What is RAIN RFID?

Radio frequency identification or RFID is a technology that enables the sharing of data encoded in RFID tags via RFID scanners. The term RAIN RFID specifies use of the UHF frequency band, which leverages the GS1 air interface protocol to communicate with tags. GS1 refers to "RAIN RFID" tags in this document whenever making reference to UHF RFID tags.

NOTE: Within the UHF RFID technology space, GS1 only endorses RAIN RFID implementations that are encoded per GS1's EPC standards (which is a subset of all RAIN RFID implementations).

Golden State Foods
Delivering Visibility with a Side of Innovation

Challenge

As one of the largest diversified suppliers to the foodservice industry, Golden State Foods values providing the highest quality products as well as delivering the last mile to some of the world's most iconic brands. Servicing approximately 125,000+ restaurants in more than 50 countries on five continents with predictable reliability requires going the extra mile. Delivering value through the seamless fusion of data and standards enables a more automated digital experience for every participant in the supply chain.

Solution

Focusing on the freshness of its products, Golden State Foods engaged in a proof-of-concept, and then a pilot, focusing on RAIN RFID – a solution that uses radio waves and cloud-based infrastructure to capture, manage, and connect RFID data to the Internet – powered by GS1 Standards. The proof-of-concept unlocked value with the ability to track, trace, and monitor case level end-to-end visibility by sharing digital product data with trading partners in a hands-free, automated manner. The follow-up pilot aimed to scale up implementation of the technology using the second-generation GS1 Tag Data Standard (TDS), without impacting operational speed.

Benefit

- End-to-End Traceability: By using RFID powered by GS1 Standards, Golden State Foods has enabled the tracking and monitoring of product freshness and inventory levels for not only itself, but for all downstream supply chain trading partners.
- Keeping with Speed: Maintaining line speed while adding flexibility in encoding traceability data, enhancing the precision of traceability and optimizing shelf-life management.
Behind the Sizzle

Ordering a hamburger at a fast-food restaurant sounds simple – the patty gets cooked, the buns are prepared with savory sauces, toppings like pickles and lettuce complete the ensemble, and minutes later you can still taste the sizzle. But when you zoom out and think of the billions of consumers placing that same order and the millions of pounds of food being used to serve them – the importance of getting each ingredient needed to fill each order at the right place, at the right time, gets amplified.

This is why Golden State Foods prides itself on superior quality, innovation, and customer service. Each year it produces billions of hamburger patties and other food products for its customers. This includes the capacity to produce more than 400,000 hamburger patties each hour, or the equivalent of nearly 200 million pounds annually.

With additional product lines for liquid products, dairy products, and produce items, Golden State Foods knows that one of its major customers launched an initiative to share digital data across the supply chain, Golden State Foods was already in collaboration with key supply chain stakeholders trying out new digital technologies. The company sought to create a recipe for success where automation and end-to-end visibility contributed just the right amount of spice for a new solution blend.

A New Recipe for Success

Crisp lettuce, juicy tomatoes, cool cucumbers - the right mix of ingredients brought together can create a delicious experience. Similarly, by bringing together the right combination of ingredients, Golden State Foods was able to execute a proof-of-concept to digitally track cases of beef patties along their journey from when they are made, done. This included implementing GS1 Standards like the Global Trade Item Number® (GTIN®) and Global Location Number (GLN) to help track Critical Tracking Events (CTEs) and Key Data Elements (KDEs).

The second ingredient was bringing together the best partners to get rapid results. To accomplish this, Golden State Foods also included its own manufacturing facility and distribution center – along with leveraging its owner/operator relationships.

The third – and most critical ingredient – was applying RFID tags. Looking to track at the case level, but in a fast and Product Code (EPC) Standard, included product information related to the GTIN, production date and serial number. The tagged cases were able to be scanned without line-of-sight

Exceeding expectations, Golden State Foods was able to not only track and monitor the freshness of the beef patties, but the pilot awakened the company to the art of the possible. It demonstrated how the convergence of standards, thought leadership, and IoT technologies unlocked the potential to optimize inventory, improve product case rotation, and enhance shelf-life management.
The First Byte

Historically, the foodservice industry has been using GS1-128 barcodes, encoded with GTINs, on cases and scanning them with hand-held devices. Because it doesn’t require line-of-sight, tagging cases with RFID offers immense benefits of efficiency. However, the industry was hesitant. RFID is encoded with a serialized GTIN – a SGTIN-96 – while the GS1-128 barcode does not. This disparity between a non-serialized GTIN and serialized GTIN appearing on a single case has long been a point of contention.

Recent updates to the GS1 Tag Data Standard (TDS) tackle this challenge, and Golden State Foods was one of the first to test it in this proof-of-concept and subsequent pilot. The TDS was updated in 2022 to optimize the tag data structure for perishable goods. Simply put, the TDS is like the description of an item on a menu – explaining what is included and any additional information pertinent to the item.

The Taste Test

Like any good recipe, it needs to get tasted – tested – and refined. Collaborating with its corrugate manufacturer, chip manufacturer, tag provider and tag reader provider, Golden State Foods was able to move the tag placement upstream to the corrugate process. By successfully streamlining tag placement at the source, the “pre-tagged” corrugate provided Golden State Foods the opportunity to make the recipe more palatable to suppliers.

To validate those attributes, improve the traceability of the patties and to test the ability for trading partners to access the data, Golden State Foods launched a pilot at its Opelika, Alabama manufacturing facility. For Opelika operations, the production date is the lot level information. By adding this additional ingredient, the company proved that partial encoding in real-time was plausible. After the date value was encoded onto the pre-tagged corrugate RFID label, it was locked to prevent any further code changes.

While this would be an important step to increase the precision of its end-to-end supply chain tracking, as it achieved in its earlier proof-of-concept, the added steps could not impact operations or slow the speed of the line. Also, to keep costs the same, Golden State Foods didn’t want to change to high-memory RFID tags.

For this pilot, Golden State Foods started at the beginning of the line validation process – and discovered best practices that led to its automated traceability data on the line with no impact to speed.
Sharing the Secret Sauce

Grounded in its values, Golden State Foods is excited to share LWVHQGLQJDGQKHOSWKHIRGKVUHYLFHLQGVVWUPRYHDKG with RFID.

Golden State Foods credits GS1 Standards, including the second-generation TDS with helping to power RFID.

“TDS 2 is like the icing on the cake. It’s not the main ingredient but it’s an integral part toward the desired outcome. It allows the suppliers to encode production attributes that are critical to establish food provenance. The combination of pre-tagged corrugate and TDS 2 allow us to capture critical production data during manufacturing without incurring additional labor hours. To accomplish this without impacting operations and while maintaining WSKQHSHGRIWWKHSURGXFQLQOLQKVLUWXODGLgHUQWLDWUE

For others in foodservice looking to get started with RFID, Golden State Foods recommends collaborating with stakeholders across the industry. A pinch of insight you get from here and the dash of expertise you get from there PDNHVDZRUQGRLgLHUOFHLQVQGLQJQHZDIVWROHYHJD\H technology for the greater good of all participants in the food chain.

Finding inspiration from one of her favorite African proverbs, you’ll often hear Javaheri sharing this saying with others, “If you want to go fast, go alone. If you want to go far, go together.”

DFFRUGLOJWR\XLOGD-DYDKHULFKLHIWHFKQQRJ\RHUDW Golden State Foods.
About Golden State Foods

Golden State Foods is one of the largest diversified suppliers to the foodservice industry. Headquartered in Irvine, California, the multi-national company is values-based with proven performance in superior quality, innovation and customer service. Established in 1947, GSF currently services 200+ leading brands (125,000+ restaurants/stores) from its 50 locations on five continents. Its core businesses include: processing and distribution of liquid products, protein, produce, dairy and other services. The company employs approximately 6,000 associates and is 100 percent management-owned and run. Golden State Foods also operates a national non-profit organization, the GSF Foundation.

www.goldenstatefoods.com

About GS1 US

GS1 US®, a member of GS1® global, is a not-for-profit information standards organization that facilitates industry collaboration to help improve supply chain visibility and efficiency through the use of GS1 Standards, the most widely used supply chain standards system in the world. Nearly 300,000 businesses in 25 industries rely on GS1 US for trading-partner collaboration that optimizes their supply chains, drives cost performance and revenue growth while also enabling regulatory compliance. They achieve these benefits through solutions based on GS1 global unique numbering and identification systems, barcodes, Electronic Product Code-based RFID, data synchronization, and electronic information exchange. GS1 US also manages the United Nations Standard Products and Services Code® (UNSPSC®).

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