more accurate WIP expiration management to ensure product safety and quality
- Facilitation of increased productivity
- Facility-wide dashboards and reporting
- Full track and trace for quality issues or recalls
- Compliance with FDA regulations

About Polytron, Inc.

Since 1983, Polytron has been an industry leading system integration and engineering consulting firm delivering a broad spectrum of innovative manufacturing solutions. Polytron serves manufacturers in the food, beverage, consumer packaged goods, chemical, and life sciences industries across North America.

To learn more about Polytron, visit us online **(www.polytron.com)** or contact us **(www.polytron.com/contact-us)** to talk to a specialist today.

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