



RFID in Challenging Packaging: Practical Lessons from Bottle Digitalization

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Agenda: Solving the Bottle-Tagging & Scanning Dilemmas

- **Bottle Labeling Challenges:**

- Liquids
- Metals
- Adhesive/Application
- Non-Smooth Surfaces

- **RFID Reading Challenges:**

- Reading one at a time
- Reading without reflection
- Reading the carton
not what's in it.

- **Bottle Labeling Solutions:**

- RFID Integrated Shrink Band
- Cost-Effective RFID Compliance
- Integrated to Product Packaging
- Sustainable

- **RFID-Enabled Workflow Examples:**

- Picking
- Packing
- Pallet Building
- On-shelf inventory

Challenges: RFID and Liquid or Metal Interference

The liquid challenge

Products like soaps, lotions, medications, beverages, and oils disrupt RFID signals as does **metallic** packaging or foil labels

Why it happens

Liquids absorb and reflect radio waves, blocking reliable reads.

Metal detunes the RFID inlay, rendering it unreadable

The impact

Missed scans and incomplete inventory visibility.

The Solution

Position above the fill line and on plastic cap where no metal or foil is present.



Challenges: RFID Label Separation "Hall of Shame"

The adhesive label challenge

RFID adhesive labels can become separated from the product.

Why it happens

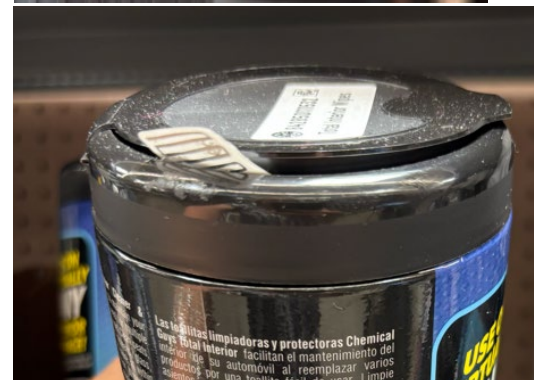
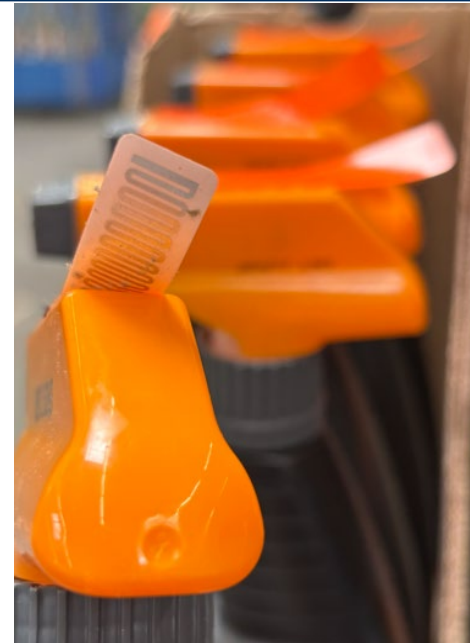
Container shape or style, poor adhesive, applicator issues, and environmental conditions may cause label to separate from product or reduce read performance.

The impact

Missed scans, incorrect inventory and inaccurate location data

The Solution

Integrate the RFID inlay to shrink band – no adhesive



Challenges: Reliable Performance Across Packaging

Versatile fit

Conforms to odd-shape
or child-resistant caps.

Consistent performance

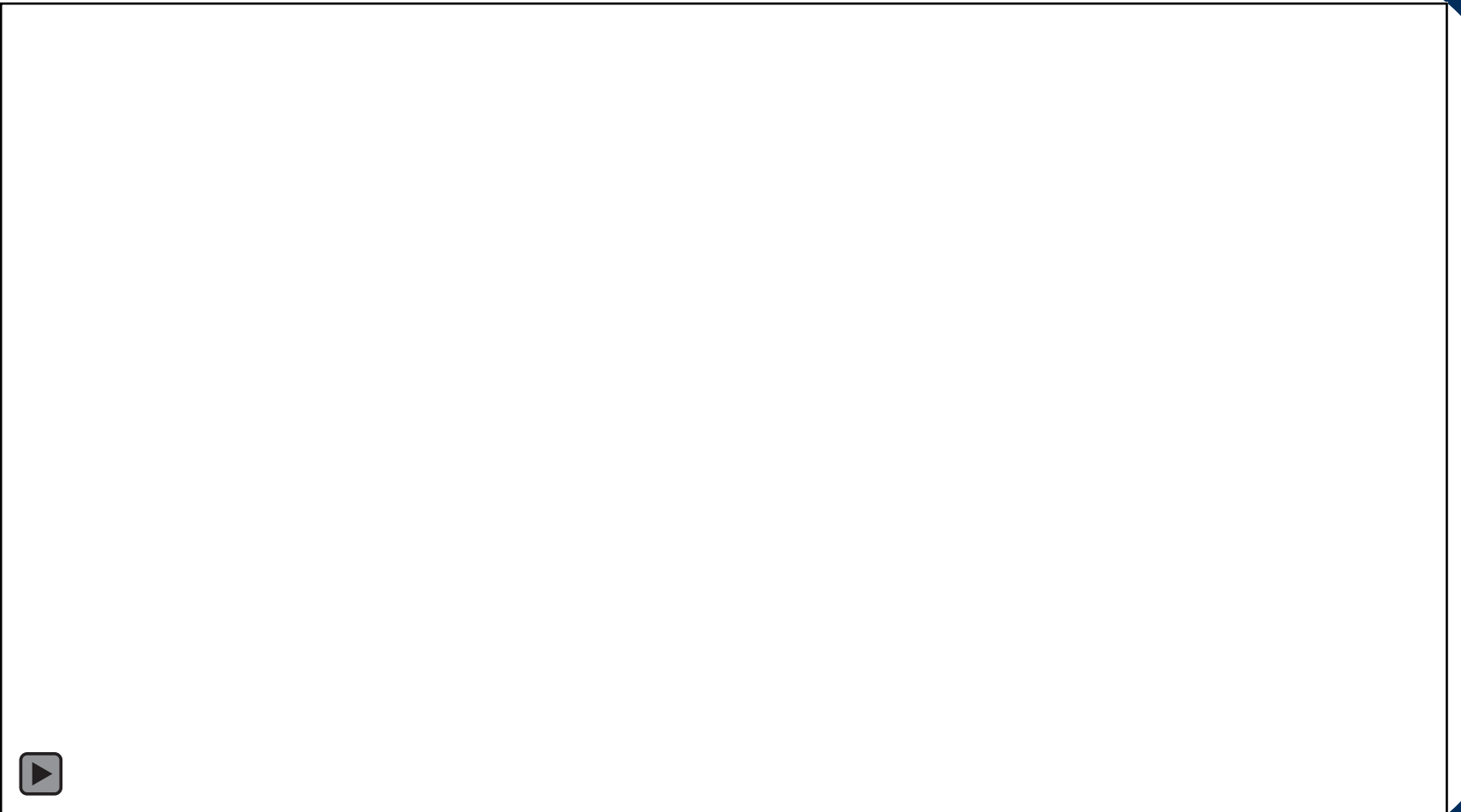
Works where adhesive
often lift or detach.

Secure seal

Prevents loose caps and

Tamper-evident

Enhances consumer trust



Solutions: SmartShrink™

- RFID Integrated Shrink Band
- Cost-Effective RFID Compliance
- Fast, Scalable Implementation
- Integrated to Product Packaging
- Sustainable
- Increased RFID Read Range



Solutions: Sustainability

Sustainable and Recyclable

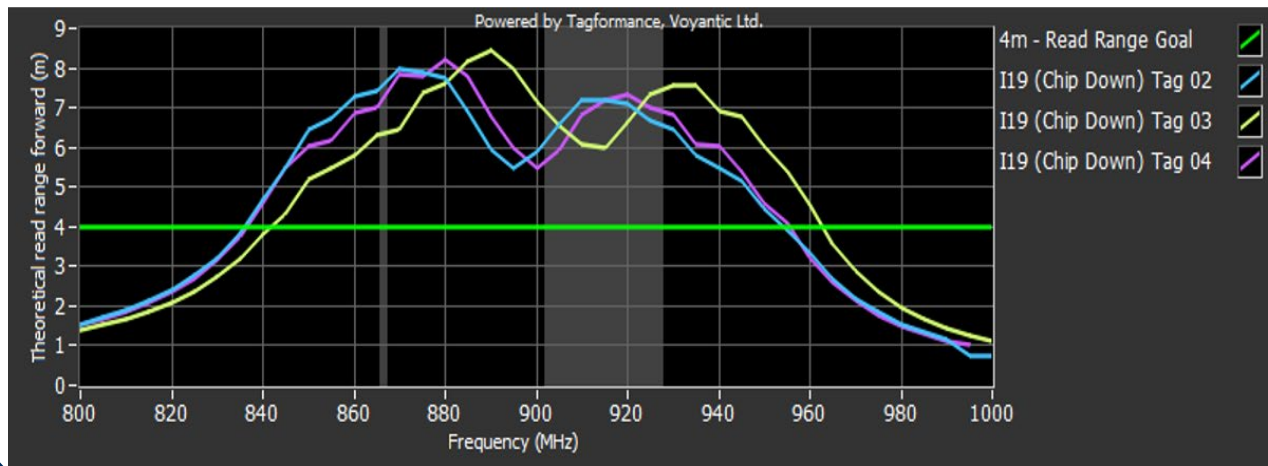
- Easily removable to allow for recycling.
- RFID does not enter curbside recycling stream
- Support sustainability efforts.



Getting Started: Product Testing and Validation

We recommend sending product samples in for testing and validation to ensure optimal RFID Shrink Band performance. Testing evaluates read range, consistency, and reliability in real-world conditions.

If needed, we can further tailor the inlay's size and functionality to match your packaging and product environment, ensuring consistent and optimized performance.



Solutions: Application and Sizing



Sizes

Custom size, made to order.

Printing

Custom Printing.

RFID Encoding

Pre-encoded or line encoding system options

Retail Compliance

RFID inlay approved by ARC

Easy removal

Perforations to support consumer convenience and recycling.

Secure fit

Shrinks tightly around caps, even with embedded RFID.







Solutions: On Shelf Inventory Workflow (University of Memphis Auto ID Lab)



On the retail floor, use of mobile RFID solutions such as the AsReader ASR-L251G GUN, allow retailers

Contact Us



RFID **COMMUNITY CONNECT**
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