WHITE PAPER

Hidden heroes of the cold chain

How materials handling equipment helps combat food waste

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LIFT TRUCK TECHNOLOGIES

In a world where hunger and environmental concerns are pressing issues, it's shocking to learn that one-fifth of all food produced globally is lost or wasted each year. This staggering statistic not only represents a significant economic burden but also contributes to environmental degradation. While many factors contribute to this problem, one often-overlooked area plays a crucial role in reducing food waste: the cold chain and its unsung heroes – materials handling equipment.

The cold chain, a temperature-controlled supply chain, is vital for preserving perishable goods from production to consumption. It's a complex system that requires precision and efficiency at every step, from harvest to processing, storage, transportation, and retail. Within this intricate network, materials handling equipment serves as the backbone, ensuring that food moves swiftly and safely through each stage of its journey.

01

Temperature: the make-or-break factor

Temperature control is the linchpin of the cold chain. Even minor fluctuations can have devastating effects on food quality and safety. When temperatures rise above recommended levels, microbial growth accelerates, leading to rapid spoilage. This is particularly critical for highly perishable items like fresh produce, dairy products, and meats.

Inconsistent temperatures don't just affect food safety; they can also damage the quality and marketability of products. Fruits and vegetables may ripen too quickly or unevenly, while dairy products might separate or develop off-flavours. These changes, while not always dangerous, can render food unsellable or unpalatable, contributing to waste.

This is where specialised materials handling equipment comes into play. Modern forklifts, pallet trucks, and order pickers can be designed for cold storage environments specially equipped with features that help maintain the integrity of the cold chain. These machines are built to operate efficiently in sub-zero temperatures, with components that resist corrosion and moisture buildup – common issues in refrigerated spaces.

02

Efficiency: the key to freshness

In the cold chain, time is of the essence. The longer perishable goods spend in transit or waiting to be processed, the greater the risk of spoilage. Efficient materials handling equipment can help significantly reduce these time windows, so that food moves quickly from one temperature-controlled environment to another.

For instance, advanced order picker trucks can combine multiple functions, allowing operators to load and unload refrigerated trucks swiftly while also performing typical warehouse tasks. This versatility can minimise the time products spend outside of ideal temperature conditions.

Similarly, reach trucks designed for cold storage can operate in narrow aisles and achieve impressive lifting heights, maximising space utilisation in high-bay freezers. This efficiency not only speeds up operations but also allows for better organisation of goods based on their temperature requirements and expiration dates.

03

Handle with care: preserving quality

However, it's not just about speed; careful handling is equally crucial in preventing food waste. Rough handling, improper stacking, and careless movements can lead to damage, which accelerates spoilage and renders products unsellable.

Modern materials handling equipment is designed with these concerns in mind. Many trucks feature advanced control systems that allow for precise movements, even in tight spaces. Shock-absorbing systems help protect delicate goods from impact during transport, while ergonomic designs can help reduce operator fatigue, which can minimise the risk of handling errors during long shifts.

Furthermore, specialised attachments can be crucial in handling specific types of perishable goods. For example, clamp attachments designed for handling multiple cases of produce can significantly reduce the risk of crushing or bruising fruits and vegetables during movement.

04

The power of data in fighting food waste

In today's digital age, the role of materials handling equipment extends beyond physical movement. Many modern trucks are equipped with telematics systems that collect valuable data on equipment performance and usage patterns.

By analysing this information, businesses can identify inefficiencies in their workflows that could lead to food waste. For example, data might reveal that certain routes through the warehouse expose products to temperature fluctuations for longer than necessary. Armed with this knowledge, managers can optimise picking routes and improve equipment utilisation to minimise product dwell time.

Telematics systems also play a crucial role in preventative maintenance. By tracking actual equipment usage patterns, these systems can help schedule maintenance based on real needs rather than arbitrary timelines. This proactive approach prevents unexpected breakdowns that could disrupt the cold chain and lead to product loss.

Moreover, the data collected can provide a comprehensive view of the entire cold chain process. This bird's-eye perspective allows for continuous improvement, helping businesses refine their processes to be more efficient and less wasteful over time.

05

Training: the human element

While advanced equipment is crucial, the human element remains a critical factor in reducing food waste within the cold chain. Even the most sophisticated machinery is only as effective as the person operating it. This is why comprehensive operator training programs are essential.

These programs go beyond basic operation instructions. They educate operators on the importance of the cold chain, the impact of their actions on food quality, and best practices for handling different types of perishable goods. This knowledge empowers operators to make informed decisions that contribute to waste reduction.

06

A sustainable future

As we look towards a more sustainable future, the role of materials handling equipment in reducing food waste cannot be overstated.

Innovations in electric-powered equipment are helping to make cold chain operations more environmentally friendly, while ongoing developments in automation and artificial intelligence promise to further optimise cold storage processes, including how we preserve and distribute perishable goods.

As we strive to address global food waste, it's clear that every link in the supply chain must be optimised. From the farm to the fork, each step presents an opportunity to reduce waste and improve efficiency. In this context, the role of materials handling equipment – often operating behind the scenes – becomes increasingly crucial.

Yale Lift Truck Technologies is at the forefront of this effort, offering a comprehensive suite of products and services designed to optimise materials handling in cold storage operations. Our commitment to innovation and sustainability is helping businesses around the world extend the shelf life of perishable goods and minimise waste.

In the end, the fight against food waste is a collective effort. It requires the collaboration of equipment manufacturers, cold chain operators, and consumers alike. By recognising the importance of every aspect of the cold chain – including the often-overlooked role of materials handling equipment – we can move closer to a world where food waste is minimised, resources are used more efficiently, and fewer people go hungry.

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