



# Industrial/Food Processing Case Study #1

Liquid CO<sub>2</sub> for Meat Processing Plant

[www.chartindustries.com](http://www.chartindustries.com)



©2016 Chart Inc.

1-800-400-4683

P/N 21077479

## Highlights:

Location — Worthington, MN

Scope of Project:

- Engineering and manufacture of turnkey system within Chart's plant
- (2) 50 ton liquid carbon dioxide (CO<sub>2</sub>) tanks
- (2) 15 kW electric pressure builders
- Flow spec: 4200 lb/hr
- 700 ft of 3" ID Python® VIP
- Pressure and level transmitters
- Integrated switcher valve system for 20/7 operation
- Project Completion: 2012

## System Configuration:

Chart's two 50 ton vessels combine for a total net storage capacity of 183,200 lbs of CO<sub>2</sub>. Chart's Python brand of VIP ensured coldest liquid to application for maximum snow yield. Safety equipment was properly installed. The entire cryogenic system has a single-source accountability for the entire CO<sub>2</sub> supply system. All components were factory tested and designed for ease of installation.

## Application:

Meat Processing Plant – CO<sub>2</sub> used to cool meat during processing by injecting liquid CO<sub>2</sub>. Plant processes 18,000 – 22,000 hogs in a 20 hour/7 day operation, requiring an automated cryogenic system.

## Project Background:

Chart was requested to develop the liquid CO<sub>2</sub> system in a complete package including equipment and installation services. The plant required taking liquid CO<sub>2</sub> from vertical storage tanks, and delivering it into the facility. Flow at points of use required consistency and dependability.

Lead time was a critical factor. The decision was made to use two 50 ton tanks, rather than a single 100 ton tank to shorten delivery time. Dual tanks provide redundant CO<sub>2</sub> supply and allowed additional process flow benefits to be added into the system.

## Significant Accomplishments:

Chart was able to provide a complete turnkey equipment package with US factory built equipment and skids, which allowed easier installation at site. Starting at the offload, the driver determines which tank to fill via the automation built into the system. The control panel shows "Do Not Fill/Tank Active" message when tank is in use. For the tank that is in idle mode, the driver easily sees the "Ready to Fill" signal which is illuminated on the visible control panel. The two tank system allows for automated switching of liquid flow between both storage tanks. The control system included in the turnkey package fully coordinates the switching between tank A and tank B. As one tank reaches a low liquid level, the control system gradually brings the second tank online before completely closing off the first. Flow on the processing floor sees steady, seamless flow. Additional piping and valves installed to allow for manual crossover of pressure building system, allowing both tanks to use either PB. 700 ft of 3" VIP reduced product loss with no presence of frost on the long runs.

