RFID IN THE FOOD CHAIN

Improve Food Safety and Business Efficiencies in the Meat-Processing Industry

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RFID in the food chain

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RFID in the food chain
Companies overview

- Offer solutions to market highly standardized: agri-food, aerospace, etc.
- Canada, USA, Europe
- Partner: Motoro
- Codification: GS1, EPCglobal

- Beef and steer processing
- The largest beef processor in Eastern Canada
- Production for Canada, Asia, United States, South America
RFID in the food chain
Traceability - Statistics

Continued contaminations and recalls have eroded consumer trust and changed perceptions and purchasing behaviors.

IBM consumer survey
- 42% of consumers buy different brands today vs. 2 years ago... because of safety concerns
- 47% more concerned today about food safety than 2 years ago

Fortune: Wal-Mart: the new FDA

2006 2007 2008 2009

- Snacks Salmonella
- Dog treats Melamine
- Tomatoes Salmonella
- Jalapeños Salmonella
- Cantaloupe Salmonella
- Toys Lead
- Pork Listeria
- Cookie Dough E. Coli
- Peanut Butter Salmonella
- Chicken Bird Flu
- Gr. Beef E. Coli
- Beef E. Coli
- Milk Melamine
- Gr. Beef Salmonella

RFID in the food chain
Traceability - Statistics

Survey Methodology and Sample

**DATA COLLECTION PERIOD:** May 2008

**METHOD:** Web survey

**SAMPLE SIZE:** 251 supply chain decision makers

**SAMPLE:** Food and beverage industry decision-makers responsible for traceability technology and/or quality and supply chain initiatives, and based in the U.S., France, UK or Sweden, with at least US$100 million in annual revenue (U.S.) or US$50 million in annual revenue (Europe)
Recall process is lengthy and largely ineffective

Q11a. What was the average time (in days) it took your organization to sense the need for the recall(s) and to enact it?
Q11b. What was the average time (in days) it took your organization to obtain the recalled product(s) from the markets?
Q12a. What percentage of the product(s) were you able to trace through the supply chain to know where the product was shipped?

<table>
<thead>
<tr>
<th>Category</th>
<th>Days to sense and enact recall</th>
<th>Days to obtain product</th>
<th>% Product traced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allergen-free</td>
<td>16</td>
<td>32</td>
<td>35%</td>
</tr>
<tr>
<td>Labeling related</td>
<td>17</td>
<td>36</td>
<td>41%</td>
</tr>
<tr>
<td>Health &amp; safety</td>
<td>18</td>
<td>42</td>
<td>43%</td>
</tr>
<tr>
<td>Contamination</td>
<td>18</td>
<td>33</td>
<td>32%</td>
</tr>
</tbody>
</table>
RFID in the food chain
Traceability – World Status

Animal ID & Tracing Systems becoming the *Global Standard*

<table>
<thead>
<tr>
<th>Country</th>
<th>Cattle Population (mln head)</th>
<th>Premises ID</th>
<th>Individual Cattle ID</th>
<th>Group Lot ID</th>
<th>Electronic ID</th>
<th>Record Movement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>28.6</td>
<td>M</td>
<td>M</td>
<td>V</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Brazil</td>
<td>207.2</td>
<td>M</td>
<td>V</td>
<td>M</td>
<td>V</td>
<td>M</td>
</tr>
<tr>
<td>Canada</td>
<td>14.8</td>
<td>V</td>
<td>M</td>
<td>V</td>
<td>M</td>
<td>V</td>
</tr>
<tr>
<td>Uruguay</td>
<td>12.0</td>
<td>M</td>
<td>M</td>
<td>V</td>
<td>M</td>
<td>M</td>
</tr>
<tr>
<td>Japan</td>
<td>4.4</td>
<td>M</td>
<td>M</td>
<td>V</td>
<td>V</td>
<td>M</td>
</tr>
<tr>
<td>South Korea</td>
<td>2.5</td>
<td>M</td>
<td>M</td>
<td>V</td>
<td>V</td>
<td>M</td>
</tr>
<tr>
<td>European Union</td>
<td>90.4</td>
<td>M</td>
<td>M</td>
<td>V</td>
<td>V</td>
<td>M</td>
</tr>
<tr>
<td>Mexico</td>
<td>28.6</td>
<td>V</td>
<td>V</td>
<td>V</td>
<td>V</td>
<td>V</td>
</tr>
<tr>
<td>United States</td>
<td>96.7</td>
<td>V</td>
<td>V</td>
<td>V</td>
<td>V</td>
<td>V</td>
</tr>
</tbody>
</table>

Source: Bowling et al. (2008)

M = mandatory, V = voluntary
RFID in the food chain
Traceability in Quebec

Agri-Trace™
RFID in the food chain
General benefits of complete eTrace Solution

• Costs reduction on food recalls
• Reaction time: less than 4 hours, generally 20 minutes
• Increase security level in agribusiness industry
• Increase productivity and reduce manual operations
  • Real time access to relevant data
  • Amount reduction of relevant data
• Increase management efficiency for logistic operations
• Possibility to integrate data with financial systems and ERP
• Better inventory management, warehousing and sales/inventory ratio
• Facilitates audits and traceability processes
RFID in the food chain
Traceability – Slaughterhouse solution
RFID in the food chain
Traceability – Slaughterhouse solution

- Middleware
- RFID equipments management
- Reading management
- Software
- Collecting data
- Slaughtering management
RFID in the food chain

The solution

- Slaughtering management software
- Middleware: RFID reading and equipments management
- Gen 2, passive, reusable RFID tag
- Motorola's XR400-Series Fixed RFID Readers
- AN200 General Purpose Indoor/Outdoor Antenna readers
- Touch screen industrial computer
- Zebra’s industrial printer
- Cameras (certifications)
RFID in the food chain

Case Study – Levinoff-Colbex S.E.C.

RFID solution from Motorola and Epsilia delivers precise traceability and increased revenue for Agribusiness leader Levinoff-Colbex S.E.C.

“With the help of Motorola and Epsilia, Levinoff-Colbex S.E.C has an RFID system that ensures traceability for a level of food safety that meets or exceeds most market standards in the world today. This automated system has increased our process efficiency, reduced costs, and enabled us to expand our revenue base by entering new international markets.”

— Stephen Dubé, Quality Assurance Manager, Levinoff-Colbex S.E.C.

The company: Levinoff-Colbex S.E.C.

Levinoff-Colbex S.E.C is the largest beef processing facility in eastern Canada. In addition to Canada, Levinoff-Colbex S.E.C serves a number of international markets. Levinoff-Colbex S.E.C is focused on delivering meat products with the highest quality and consistency.

The challenge: Ensure food safety and increase process efficiency.

Food safety is paramount at Levinoff-Colbex S.E.C and the company aims to be at the forefront of technological innovation in agribusiness to maintain its level of excellence. As a result, animal disease and potential contamination became an issue across the food industry in recent years. Levinoff-Colbex S.E.C plans to upgrade and transform its processing facility in order to help ensure food safety and efficiency.

Traceability was a critical goal. In the event of any problem, Levinoff-Colbex S.E.C wanted an absolute system that would make the company capable of quickly identify all affected products. The system would ensure food safety and efficiency.

The benefits: Traceability and facility transformation.

— Increased traceability, ensuring that all products are safe and consistent.
— Improved facility efficiency and productivity.
— Reduced costs associated with facility upgrades.
— Easier compliance with regulations and consumer demands.

By Elizabeth Wasserman

Jan. 25, 2010—For decades, the Dubé family owned Colbex, a slaughterhouse in Saint-Cyrille-de-Wendover, in Quebec, Canada. In 1998, the Dubé family, Levinoff Meat Product Sales, headquartered in Montreal, joined with the Colbex and became the largest meat processor in the eastern part of the country. In 2003, the company purchased a slaughterhouse in Tadoussac, Quebec, and expanded to include all aspects of livestock marketing and processing. The company is now Levinoff-Colbex S.E.C.

The initial Epps discovery—there have since been 11 cases found in Canada—led to the slaughter of thousands of head of cattle. A ban on all beef products from Canada was imposed by the United States, Japan and other nations, and in 2005, that ban remained in effect. In Quebec, the government adopted more stringent livestock traceability requirements. It set up a not-for-profit agency, Agri-Traçabilité Québec (ATQ), which requires all farms to maintain reliable traceability systems. The tags can only be removed at the slaughterhouse, thus ensuring traceability from birth to death.
RFID in the food chain

Project objectives

• Food safety
• Market positioning
• Prevention of animal diseases outbreaks and potential contamination
• Efficiency of transformation process
• Certification of international markets
• Ultimate objective = traceability

« Trustworthy system to identify and locate all affected products »
Slaughtering Process at Levinoff-Colbex
RFID in the food chain

Why RFID?

- Traceability and operation management automatization
- Harsh environments:
  - pressure spray, high temperatures, humidity, extreme shocks, soaking in caustic soda, etc
- Metal environment
- Multi-rail Management
- Integration with slaughtering management software
RFID in the food chain
Solution description

Veterinarian Station – Holds, releases, condemnations
Triggers automatically warnings at blood, legs, heads and offals stations.
RFID in the food chain

Benefits

• Ensuring precise product traceability, achieving ROI in less than one year by increasing process and staffing efficiency

• Increasing revenue by as much as 10 to 15 percent by enabling penetration of new international markets

• Providing real-time data to support effective management decisions.
RFID in the food chain

Benefits

Traceability helps find Markets – McDonald’s

“McDonald’s Canada has decided that is ground beef from Canadian cull cows will come from Quebec, in part because it has a beef traceability program.”

Traceability isn’t our only selling point but it has been key. It has been a marketing Gold Mine.
Japanese Article

« Japanese importer Zénsho has found the world’s best beef in Saint-Cyrille-de-Wendover. (...)The company, which just signed an agreement with the Levinoff-Colbex cattle slaughter and processing plant, turned its back on Australia, Alberta and the Western United States. »

« The province’s traceability system is one of the best in the world. It makes it possible to establish the animal’s origins, its genetic past and its age. »

Japan, Date Verified: cattle less then 21 months of age Must be determined utilizing physiological evaluation (A40) or age verification through documentation.
Thank you
From farm to slaughterhouse
Declaration of the arrival lots
Slaughterhouse

Raising rail
Identification with RFID tag on the hook and slaughtering sequence
Slaughterhouse

Blood Station
Animal Identification – Labelling of the blood bag
Low legs Station
*Animal identification – Labelling of the legs barrel*
Slaughterhouse

RFID readings – Rise rail
Tag certification
Blood station
Legs station
Transfer before main rail
Transfer on the main rail
RFID reading to associate the rise rail hook with the position on the main rail
Identification and certification Station for the age of the animal
RFID reading of the tag of the animal and association with the position on the main rail
Certification Station (Angus)
Photo of the carcass and RFID reading to associate the photo with position on main rail
Heads Station
Animal identification – RFID reading of the carousel position and association with the position on the main rail – Labelling of the head
Offals Station
RFID reading of the tray position and association with the main rail position
The veterinarian inspects and decides whether to let go, hold, condemn or release the carcass.

Veterinarian Station – before the back rail
RFID reading to identify the carcass.
Slaughterhouse

- Weight associated with the carcass
- Printing of the barcode label with product description
- Additional informations (ex. Grade)

Scale Station
RFID reading to identify the carcass
Slaughterhouse

Inventory – Refrigeration – Localization