

CUSTOM DESIGNED HYDRAULIC VRCs HELP MAXIMIZE SPACE AT TYSON FOODS

FROZEN STORAGE FACILITY | TEMPERANCEVILLE, VA

Once chicken is processed and packaged at the facility, it is stored in a large two-level cold storage freezer warehouse until it is shipped. The volume that comes through the warehouse is substantial, with frequent movement of the packaged chicken between the two levels.

In 2011, when Tyson discovered it needed to upgrade the antiquated system used to move the chicken between the two levels, it called in Delaware Elevator of Salisbury, MD for a recommendation. Not only did the new lifting mechanism need to operate in sub-zero temperatures, it needed to handle several full pallets of chicken per lift, and it had to withstand frequent trips throughout the day.

“We looked at what Tyson needed in the Temperanceville freezer room and it was clear that it would have to be a unique solution,” said PJ Laviola, general manager of special applications for Delaware Elevator. “The lift itself needed to be fully operable in cold temperatures, and we had to somehow figure out a way to protect the controls and other more sensitive components.”

After a thorough review of project requirements, the Delaware Elevator team recommended a 21 Series hydraulic lift from PFlow, the leading global provider of custom-engineered Vertical Reciprocating Conveyors (VRCs).

Delaware Elevator worked with the PFlow engineering staff to finalize the hydraulic system specifications and design. After several consultations with Tyson the solution was approved. In order to achieve optimal performance in the frozen environment the hydraulic lifts utilize special, environmentally safe hydraulic oil that can withstand the sub-zero temperatures. The controls and pump are housed in a small, heated room adjacent to the freezer room.

In order to build the most efficient system, only one pump is needed, with the hydraulic line splitting off to service each lift at opposite ends of the warehouse. The carriage is lifted and lowered by two hydraulic cylinders, mounted on the guide columns that straddle each side. The hydraulic VRCs also include advanced safety features to protect workers and materials, such as:

Access gates at each level with interlocks to sync with the movement and position of the lift carriage.

A torsion bar links the two hydraulic cylinders to equalize the load and ensures the carriage remains level at all times.

Velocity fuses to prevent uncontrolled carriage descent in the unlikely event of a hydraulic hose rupture.

Each 21 Series has a 4,000 lifting capacity and carriage dimensions of 5.75' x 7' high, allowing two full pallets to be moved at a time.

The full vertical travel is 11.5', moving at a speed of 24 FPM.



“Hydraulic (PFlow) VRCs customized in a similar manner are viable for a wide range of refrigerated and frozen storage applications. It easily withstands the cold temperatures and frequent use with minimal maintenance required.”

PJ Laviola,
GM for Special Applications,
Delaware Elevator

