Cold storage warehouse improves efficiency with ammonia/pumped CO$_2$ system

**Result**

- Ammonia / CO$_2$ brine system
- Dual slide valve efficiency avoids $100,000$ of variable frequency drives
- 1000 tons of efficient ammonia refrigeration
- Pumped liquid CO$_2$ secondary refrigerant
- Non-ozone depleting refrigerant with zero global warming impact
- Vilter™ single screw compressor with ammonia refrigerant achieves increased performance
- 15% higher efficiency than comparable technologies
- Designed for 20 years service without costly maintenance

**Application**

Pumped liquid CO$_2$ secondary system refrigerated by ammonia for 240,000 square foot product and dairy cold storage warehouse.

**Customer**

With annual sales of over $11$ billion and over 65,000 employees, METRO INC. is a leader in the food and pharmaceutical sectors in Québec and Ontario, where it operates a network of more than 600 food stores as well as over 250 drugstores.

CIMCO is an international refrigeration leader in the industrial refrigeration food and beverage and cold storage markets.
Low charge ammonia refrigeration systems such as that applied at Metro are gaining popularity for large-capacity cooling applications in the 75-750 kW range. The low ammonia refrigerant charge also improves safety and reduces certification costs.

Single screw compressors benefit from balanced forces around the main rotor. Balanced axial and radial forces offset one another so that, effectively, the only net force on the main rotor of the single screw compressor is gravity. The low bearing loads result in long compressor life and high reliability. Vilter is able to offer a fifteen year bearing warranty. As a result, operators can greatly reduce maintenance costs by avoiding costly bearing replacements and downtime events.

The unit is equipped with Vilter VISSION 20/20 microprocessors with process temperature controls. The controls are designed to regulate the starting, stopping, and capacity control. The dual slide design on the Vilter single screw compressor offers the highest level of flexibility and performance optimization for screw compressors. This design actually has two slides per compression side of the gas end. The two slides are commonly referred to as the capacity slide and the volume slide. The capacity slide moves from positions of 20% to 100% of flow while continuously operating at the ideal compression ratio throughout the part-load range. This allows the compressor to match the system flow requirements and makes cooling low-cost and efficient.

Resources
Learn more about the Vilter VSS single screw compressor at: EmersonClimate.com/Vilter