

RETROTECH

INCORPORATED

INNOVATIVE MATERIAL HANDLING SOLUTIONS

Frozen and Refrigerated Warehouses

10 reasons for investing in Automated Storage in Refrigeration and Frozen Warehouses

- Less building (30% or more reduction)
- Minimal staff
- Minimal fork trucks & long jacks
- Reduced cooling costs
- Excellent Customer Service
- Less spoilage, lost product
- More positive FDA tracking
- Less dock doors
- Faster turns at doors
- Appointments possible

Freezers – Ice Cream Storage



Building Savings - Going Up as a Strategy

Building a warehouse for frozen and refrigerated products is not a new approach. More storage is possible on a per square foot basis by going to a hi-rise or dense storage technology for the building. Equipment is the key to making this possible and a well-accepted convention is turret truck or very narrow aisle equipment to achieve this height. The limitation is the need for people and height past 50' marks a difficulty for both man and technology.

In the world of AS/RS (automated storage and retrieval systems), which are common abroad, heights of 100 feet are typical allowing storage to be optimized. This means computer controlled S/RMs (storage retrieval machines), regardless of their technical approach to reaching this racked height storage, can service inventory management of frozen or refrigerated products with 100% accuracy and repeat the process 24 hours a day without human intervention.

This means that the normal design parameters for laying out a freezer building, at costs in excess of \$100 per square foot, are completely overhauled. It is possible to take the industry average for racked four high warehousing at 10 square foot per pallet (including aisle ways) and get into a two to three square foot per pallet, based on achieving the vertical use. Costs can be 1/3 to 1/2 or less of conventional buildings, often paying for the entire investment in AS/RS. In areas where the cost of land is high, the savings are even greater.

Existing Freezer / Cooler Operations

Many cooler / freezer operations lack good use of their existing space and can be retrofitted to be more dense. A variety of AS/RS in a variety of capital and performance applications can be put into an operational warehouse. The ability to achieve productivity gains and storage optimization shouldn't be overlooked as a way to avoid new construction and moving costs. The ability to gain 20-30% more product in the same footprint may be available as a solution to a storage problem and the typical cost of out side storage.

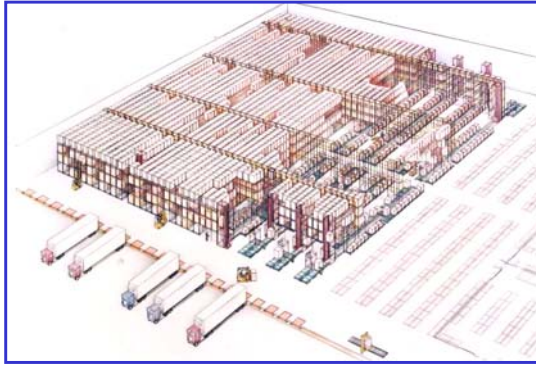
Personnel Reduction

Turnover in many frozen and refrigerated warehouses remains a major issue; numbers over 30% are common, even at premium wages. Surveys have reported significant reductions in corporate earning due to turnover.

The costs of maintaining people in a hostile environment, even without turnover, raises the question of why put people in those work places, knowing the productivity will be low due to the cold temperatures. Every staff member has a related cost of needed freezer clothing, operational and safety/ergonomic training.

Safety and employee satisfaction remains low in the freezer-cooler environment. Strategies that can employ

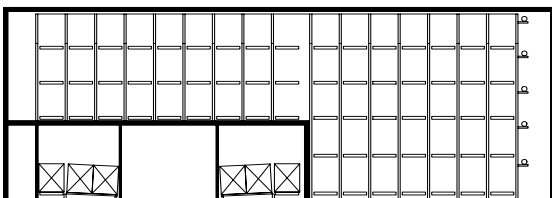
people at high productivity and job satisfaction are one of the outcomes of employing AS/RS.



Wait Times

The tendency to have long wait times associated with coolers has to do with the tendency to have poor layouts and dense storage associated with the warehouse. This warehouse design trait is common when trading off density with complexity of products and date codes. The process of shuffling one product to get to another is common. Its outcome is exacerbated by the fact truck arrivals are often unpredictable. The combination of limited staging times due to spoilage, difficult warehouse arrangements, and limited ability to meet instantaneous demands of arrivals leads to wait times.

In AS/RS, the ability to postpone decisions for shipping until the truck is at the dock door is viable. The properly designed system will have the excess capacity to deliver product at peak times with 100% accuracy. Productivity for personnel is maximized as a result of the right product being delivered to the right place at the right time, near the load out doors.



Picking and Pick Replenishment

Congestion in the pick areas of coolers and freezers is typical. This problem is due to the necessity to let down or replenish product into areas where people are working pick lists. This presents both safety and productivity problems. The obvious problem of having fork trucks and people working closely in the same area is self-evident. The productivity issue is also obvious and related but is dependent on the efficiency of

practices and WMS to prevent total chaos and congestion.

Several solutions to this problem occur in the AS/RS environment. One is the automated pallet replenishment of manual pick slots. In this instance, the S/RM can directly place a load into a pick slot in a tunnel arrangement running through the pallet storage AS/RS. With pallet storage in the racking being located above the pick tunnel, cube is optimized. Computer management of pick slots can also optimize pallet slot arrangements dynamically. Pick to pallet or pick to belt can be done on one or more levels of the AS/RS as the design and business requirements dictate.

High activity picking can be managed by replenishing layer, case or tote slots in a mini-load AS/RS. This provides for less than pallet quantities being managed by equipment on a selective, on-demand basis. This form of less-than-pallet picking automation can be tracked completely, from its source in manufacturing or warehousing to its final shipment form as an individual case or item or as a re-grouped order on a pallet. Stretch wrapping, pallet or slip sheet insertion can also be added to the process to support the order fulfillment process.



Non-Labor-Based Operational Savings from AS/RS

Other savings are directly related to cube reduction of the cooler. Wasted space in the freezer and cooler warehouse operation is directly attributed to aisle ways and unused vertical spaces. Typical space savings are in the 10-30% range, depending on the storage practice of the warehouse. These convert at the rate of 1 to 2 cents per cubic foot per month, often delivering tens of thousands of dollars of annual savings when an AS/RS design is compared to a conventional operation.

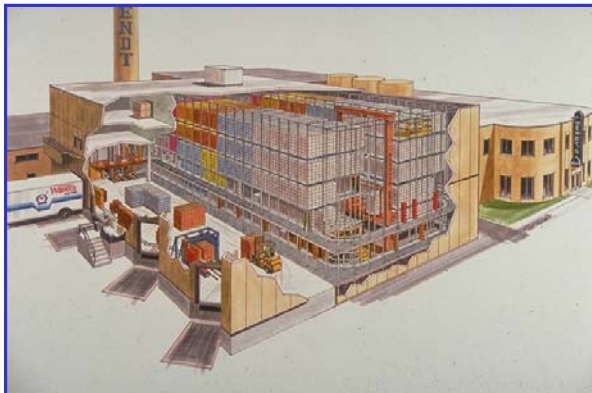
Lighting and heat dissipation from man-up vehicles also accounts for significant loss of cooling efficiency in the

warehouse. These are also eliminated generating additional savings.

Information Management – Achieving Visibility

Managing the warehouse information in the form of a material tracking and control system can achieve a variety of operational objectives. Most important is the real-time visibility of products. Knowing what you have on-hand in real-time allows you and the material control software to make decisions together. By providing both relational database information on inventory as well as dynamic tracking of product in-transit allows operations people to make decisions as conditions change. Moreover, the ability to know what products went where is insurance for FDA and other regulatory bodies if and when a quality problem occurs.

The power to postpone a decision with good information is a powerful tool when combined with a rapid response material handling system. Both the current activities and the reports on completed activities keep operations flexible in their decision making.



Return on Investment - Summing It Up!

The ability to create returns to shareholders through warehouse automation design is very achievable for a large number of freezer / cooler operations. The one-time savings in building and construction costs for new construction combined with operational savings in labor and environment are often enough to generate 3 year paybacks and over 20% internal rates of return (IRR).

Let us help you determine whether, or not, your operation can technically and financially succeed with AS/RS warehousing. A wide variety of technology and material handling solutions is out there waiting to return profitability and efficiency to your operation.

Contact us soon!

Retrotech Incorporated

INNOVATIVE MATERIAL HANDLING SOLUTIONS

610 Fishers Run

Victor, NY 14564

585-924-6333

585-924-6334 FAX

info@retrotech.com