RFID in Food & Beverage Industry

WHITE PAPER

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As the world continues to evolve, demand for profitability and expediency increases. It is difficult to maintain the food supply safer by coordinating **tracking of product from suppliers**, and facilitate traceability from supplier to customer in markets. When it comes to food safety or quality issues, having quick access to the broadest set of data is critical. **Getting the right product to the customer** when they need it is the bottom line for food and beverage distributors.

Increased industrial processing of food, greater importation and exportation of food products, and less time for preparation of fresh foods compel the food and beverage packaging industry to investigate newer, more advanced packaging solutions. Thus, while protecting and preserving food were once perceived as the principal roles of food packaging, facilitating convenience has quickly emerged as equally important. Other elements of increasing importance in food packaging include traceability, tamper indication, and sustainability.

**Radio frequency identification (RFID)** technology provides real-time information that can help retailer & distributor plan product delivery schedules more efficiently, or allows customers to see deeper into the supply chain. It also allows tightening delivery times and schedules by using the business software to create automated processes for specific customer requests. It helps to nearly eliminate comprehensive inventory counts, lower inventory required to service customers, pull customer orders in a fraction of the time typically required, and comply with changing customer demand. It can also improve accountability by implementing metric setting and tracking for individual warehouses, departments, and processes. RFID systems are beneficial for many food manufacturing operations and supply chains.

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**Issues faced by Food & Beverage Industry**

- Bacterial Contamination.
- Attack from ambient media, water and chemicals (acids and alkalis) either directly or splash.
- Perishable / freshness concerns.
- Problems arising from poor food handling / improper preparation.
- Animal Diseases.
- Farming practices – what animals are fed, pesticide residues.
- Improper preservation techniques i.e. Additive & preservatives.
- Lack of Safety measures. Expired food products results impact on customer health, product brand & lost revenue.
- Poor storage and refrigeration, packaging methods.
- Exposed to extremes of temperature.
- Keeping record of specific transactional portion of information in the food supply chain is difficult.
- It is hard to trace products internally accurately by the food companies.
- No access to information in a timely fashion, when requested as it is not available in the electronic format.
- Not following the standardized way of expressing key data elements like quantity, location, lot number, date.
- Non implementation of standard audit for quality of the product.
RFID in Food & Beverage Industry

Ensuring Food Quality

Process

- Companies attach RFID tags with temperature sensors to bins or crates of meat.
- These tags are read at key transfer points as the meat is moved from the processing plant to the store’s distribution centre and on to the retail shop floor.
- The sensor on the tag records a temperature reading at a pre-set interval and this information is transmitted to the computer system when the unique identification numbers on the tags are read.

Improving the Safety of the Food

Tracking livestock for public health

- RFID enabled ear tags are attached to the animals which is used to track back to its herd of origin.
- When cattle move through a stall as they head for a processing plant, a reader collects the unique identification number on the animal's ear tag.
- Even if a tag is caked with dirt or mud, RFID reader read the tag.
- The cow’s tag is read at other key points, and information is saved in a database.
- If a bad batch of meat is discovered, the information collected via RFID can be used to find out which cattle were exposed to similar conditions. Or, if an animal is ill, using RFID the animal can be identified for removal from the herd as quickly as possible.
Protection against Imitations

RFID helps reduce counterfeits and ensure quality

- RFID tags containing the Electronic Product Code (EPC) are placed on each cheese at the beginning of production.
- The tags are read throughout the production and ripening processes.
- They’re finally removed when the cheese is delivered to stores.
- The information documents the production stages for each individual slab of cheese, proving the quality of the production process as well as the origin of the cheese.

RFID used to track quantity of flavor in soft drink

- Cartridges containing concentrated flavoring will dispense a small amount of the appropriate flavor, which will then be mixed with the other ingredients, such as sweetener, water, and carbonating agent, and dispensed to the customer.
- When the cartridge is produced, it is fitted with an RFID passive tag, which will contain details of the flavor it contains and the quantity.
- RFID readers in the dispensers can then register the cartridge as it is inserted, and ensure it is placed in the correct slot, which will be identified to the user by a LED.
- Once the cartridge has been correctly installed, the data on the cartridge’s passive RFID tag can be updated each time a drink is dispensed, to keep track of the quantity of flavoring remaining.
- This information can also be relayed back to Company’s management system, and used to automatically detect when a cartridge is nearing depletion, allowing a replacement to be prepared.
- This also allows the company up-to-date information on consumption patterns, and finally the direct link to the dispenser allows a particular cartridge to be instantly disabled for any reason, be it a recall or withdrawal of a product line.
Benefits of RFID in Food & Beverage Industry

- Reduced handling cost through fully automated crate stack handling.
- High picking accuracy and capacity.
- Extremely short times for order Fulfillment.
- High flexibility in creating customized loads.
- Efficient warehouse space utilization through compact modular design.
- Optimal space utilization through high storage density automated warehouse.
- Reduced stock damage.
- Pallet load sequencing to optimized outbound transport routes.
- Streamlined and more efficient.
- Processes due to automated hauling, putaway and replenishment functions.
- Multilevel order filling allows a reduction in building footprint.
- Accurate and highly visible inventory information.
- Increased Revenue
  - Reduced out-of-stocks at the retail shelf.
  - Improved new product introduction execution and planning.
  - Reduced losses due to shrink.
  - Reduced counterfeiting and diversion.
- Reduced operating costs.
- Reduced retailer claims from electronic proof of delivery (ePOD).
- Reduced working capital.
- Reduced returns & Unsalable.
What IAITO can provide

- Site Analysis
- Business Case Development
- Design & System Integration
- Implementation
- Training
- Customer Support

1. Understanding the requirement with end customer/partner.
2. Visiting the end customer/partner site and studying the system & IT.

1. Justifying the business value of RFID based Food & Beverage Industry.
2. Calculating the \textit{ROI (Return on Investment)}.

1. Defining the software and hardware requirement study (SRS & HRS).
2. Integration of hardware and software in lab environment.

1. Customer site deployment of the hardware & software.
2. Testing the System.
3. Commissioning the system.

1. Fully fledged training conducted by IAITO people to Site operation person.
2. Training will be conducted to the management & Admin.

1. Full telephonic & Email support.
3. AMC & Warranty Support.

Why you should select IAITO Infotech as your partner

- We understand the RFID Technology, Solution and have knowledge of the Industry with the top Notch IIT Kanpur R&D engineers who are having more than 5+ years experience in the same domain.

- Our understanding about the RFID Business Values & ROI Realization is with 15+ years experience business people in team.

- We provide High Quality Product & Testing process (\textit{ISO 9001: 2008 Certified Company}).

- We Have High Techno Commercial viability – ROI.

- Indigenous Setup (Design, Developed & Tested in world class RFID lab of IIT Kanpur).

- We have Local Support & Strong Partner Network Framework to ensure better support.
**Conclusion**

RFID technology combined with the appropriate infrastructure can enable end-to-end traceability in the supply chain at relatively small costs. RFID implementation can assist produce growers to overcome spoilage issues. Using RFID technology it is possible to monitor temperature and shelf life of perishable items at every stage of the 'cold chain', and allow both producers and buyers to be notified of custody and conditions of shipments. Competitive pressures, regulatory requirements, a global supply chain, Safety concerns in the food & beverage industry are overcome by RFID technology which gives maximum output.

About *IAITO INFOTECH PVT LTD (ISO 9001:2008 certified)* an incubate company of IIT Kanpur provides state of the art integrated traceability, identification and authentication solution. It provides software as well as integrated turnkey solution of both(hardware, software & services) in various technologies like RFID, NFC, GPS, Mobile technologies etc.

With the knowledge of experienced professional, we are able to help you to deploy right combination of technology that will maximize your ROI right from start and ensure its expandability as the application grow through the evolution of the technology.

With our R & D experienced team, we have developed different integrated solutions for various industries and carry one of the most comprehensive product/solutions.

IAITO’s turnkey solutions model covers industries like Aviation, Manufacturing, Transportation, Retail, Government, Renewable Energy, BFSI and Mining.

For more Information kindly visit our website [http://www.iaito.co.in/](http://www.iaito.co.in/)

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