Driving Dairy Compliance Forward:

Land O'Lakes Adopts QR Code Seal Innovation

OVERVIEW

Dairy transportation logistics involve a highly regulated process to move raw milk from farms to processing plants while maintaining strict sanitation and temperature controls. ***Key to ensuring this compliance is the use of wash cards,*** which are part of a ***rigorous documentation and sanitation process.***

Traditional dairy transportation processes require drivers to manually record seal numbers, including climbing to the top of milk tanks to retrieve information for wash cards. This not only poses safety hazards but also increases the risk of transcription errors, which could lead to costly shipment rejections and noncompliance.

To solve these issues, Land O'Lakes and J. J. Keller ***collaborated on an innovative solution:*** a pull-tight security seal with a peel-off QR code label. This design allows drivers to scan seal numbers directly into a custom app and affix the label to the wash card, eliminating manual entry and reducing errors. The result balances regulatory compliance, operational efficiency, and driver safety while setting a new standard for dairy logistics.

CHALLENGE

The dairy transport process requires strict adherence to regulatory standards, including accurate documentation of seal serial numbers on wash cards. During a conversation between a J. J. Keller sales representative and Land O'Lakes, pain points surfaced around the manual seal documentation and integration with a new shipment-tracking app:

- **COMPLEX COMPLIANCE:** Regulations required seal numbers to be attached to wash cards, adding another layer of manual work.

- **SAFETY CONCERN:** Drivers climbed to the top of the tank to retrieve the seal number for the wash card, creating potential fall hazards.

- **MANUAL RECORDING ERRORS:** Drivers wrote down seal numbers by hand, which were later transcribed by others — creating frequent mismatches.

- **HIGH FINANCIAL RISK:** Incorrect seal documentation could lead to milk shipment rejection, costing up to ***$10,000 per tank.***

These inefficiencies and risks threatened operational accuracy and profitability, prompting Land O'Lakes to seek a streamlined solution.

DAIRY TRANSPORTATION LOGISTICS PROCESS:

1. **On-Farm Storage:** After milking, raw milk is quickly cooled and stored in a refrigerated bulk tank.

2. **Collection & Testing:** A licensed bulk milk hauler/sampler arrives to collect and test a milk sample for quality and antibiotics.

3. **Transportation:** The hauler transfers the milk into the insulated tanker truck. The milk is commingled with other loads along a "milk run" route, with the tanker remaining sealed between stops to prevent contamination.

4. **Processing Plant Reception:** The milk is tested again for quality and antibiotics before it can be accepted for processing.

5. **Sanitation:** After emptying, the tanker must be thoroughly cleaned and sanitized. **A Wash Card provides essential documentation to verify that a milk tanker has been properly cleaned and sanitized according to regulatory standards.**

STRATEGIC RESPONSE

Land O'Lakes and J. J. Keller partnered to explore ways to improve the security seal/wash card system. Through multiple collaborative discussions, onsite operational reviews, and hands-on testing, the teams worked together to design a solution that would deliver greater efficiency and reliability:

- **REDUCE HUMAN ERROR:** Replace manual entry with automated data capture.
- **SIMPLIFY COMPLIANCE:** Ensure seal numbers could be easily transferred to wash cards.
- **ENHANCE USABILITY:** Create a driver-friendly process that could scale across locations.

THE SOLUTION

The final product combined simplicity with ingenuity:

- **PULL-TIGHT SEAL:** Maintains security during transport.
- **PEEL-OFF QR CODE LABEL**
  - Drivers scan the QR code into a custom app, eliminating manual entry.
  - The label is peeled off and affixed to the wash card, meeting regulatory requirements.

RESULTS AND IMPACT

The solution delivered measurable improvements:

- **ERROR REDUCTION:** Eliminated transcription mistakes, ensuring accurate seal tracking.
- **COMPLIANCE ASSURANCE:** Simplified regulatory documentation with peel-off labels.
- **OPERATIONAL ADOPTION:**
  - Initial pilot of 1,000 seals led to a full order of *35,000 seals.*
  - Drivers initially questioned the idea, but later embraced the ease of scanning and labeling.
- **COST SAVINGS:** Using the new security seals with labels, along with the driver app, has eliminated lost loads due to incorrect numbers on wash cards.

While ROI in time savings wasn't calculated, the primary benefit — error prevention — protects against costly shipment rejections and strengthens customer trust.

WASH CARDS

Wash Cards (also known as wash tags or cleaning records) are a critical control point, providing documented evidence that sanitation standards are met, thereby ensuring milk safety and regulatory compliance.

- **Purpose:** Provides a traceable record of the sanitation procedure and prevents the use of a contaminated tanker.
- **Process:** The wash bay operator issues a wash card or tag after a tanker is washed. It includes:
  - date, time and location of the wash
  - name of person who performed the wash
  - confirms all cleaning protocols were met
- **Regulatory Requirement:** FDA's Food Safety Modernization Act (FSMA) Sanitary Transportation Rule and the Pasteurized Milk Ordinance (PMO) require haulers and carriers to maintain records of sanitation and make them available for inspection.
- **Logistics Management:** Before a hauler can pick up a new load of milk, they must have a current, valid wash card. Dispatchers and plant receivers check this documentation to ensure compliance before loading or unloading the product.

"**The QR code seal solution has been a game-changer for our operations.** It improves accuracy, simplifies compliance, and adds a safety benefit by eliminating the need for drivers to climb trailers. What's even more impressive is how quickly J. J. Keller turned our idea into reality — going from concept to design, manufacturing, and implementation in less than a year."

— Matthew Kohn, Land O' Lakes

CONCLUSION

This collaboration not only solved a critical compliance challenge for Land O'Lakes but also opens the door for similar solutions across the dairy industry. J. J. Keller continues to refine the design for faster application and scalability, ensuring innovation keeps pace with operational demands.

Overall, the project demonstrates how listening to customer pain points and leveraging product engagement can transform industry practices. By addressing a critical compliance challenge with a practical, scalable solution, J. J. Keller and Land O'Lakes set a new standard for dairy transport efficiency and accuracy.

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