



MIT RFID Time/Temperature in Cold Chain Management

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Cool Chain Group AG – Who we are...

Founded in February of 2005 by Christian Helms – announced at Fruit Logistica in Berlin, Germany

*July of 2005; acquired majority interest in high quality fresh food distributor
Rungis Express AG (www.rungisexpress.com) ... CCG providing operational management*

- *Global network of offices dedicated to specialized handling of temperature sensitive products*
- *Highly skilled and experienced people dedicated to cool supply chain operations*
- *Strategic locations to serve origin-destination countries for shifting production, export-import seasons*
- *Strategic locations to provide key gateway logistics*
- *Food, pharma, blood, film, beverage and other dedicated temperature sensitive logistic services*

- Cool & Freezer storage
- Pre-cooling
- Wet & Dry Reicing
- Film handling
- Import – Export Customs Service
- Airfreight
- Charter Flights

- Ocean – Sea Freight
- Charter Vessels
- Intermodal Services
- Consolidation – Deconsolidation
- Beverage Logistics
- Pharmaceutical Handling
- WMS/Inventory Systems

- FTL and LTL Trucking
- Palletize & Shrink Wrap Service
- Live Animal Transport
- Track, Trace, Exception Reporting
- Quality Inspection
- Agressive Technology Development
- Country Infrastructure Consulting



Cool Chain RFID Priority Objectives

➤ **Optimize Transit Time**

- ❖ *Real-time capture of broken transit enables dynamic exception reporting to allow immediate corrective action (missed connection/COB, etc.)*
- ❖ *Automated data collection at receiving/shipping saves time*

➤ **Optimize proper temperature & monitor problems**

- ❖ *For sensitive fruit 1 hour above temperature = 1 day of lost shelf life*
- ❖ *Dynamic real-time alerts can enable remedial actions during transit*
- ❖ *Enhance “shelf life predictability” to improve inventory management*
- ❖ *Identify problem points in the cool chain to enable fixing ‘what is broken’*



Cool Chain RFID Priority Objectives

- **Trace & Track without slowing process flow**
 - ❖ Safety & Recall
 - ❖ Retail revenue to lot/production for value analysis/lot accounting

- **Measure/Maintain humidity & atmosphere conditions**

- **Warehouse and handling efficiency**
 - ❖ Realtime receiving, shipping and pick detail data capture
 - ❖ Alert to pick/ship errors for corrective action
 - ❖ Time study by automated action observation and data capture
 - ❖ Automated inventory by bin polling



Cool Chain RFID Challenges

- ❖ *Establish measurable baseline costs for current process errors and then measure saved costs from RFID real-time implementation to establish a sustainable ROI*
- ❖ *Understand that not all RFID technology is EPC RFID, and that some closed cycle applications of RFID (like sensor enabled RFID tags) can be cost justified in different formats/frequencies*
- ❖ *Have tags applied at the first stage of process...it is much harder to cost justify applying tags midstream in handling or transit*
- ❖ *Read accuracy has to be close to 100% of the data – or RFID is not reliable enough to eliminate existing forms of data capture/process*
- ❖ *Infrastructure has to be affordable, maintainable and through the whole supply chain*
- ❖ *Approach container level, pallet level, item level, sensor level independently if necessary, but within a common standard/frequency where possible*
- ❖ *Find ways to lower cost, even with current technology: easier to justify on pallet/container basis than with case level, and can be lowered with “reusable tags”, RPC, etc.*



Cool Chain RFID Implementation Concepts

Identify client/commodity to test RFID tags on case level from production/origin labelling through complete logistics chain, to determine saved time & increased accuracy at all loading, receiving, picking and shipping operational points. Determine accuracy of technology and impact on process flow.



Cool Chain RFID Implementation Concepts

Find carriers to test RFID tags on container level, with integrated alerts for tracking shipment. Determine if infrastructure can be implemented at each critical observation point in the chain, and if it is feasible to rely on alert messages for exceptions to planned transit points. Determine accuracy of technology and impact on process flow.



Cool Chain RFID Implementation Concepts

Determine a client and commodity to test increased temperature mapping, as compared to existing methods. Test several different frequency tags with reusable capabilities to lower cost per trip (target no increase over current methods). Develop intelligent software to enable fast receiving and processing, that indicates a problem based on not just upper/lower control limits, but commodity/packaging consideration for accept/reject + shelf life predictions, on a pallet by pallet basis.

