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WHITE PAPER

WIRELESS MONITORING FOR COLD STORAGE APPLICATIONS

Introduction

Companies are obliged to monitor cold storage areas to preserve quality and maintain consumer product safety standards. When temperature sensitive or perishable goods are stored prior to final distribution, the storage condition data needs to be recorded and accessible anytime.

Food waste and recalls are some of the most important problems of food sector nowadays and cold storage has contributed in reduction of waste from perishable commodities and is instrumental for the development of the food sector. Food manufacturers and other industries such as pharmaceuticals, chemicals and livestock are now embracing wireless monitoring technologies for a number of benefits.

Many changes in government regulatory requirements such as FSMA and HACCP are posing new challenges for many companies in warehousing industry. Such regulations request temperature to be monitored, controlled and recorded throughout food distribution process, including while it's stored.

Cold storage requirements

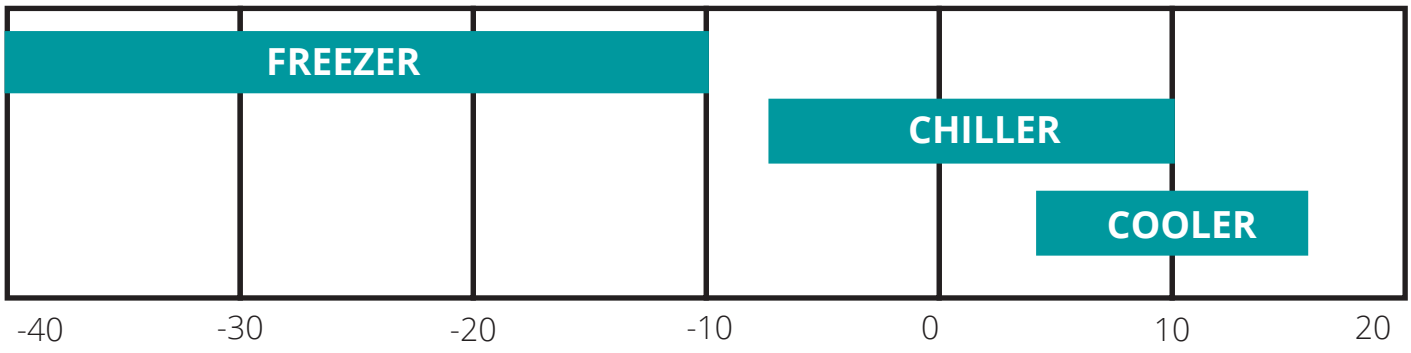
Not all storage units are created equal and the same goes for different cold storage warehouses:

- Freezer unit temperature requirements usually vary between -40ºC to -10ºC;
- Chiller unit temperature is usually between -5ºC to + 10ºC;
- Cooler storage units temperature varies from +3ºC to + 15ºC.

Examples of typical storage temperatures include:

- For frozen foods, such as ice cream, frozen vegetables, meat and fish, a minimum temperature of -18°C should be maintained to help prevent deterioration;
- Chilled foods, such as prepared meals, cheeses, dairy products and other perishable goods, should be stored at 5°C to help slow down or prevent deterioration.

The obligation to monitor can also extend to areas that are also used for food preparation. An example of this is an area used for preparing meat and fish, where products must be weighed, sliced and packed at temperatures of around 7°C. It is also necessary to monitor and record ambient storage conditions.



If the authorities discover any incompliance with the regulations, they can issue a recall that itself can have a devastating effect on company's balance sheet, but it can also result in fines and penalties. In extreme cases, operations may be shut down until expectations for food storage standards are met

Wireless monitoring and IoT for cold storage monitoring

The Internet of Things (IoT) is helping manufacturers optimize business operations, reduce the impact of a recall and meet government requirements by providing continuous monitoring and record keeping at cold storages and freezers.

To implement a reliable system for temperature and humidity traceability, the first rule is to eliminate the paper recording practice. Not only is it challenging to record everything, but locating and organizing the proper documents for reports and data analysis can be time consuming task. With today's standards, a company is expected to take action immediately when temperature sensitive good safety is at stake.

The wireless sensor networks provide a solution - the real time status of the entire cold storage is visible on the PC for the warehouse supervisor and is also accessible in mobile devices. The sensors detect when allowed thresholds have been exceeded and provide early warning notifications in case of a critical condition.

Aranet wireless monitoring solution

Aranet systems have been deployed to monitor temperature and humidity conditions in cold storage facilities, walk-in coolers, and commercial freezers to help meet the quality standards and comply with government requirements.

Aranet solution consists of a wireless temperature & humidity sensors, base station and advanced software for data analysis, to offer a full monitoring solution.

Most crucially, our wireless environmental monitoring solutions are able to send email alerts, if any predetermined thresholds are exceeded; for example, if the temperatures exceed a desired range.

With the help of wireless cold unit monitoring and historical data logging the responsible personnel can analyse temperature tendencies and fluctuations over time, make adjustments when necessary as well as demonstrate consistent compliance with storage condition standards. Aranet software provides accurate data logs of temperature and humidity within cold storage warehouses, walk in coolers and commercial freezers for use in documentation, reports and product safety audits.

Value Proposition

- Wireless monitoring and better local supervision of critical parameters of storage unit in real time.
- Preventive e-mail alerts resulting in timely action.
- Historical data collection for better analysis and audits.
- Easy to install and manage.
- Highly scalable system 1-100 sensors per base station.
- Energy efficient - 10 year sensor battery life
- Reduce costs with 24/7 automated monitoring

In addition, by removing the human factor from cold storage monitoring, Aranet also saves time, minimizes errors, and reduces the need to open the container at all – keeping products in the right place, at the right time, at the right temperature.

Things to remember

- A number of regulations and processes are mandatory within the cold storage and cold chain industries to ensure safety of perishable goods.
- Manual documentation processes are time consuming, resource intensive and prone to human error.
- Warehouse segment can realize cost savings by reducing waste, spoilage and recalls, freeing up employee time by automating manual documentation processes, and wirelessly tracking the temperature in coolers and freezers.
- Aranet automated wireless monitoring solution can properly track and record temperatures 24/7, immediately alerting staff of any detected issues.
- Aranet is a full wireless monitoring solution that is easy to implement and manage;
- It has never been easier and more cost-effective to implement industrial IoT solutions!

Get started today! To implement the future today visit **www.aranet.com/products** and find out more about wireless monitoring solutions!

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