



Frost free cold storage

Newark Refrigerated Warehouse eliminates defrost

Case story

Newark Refrigerated Warehouse, located in Newark NJ, is a cold storage warehouse specializing in food and beverage imports and exports requiring temperature-controlled conditions. The warehouse stores a wide range of products from meat to baked goods to juice and has been helping global customers with their storage needs since 1984.

The company's original building dates back to 1926. Today with two buildings, the warehouse's total capacity is about 4,000,000 cubic feet of temperature-controlled storage. Sixteen rooms, each with separate temperature controls, allow the warehouse to provide a variety of storage conditions to meet the needs of their customers.

The beginning of a strong partnership

Newark Refrigerated Warehouse first partnered with Alfa Laval Kathabar in 1999, when Jerry von Dohlen, president of Newark Refrigerated Warehouse, was searching for a way to eliminate unwanted frost and ice in the company's warehouse staging area.

Moisture infiltration through dock door openings led to icing of elevator interlocks and the need to defrost coils frequently. The warehouse selected a small Alfa Laval Kathabar liquid desiccant system to address these issues, and it successfully solved both problems. By eliminating the frost and ice in this staging area, Newark Refrigerated Warehouse greatly improved the efficiency and safety of their space.

Planning for more

In 2000, Jerry started plans for a major expansion. He considered the pros and cons of conventional ceiling-hung coil evaporators that would distribute refrigerant from a compressor room, versus installation of a larger Alfa Laval Kathabar liquid desiccant system.

One of the cons to a conventional system is defrosting. Defrosting conventional refrigeration coils is one of the most challenging factors encountered by a cold storage warehouse because it introduces heat into a 0°F space. Removing heat and moisture from the refrigerated space saves energy.



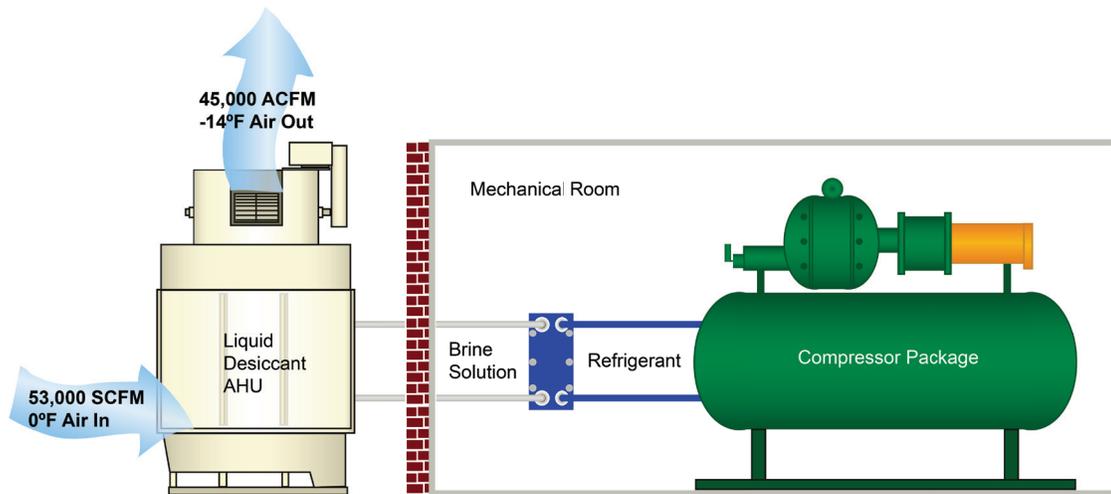
Whether a manufactured refrigerant or ammonia is used as the refrigerant, limiting the total charge in the system is ideal. Newark Refrigerated Warehouse uses R-22 as the refrigerant to cool the secondary desiccant brine solution in the Alfa Laval Kathabar system. The refrigerant is centralized at the mechanical room, lowering the charge and allowing for only the desiccant solution to be pumped out to the warehouse area.

In addition, defrost piping is often where most refrigerant leaks occur. Eliminating this piping and reducing the amount of refrigerant in the system would lead to fewer leaks and again, less impact on the environment.

Fast facts

Newark Refrigerated Warehouse, Newark, NJ

- 100 Ton liquid desiccant system
- 0°F freezer
- Defrost completely eliminated
- Remote plate & frame heat exchanger promotes low charge refrigeration system



Since Jerry wanted a refrigeration system that would eliminate the need to defrost completely while also promoting a low refrigerant charge, he chose to move forward with the liquid desiccant solution.

Engineered by design

Alfa Laval Kathabar helped with the design and layout of a penthouse equipment room, located over the top of the staging area of the warehouse, featuring ducts that connect to the freezer.

Construction of the new addition began in 2004. A 100 Ton liquid desiccant system consisting of an Alfa Laval Kathabar FV 4000 Conditioner, plate & frame evaporator and an FP-P 3 Regenerator.

The system provides cold air to maintain the freezer at 0°F and eliminates the need for manual defrosting of products and surfaces. And since the Alfa Laval Kathabar heat exchanger is located near the mechanical room, outside of the refrigerated space, the system is safer and has less impact on the environment.

The regenerator efficiently uses waste heat from the refrigeration chiller. This waste heat is converted to a glycol hot water loop which is then used to heat the desiccant solution in the regenerator.

The warehouse also benefits from cost-effective operation. In fact, Jerry calculated a cost savings of over \$46,000 per year versus the operational cost of an optimized hot gas-defrosting situation.

In addition, the system's simplicity extends to its operation. Jerry said, "It is simple to operate, with no complicated defrost controls."

The Alfa Laval Kathabar system eliminates the downtime and reduced refrigeration capacity that is usually associated with defrosting fan coil evaporators.

Safe and effective operation

By design, the system eliminates fog, ice and refrigerant from the work areas. It also eliminates defrost and refrigeration coils from the refrigerated space and keeps refrigerant out of areas occupied by people and products.

Jerry is pleased with the results. He said, "The way the industry is going with regulations, low refrigerant charge is absolutely necessary. The Alfa Laval Kathabar system is an option for the industry to design refrigeration systems capable of charges as low as 1 to 3 pounds per ton while still limiting the refrigerant to the compressor room and eliminating evaporators completely from occupied spaces."

A clean warehouse

The Alfa Laval Kathabar system's air scrubbing feature also cleans the warehouse of dust, dirt and bacteria. Instead of employees cleaning the warehouse and the stored products, they simply go to the Alfa Laval Kathabar system and change its solution filter.

Jerry added, "The system keeps the warehouse clean. Scrubbing the air of dust and dirt keeps the products inside the warehouse clean and significantly reduces our cleaning costs."

Spreading the word

Jerry has become a spokesperson for the benefits of the Alfa Laval Kathabar technology. Since the installation in 2004, Jerry has written articles, presented at conferences, and even gave the keynote address for International Institute of Ammonia Refrigeration (IAR) in 2010, where he promoted his Alfa Laval Kathabar system as a premier low charge refrigeration technology for cold storage warehouses.

Alfa Laval reserves the right to change specifications without prior notification.

How to contact Alfa Laval

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