Körber Supply Chain

In from the cold

Using innovative technology to improve working conditions for cold storage teams.

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Introduction
Working in a warehouse isn't easy. Even with the best technology, and when every comfort and safety measure is considered, it is still a difficult job. This is especially true for warehouse workers in the "cold chain."

Cold storage conditions are tough. Not just due to the cold and the giant air-conditioning units blasting freezing air, but the extremely noisy environment. Staff are subjected to this 24/7, which poses many challenges for both the equipment and the people operating it – neither of whom were designed to work in sub-zero temperatures.

Your team are your most valuable and productive assets, and they must be looked after. Cold storage is necessary for the fresh and frozen food chain. It isn't going away, and neither is the need for people on the warehouse floor, no matter what the temperature. Cold storage worker conditions need to be consistently scrutinized, and enhanced, wherever possible.

Thankfully, there are innovations available which will improve conditions, and therefore overall worker experience. This leads to a happier, safer and more dedicated team, and gains in productivity and efficiency for your business.

"Not everyone who works in the supply chain will want to work in a freezer. If you had the choice between the normal warehouse environment and a freezer for the same pay, nobody would do it. This means you are tapping into an even smaller pool of workers than usual, even with better pay."

Anton Du Preez
Group Sales Director
Körber Voice

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Cold storage challenges

According to the Cold Chain Federation[1], cold storage "keeps goods safe and prevents waste. As such it underpins key industries, and our way of life."

In the UK alone, the frozen food industry is estimated[2] to be worth in excess of £8 billion (BFFF) and the chilled food industry £11 billion (CFA), and that's just a tiny portion. The global cold storage market was valued at USD 94.02 billion in 2018 and is projected to expand at a compound annual growth rate of 12.2% between then and 2025[3]. As most cold storage providers facilitate both frozen and chilled, it's a lucrative, and essential, service – but it's not without its challenges.

Types of cold storage

Cold store/chilled ambient: 0 to +5°C (32 to 41°F)

Used for:
- Fresh fruit and vegetables
- Fresh meat, poultry and fish
- Dairy products
- Other chilled items (inc. pharmaceutical)

Freezer: -20 to -30°C (-4 to -22°F)

Used for:
- Frozen fruit and vegetables
- Frozen meat, poultry and fish
- Ice cream and other frozen dairy items
- Other frozen items (inc. pharmaceutical)

The freezer environment is where there are more likely to be mechanical and operational challenges.

Mechanical challenges

Most warehouse technologies and processes were not created to work in freezing temperatures. If it's a paper-based system, the glue on your labels may not hold up, causing the labels to fall off their boxes. Normal pens don't typically work in sub-zero temperatures either, which means most cold storage set ups involve wrist-mounted scanners and screens, which always require some level of manual engagement.

This is problematic for two reasons:

- Condensation on the screens will freeze and thaw, making manual input impossible
- Hands will have to be exposed as gloves are too bulky for accurate input

Operational challenges

Worker safety is critical, which means they will need to stay wrapped up warm at all times, which leads to restricted mobility. Many of them will be under pressure to meet targets, and may therefore quickly remove protective clothing such as gloves in order to write, operate a scanner, or engage with a touch screen or keyboard.

Not only is this detrimental to their health and comfort, it is also a slow and inefficient way to work. This can lead to problems with both accuracy and productivity.

Cold storage is also a very noisy environment, which can be problematic for those working on the warehouse floor. It makes communication between team members difficult, and adds to the general unpleasantness of the environment.

"The most common picker technology is a handheld scanner, usually mounted on the wrist inside a plastic case with a screen. One of the challenges with mobile devices in freezers is that changes in temperature are constant. Workers are constantly in and out of the freezer zone and chilled zone, which leads to constant condensation and re-freezing. This makes the device both difficult to see, and use."

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Solution 1: Voice directed work

Voice technology was created to maximize operational efficiency in the warehouse by allowing team members to work both hands free and eyes free. It works by feeding instructions directly to them via a headset, which fits snugly under a balaclava.

So far, it can be used in over 20 processes, including:

- Order selection
- Put-away
- Replenishment
- Cycle counting
- Returns

It can lead to massive gains in:

- Productivity (up by 35%)
- Accuracy (up by 25%)
- Time spent training and onboarding (down by at least 50%)

Answering challenges with VDW

Hardware
The nature of voice makes it a perfect fit for the freezer environment, thanks to its temperature and condensation-proof hardware.

The wireless headsets are certified for use in the freezer environment, and are able to withstand temperatures down to -30°C. Both the headsets and their terminals are tightly sealed against condensation, and can also come with protection built-in for workers' ears. They are even noise-cancelling, so the instructions can be heard over freezer fans, even through hats or balaclavas. The batteries will easily last a full eight-hour shift too, even in extreme temperatures.

Productivity and accuracy
Using the headsets instead of a wrist-mounted scanner, or paper, allows gloves to stay on at all times, and directions on screens or paper don't need to be read and interpreted through a layer of frost. This means that picks are both more productive, and more accurate.

Employee satisfaction
One of the best things about voice is how much the team members benefit from using it. Working in a freezer environment can lend itself to a high turnover as people find they can't cope in the cold – especially when working with unsuitable equipment. Keeping workers is key to business success, and improving their quality of life at work is a big step toward retention.

When asked about their experience using voice, team members unanimously saw it as investment in their comfort. Being able to keep gloves and hats on in below-zero temperatures has been described as a "game-changer" by staff.

"We always put the voice into the freezer section of the warehouse. Users like it because it's safer and more comfortable, managers like it because it's reliable and the battery lasts the full shift – even in a freezer environment."

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Group Sales Director
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Solution 2: Robotics and automation

Warehouse automation is using robots, autonomous vehicles and other specialized machinery to fill some of the more labor-intensive functions in a warehouse, including:

- "Walking" to different picking points
- Pushing carts
- Finding the correct pick path
- Picking up heavy items

All of this can lead to massive gains in:

- Efficiency
- Capacity
- Productivity

Types of robot

Category 1: AMR (autonomous mobile robots)
These are "cobots": robots and people moving and working together on the warehouse floor. This model includes "goods-to-person," where the robot brings the product – or a unit of products – to the person.

For example:
Instead of having team members continuously walking up and down long aisles, the robots bring the necessary rack to them – a system used by Amazon.

Category 2: AGV (automated guided vehicles)
These are essentially automated vehicles, such as forklift trucks. These will follow fixed paths, which will prevent them from bumping into each other, as well as helping them know which way to go. This limits their ability to adapt to a dynamic environment.

For example:
An AGV moves continuously along a predetermined path, shuttling material along it.

Answering challenges with robotics and automation

Ultimately, the best way to protect people from the cold is to keep them out of it in the first place. Robots and automation can help to achieve this.

At this stage, use of robots in a temperature-controlled environment is conceptual, but theoretically possible as they are able to withstand temperatures as low as -25°C. Their only constraint is they are not immune to condensation – which means they are limited to staying within a single temperature zone. However, if robots remain isolated to a freezer or chilled zone, this shouldn't cause a problem.

There are multiple ways robots could be used:

Scenario 1
People don't enter the freezer zone at all, and remain in chilled – or another "warmer" environment. AMRs (i.e. goods-to-person robots) pass the goods to them from the freezer through a "hole in the wall"-style interface.

Scenario 2
Automation using robot arms and conveyance belts – currently common in chilled and non-cold storage warehouse environments – is installed in freezers. This reduces the need for human engagement at the picking stage.

"Broad acceptance of autonomous robotics in the freezer environment hasn't happened, but that's not saying they are inappropriate for a freezer environment. We're just waiting for an innovative warehouse to think outside the box and give it a go! The trajectory of the technology, and the challenges hitting other warehouse environments, make it a necessity for the cold chain to jump on the AMR bandwagon."

John Santagate
VP of Robotics
Körber

The future of cold storage

The future of cold storage lies in the innovation around its key challenges. This will, in part, come in the form of technology facilitating widespread traceability to assist with maintaining “farm to fork” visibility, to comply with both regulations and customer expectations. It will also need to keep maintaining “continuity of conditions” in facilities and vehicles, in line with the most efficient technologies. But, ultimately, it will face the same challenges as the rest of the supply chain, with one of the most significant being attracting and retaining labor.

Investments in working safety and comfort, from simple thermal clothing to better technology, will help improve those conditions. Ideally, a combination of AMR and VDW could eliminate the need for workers to step into a freezer during any business-as-usual activities, while making each process more productive, accurate and efficient.

But, as ever, it all starts with your team. Making the necessary investments to ensure they are as safe and as happy as possible when they come to work is the best way to achieve business success in the supply chain.

“The future of working conditions in warehouses is robots doing the dirty, ugly and dangerous jobs. Eventually, it will become more automated inside freezers, allowing robots to take care of that unpleasant environment so people can focus on the most valuable tasks – perhaps even directed by voice technology.”

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Conclusion

People should always come first, no matter what. Just because an environment has been unpleasant to work in in the past doesn't mean it should have to stay that way. A willingness to invest in proven innovations is the best possible way to put your team first – both in cold storage, and beyond.

For more information

Could Körber's versatile VDW and robotics solutions help improve conditions for your cold storage team?

For Voice solutions visit: www.koerber-supplychain.com/supply-chain-solutions/supply-chain-voice-solutions

For AMR solutions visit: www.koerber-supplychain.com/supply-chain-solutions/warehouse-robots/autonomous-mobile-robots

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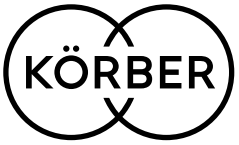

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