



RFID Proactive Cold Chain

A UNIQUE PROACTIVE **RFID** SYSTEM FOR COLD CHAIN MANAGEMENT





What are the components of RFID-PC?

RFID-PC has three key components: an RFID Tag, an RFID Reader, and an Interface for data access.

The **RFID Tag** is a small electronic device that is attached to a pallet. Initially the producer records the pallet identifier (SSCC) on the tag, as well as other information regarding its contents (product Id, batch number, sell-by date, etc.), as is done today using EAN 128 barcodes. The tag is equipped with a temperature sensor. The tag placed on the pallet transmits its identifier (SSCC) and its temperature to the Reader periodically (upon being polled).

RFID Readers are installed in depots and on trucks. They receive information from the tags placed on the pallets and transmit this information to a central database. Readers installed at depots can control a large radius, taking care of all pallets within their range. Several readers can be installed in a depot if required. A single reader installed in a truck can take care of all pallets a standard truck can carry. This reader is equipped with a GPS that provides the exact location of the truck, on top of pallet identification and temperature.

What is RFID Proactive Cold-Chain (RFID-PC)?

RFID-PC is a cold chain traceability system based on RFID tags placed on pallets that transmit temperature and other information to a central database accessible to all nodes of the supply chain.

What advantages does RFID-PC offer over other cold chain traceability methods?

RFID-PC allows controlling the cold chain in an uninterrupted way from the producer to the final destination, including periods when pallets are stored and periods of transportation performed by different companies involved in the supply chain. RFID-PC allows visibility of pallet authorized status to all members of the supply chain.

The **RFID-PC Interface** offers the data received at the central database to producers, logistic operators and transportation companies involved. Based on Web Services and XML, the interface makes RFID-PC interoperable among all members of the supply chain.



How is temperature information transmitted?

Each pallet equipped with RFID-PC makes temperature information available via a Reader, using different long-range communication means depending on the current location. During transportation RFID-PC uses GPRS, i.e. the data communication mechanism of the cell phone infrastructure that offers high coverage and low cost. During storage GPRS can also be used, or even better, lower cost mechanisms such as WIFI and the Internet can provide the communication infrastructure. The RFID Readers are responsible for transmitting pallet information along the optimal communication channel.

How frequently do we receive information from the pallets?

The recording and transmitting interval is completely user programmable. For example, during storage we can adjust RFID-PC to transmit every hour, and during transportation every five minutes.

Besides temperature control, what other added functionality can RFID-PC provide?

During transportation RFID-PC can transmit the exact location of the truck using GPS technology. Not only do we know pallet temperature, we also know where the pallet is located.

At depots, RFID-PC can be used as a constant inventory tool, avoiding the need for manual inventory checking. RFID-PC can also be used as a truck loading control tool.



Who has access to information provided by RFID-PC?

The producer decides who has access to information provided by his pallets. He can give access to a limited number of logistic operators, or to any logistic operator that handles one of his pallets and also to a limited number of transportation companies, or to any transportation company that transports one of his pallets. The producer has complete visibility, the logistic operator to the period when a pallet was stored at its depot, and the transportation company to the period when it transported the pallet.

The RFID-PC Interface assures that all members of the supply chain have limited access to their scope of information.

Can RFID-PC only warn us if something is wrong?

Yes, RFID-PC can trigger alarms if something goes wrong. Among the information recorded on a tag, RFID-PC offers a maximum allowed temperature and duration, and a minimum allowed temperature and duration. If any of the two limits are exceeded for over the established maximum duration, RFID-PC triggers an alarm and allows various mechanisms for transmitting this alarm (e-mail, ftp, etc.). RFID-PC is not only a temperature recording and cold chain documenting system, it is a proactive system with a goal: avoiding spoilage of merchandise before it occurs.

Who is RFID-PC targeted to?

RFID-PC is targeted to the complete supply chain, to anyone that is worried about the control of the cold chain.

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