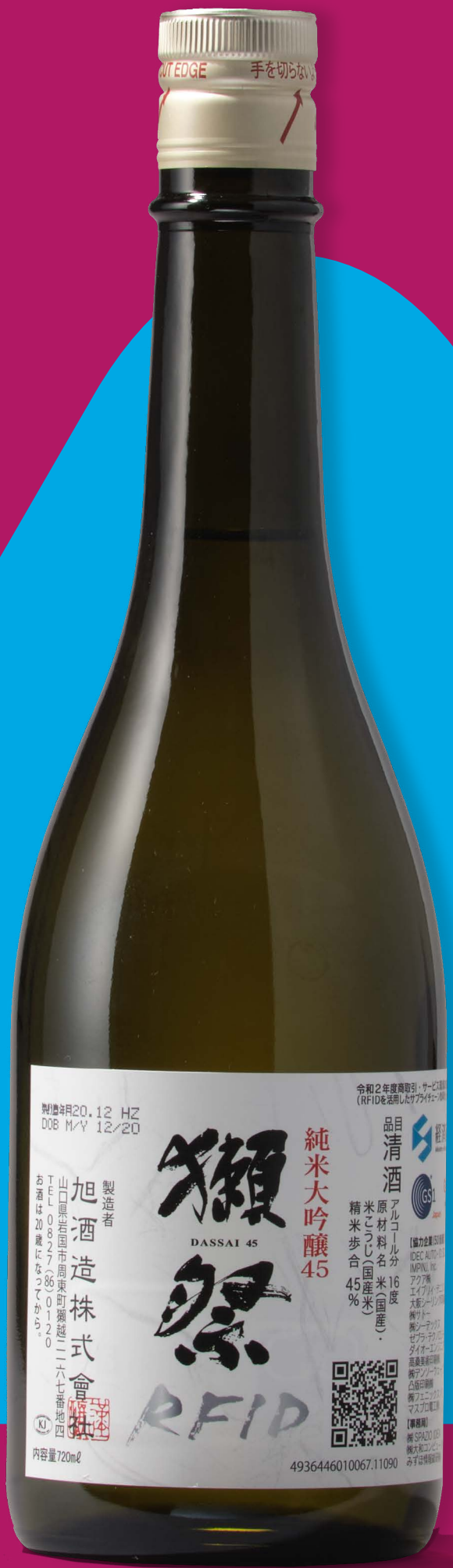
Avery Dennison
Smartrac
Case Study

June 2021

How RFID changes the sake supply chain

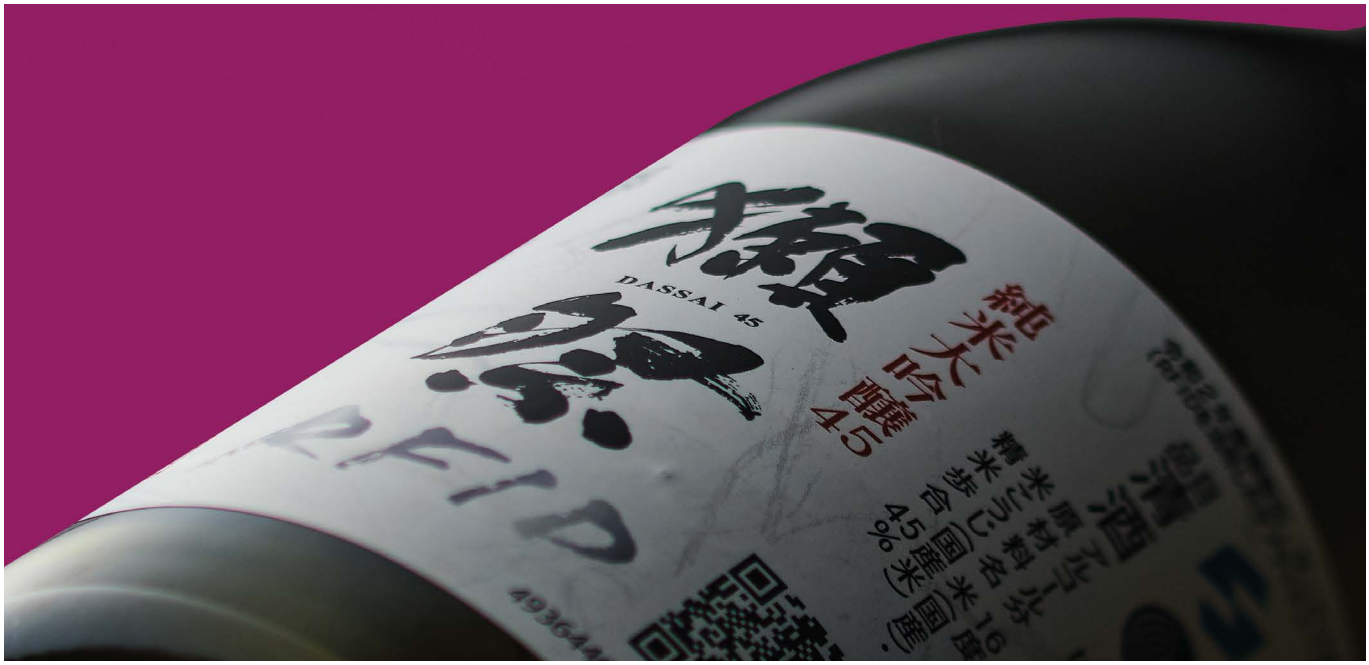
Dassai taps into intelligent labeling technology



AVERY DENNISON

Asahi Sake Brewery Participates in RFID-Based Supply Chain Visualization Project

The Japanese Ministry of Economy, Trade and Industry (METI) announced its “Declaration of 100 billion RFID Tags for Convenience Stores” in 2017, with the goal of having the five major convenience store chains attach RFID tags to all products by 2025 in order to solve social issues such as labor shortages, and to reduce food loss. RFID has already been adopted by a large percentage of major apparel companies in the world and has become an indispensable technology for each company. However, in non-apparel segments such as the food and consumer goods industries, many companies are hesitant to implement RFID technology due to cost and implementation concerns.



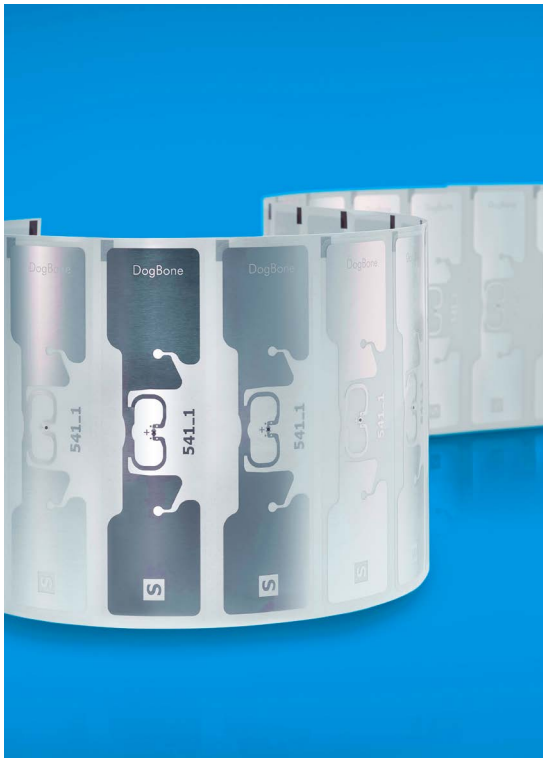
It was urgent for breweries to improve customer experience by utilizing digital technology and to transform their operations.

On the other hand, the sake industry saw its market shrink to one third of its peak in 2018. For sake breweries, it was difficult to differentiate due to their inability to communicate their brand stories and product values. This was compounded by an accompanying decline in sake consumption, and the distribution of sake through unregulated retail channels. Therefore, it was urgent for breweries to promote new values by utilizing digital technology and to transform their business.

Asahi Shuzo, the brewer of Dassai, one of Japan’s leading brands, endorsed and participated in METI’s project to implement RFID technology to achieve end-to-end visibility across their supply chain from manufacturing to sales, while many other companies were struggling to get to grips with RFID.

A key requirement of this project was to integrate RFID inlays into the bottle labeling.

Dogbone® RFID inlay



Successful RFID source tagging while maintaining existing operations

In order to avoid additional investment and man-hours for the brewery, a key requirement of this project was to integrate RFID tags into the bottle labeling process while using the existing bottle labeler. Although this requirement sounded simple at first glance, a partner with expertise in the following processes was required to make it a reality.

- Designing RFID antennas for liquids and glass
- Bonding the IC chip to the aluminum antenna
- Converting into an RFID label and printing on the face material
- Encoding a unique ID on the IC chip for each label
- Printing a QR code with the same ID on the label

Therefore, an efficient process was required to allow a traditional printing service provider to carry out the current process while integrating RFID labels into their printing workflow. Having multiple service providers in one project might increase production lead times or transportation costs between different companies, and could complicate project responsibilities.

Besides the integration of RFID on sake labels, another concern was whether the IC chip would be damaged when the bottle label was applied. This is due to the IC chip being subjected to a certain amount of pressure when the label is tensioned to prevent wrinkles and when it is attached to the bottle by the crimping roller. Avery Dennison Smartrac's inlays are bonded to the IC chips using proprietary technology and production control methods, and not a single chip has been damaged during this process.

Finally, since UHF RFID is susceptible to liquid and glass interference, it was necessary to tune the RFID antenna so that it could be read without problems even when applied to a sake bottle. After meticulous testing, the Dogbone inlay developed by Avery Dennison Smartrac could be read from approximately three meters away when applied to a Dassai bottle.

Visualizing the Dassai supply chain

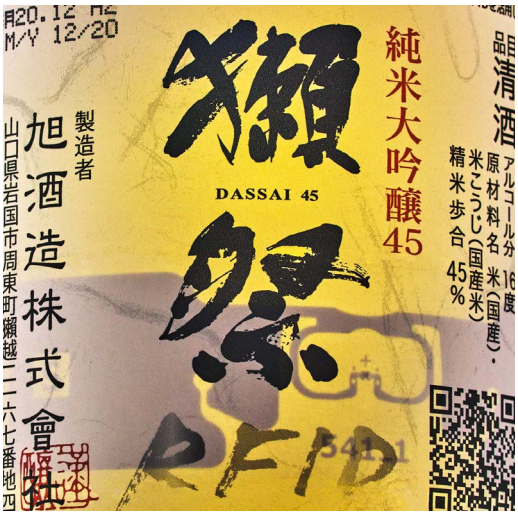
After the RFID tags were installed on each individual bottle, supply-chain visualization began. The goal is to use digital technology to track the supply chain from the brewery to the liquor stores, making it possible to visualize in real time the flow of goods: when, where, and what.

In order to facilitate tracking during the distribution process after shipment, Asahi Shuzo associated the unique IDs on the 12 bottles with an RFID tag on the case in which they were packed. In this way, it is possible to track the distribution process of each bottle by simply reading the RFID on the case, rather than having to read the RFID on all 12 bottles after they leave the brewery. The RFID tag on the case also has a QR code printed on it, so that wholesalers and liquor stores that do not have RFID readers can use their smartphones to read the QR code and carry out the bottle receiving and shipping process.

In this way, brewers can now monitor whether their products are being properly managed and sold in their intended retail channels. At the same time, consumers can now instantly access information such as “when was this sake made?” and “how long has this sake been sold at liquor stores?”

Ichiro Abe, Senior Consultant at Mizuho Research & Technologies, who was in charge of the project, commented “Avery Dennison Smartrac is a top global company, and we were very pleased with their solution.” The consultant also said “Generally, RFID is perceived as a way to save labor in business operations, but I feel it is necessary to promote RFID as a system that achieves total optimization not only for manufacturers, but also for retailers and consumers.” This project reaffirmed the need to select a partner that can propose appropriate solutions based on experience and understanding of the issues faced by the customer, and who has the knowledge to implement high-performance products in line with the customer’s strategy, in order to successfully implement RFID.

Dassai sake RFID integrated label



“RFID as a system that achieves total optimization not only for manufacturers, but also for retailers and consumers.”

Ichiro Abe, senior consultant at Mizuho Research & Technologies

Benefits of supply chain transparency to contribute to common goals

The benefits of RFID go beyond item tracking. By linking not only products but also individual IDs to raw materials, it is possible to trace back to the raw ingredients; and by using RFID labels equipped with temperature sensors, it is also possible to visualize whether or not products have been managed in the appropriate temperature range throughout the supply chain. In this way, restructuring the supply chain and using digital technology to visualize what was previously invisible will contribute to Sustainable Development Goals (SDGs), as it will provide people with more choices.

Avery Dennison Smartrac aims to maximize the value of RFID

As the world’s largest UHF RFID partner, Avery Dennison Smartrac meets the unique needs of the industry, developing unprecedented products and solutions such as on-metal tags, microwave-safe tags, moisture and temperature sensors as well as innovative solutions for digital transformation, such as atma.io, a cloud data platform for integrating and leveraging data read through RFID.

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