



Answering is it “Fresh?”

Adding Product Integrity Monitoring to RFID Tracking and Tracing of Perishables

The Challenges

Temperature is playing an increasingly important role in the cold chain.

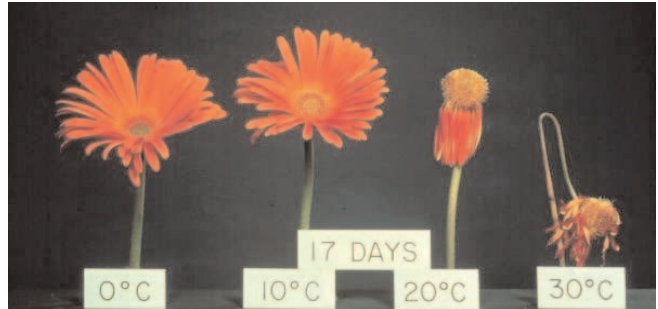
- As suppliers from Africa, Asia and South America replace local suppliers, trade lanes get longer with more points of handling and more physical changes of control. For perishables such as strawberries, this can mean as many as 20% get tossed before reaching the consumer.
- Quality is no longer a competitive opportunity but a competitive necessity--not only for brand loyalty but for competitiveness against low price suppliers and retailers. For California flower growers, one quality indicator is vase life. Being able to offer flowers with a vase life of greater than 7 days means a stronger competitive advantage over imports plus more repeat sales from satisfied buyers.
- Pharmaceutical companies as well as Industrial suppliers of adhesives or chemicals are under buyer and government pressure to document the temperature abuse experienced by temperature-sensitive products. When temperature abuse occurs, often the only alternative for knowing whether a product can be used is expensive retesting.

The solution

RFID advanced sensing tags in combination with RFID readers and web-enabled software to monitor, track and trace a perishable's condition from the time a product is manufactured until it is purchased or used.

The benefits

- Insight into the condition of a perishable at different points of the cold chain in order to plan for and manage temperature abuse
- Fresher perishables; increased sales
- Reduced waste in transport and storage
- Faster receiving & processing of invoice disputes
- Reduced insurance claims



Freshness Matters

Perishables each have a unique spoilage rate (shelf life). Perishable producers know this and use shelf life to determine the expiration date on perishables.

Both quality and safety of a perishable are affected by physical, chemical and/or biological factors (often inter-related). However, temperature is the predominant factor in determining how long acceptable quality lasts.

Cold Chain Management

The management of the cold chain for perishables is never perfect—resulting in unplanned variations in temperature, especially in loading, unloading, transport and storage. For example, the pick-up of goods was late. The perishable's location in transport was near the door. Surrounding products in the shipment were not pre-cooled. The shipment was delayed in customs. A power outage occurred while the goods were in storage.

When temperature spikes occur, unanswered is how much shelf life was lost due to these spikes—leaving brand owners unaware that the perishable does not meet quality standards. In today's trade lanes, knowing at receipt of a shipment that temperature abuse has occurred is not sufficient—unless it is to provide proof for an insurance claim or an invoice dispute. **Too bad. Too late.**

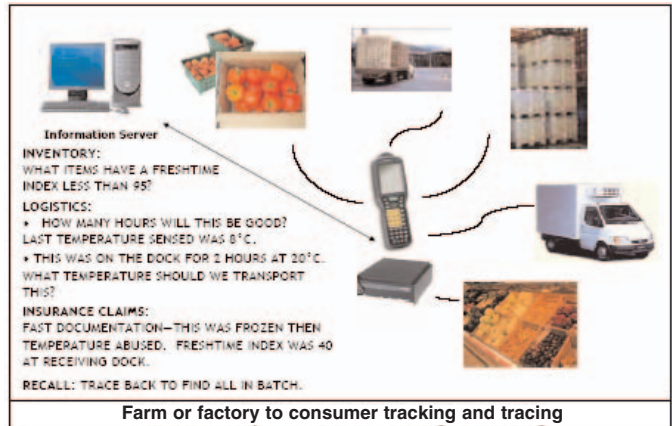
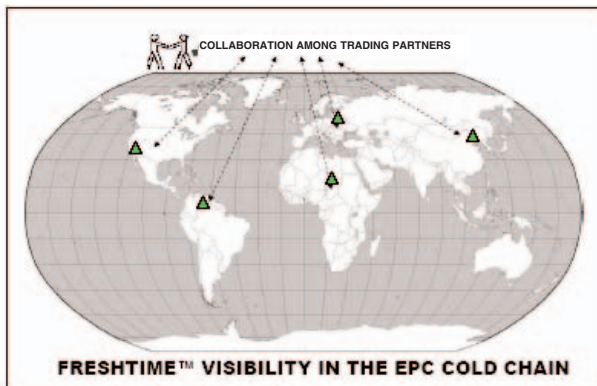
Freshtime™ RFID tags and software change the way perishables are handled. This is because Freshtime™ tags know the spoilage characteristics of the item tagged. When temperature is sensed, they know not only the temperature but how much shelf was used and how much shelf life is left. We call shelf life left—Freshtime™.



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Business Benefits of Freshtime™ in the EPCGlobal Network

- Your cold chain becomes a quality-driven cold chain with no new infrastructure.
- Freshtime™ tags incorporate NXP's U-Code Gen2 RFID chip—thereby providing known RFID performance and RFID reader compatibility.
- Freshtime™ tags are EPC tags compatible with EPC middleware and database software for tracking and tracing.
- Freshtime™ tags are RFID "portal" savvy so that Freshtime™ status and alerts can be read when the EPC number is read without slowing down procedures.
- Freshtime™ Tracker software for handhelds and fixed readers filter and capture data, provide acceptance criteria and send data to SQL or EPC-IS servers automatically. When the handheld reader is equipped with GPRS, all those concerned with a perishable can be "in-the-know" seconds after a tag has been read—even if the perishable is in Africa or South America.
- Freshtime™ tags keep a history of what happened in the cold chain, including checkpoints for changes of custody. The benefit is that if a dispute occurs, detailed data is available quickly to be printed, emailed and saved.
- Freshtime™ tags do not overload your networks with unnecessary data. Instead our focus is on exceptions. This means less data to read, to communicate and store and better data to analyze and aggregate.
- Freshtime™ data, when collected from time of production to time of sale, give you new and better insights into the cold chain—so that you can focus on what makes a good trade lane or how to cope with hotter and hotter weather.



About Freshtime™ Tags & Labels

Freshtime™ tags and labels actively monitor the perishable to which they are attached. They can be attached directly to a perishable, for example a large fish, or attached to cases, reusable transport items or pallets. This contrasts to temperature loggers which are most often used to monitor environments within the cold chain.

Freshtime tags are UHF RFID tags, EPC Class 1 Gen2. They are "semi-passive" tags. This means that temperature sensing and shelf life calculations are battery-powered but RFID communications are powered by an RFID reader.

EPC Gen2 RFID readers, handheld or fixed, load data about a perishable into the tag, query the tag about the perishable's condition or freshness and retrieve history data about what happened during the cold chain. The tag has an optional display—permitting use in the field with no RFID infrastructure required.

EPC Tracking, Tracing & Product Integrity Monitoring

Infratab's Freshtime™ software on the handheld or at the fixed reader captures, filters, and stores data read at different points in the cold chain—using either GPRS, wireless or connected LAN to communicate in seconds to those concerned about where the perishable is, when it arrived and most importantly "how is it?".

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