



Transcritical CO₂ Solution for Lunds & Byerlys

FOREWORD



Transcritical CO₂ refrigeration has proven to be a versatile application that can be employed in several sectors within the cold chain. Minneapolis-based South-Town

Refrigeration & Mechanical installed a transcritical system for upscale grocer Lunds & Byerlys.

THE PROJECT

Setting exceptionally high-standards, Lunds & Byerlys work hard to ensure that their products and shopping environment exceed customers' expectations. RDM products are

used to successfully control and monitor heating, air-conditioning and refrigeration equipment and HFC systems on their estate, saving millions of dollars to date,

they wanted to look at alternate approaches where additional energy and CO₂ reductions could be made.

THE SOLUTION

Working with Minnesota-based contractor South-Town Refrigeration & Mechanical, Lunds & Byerlys installed a CO₂ system, using an Advansor transcritical model with an adiabatic condenser at their new store in White Bear Lake, outside of Minneapolis.

At the heart of the site, a DMTouch provides remote access combined with an ActiveFM remote monitoring solution to solidify the security of their IT systems and ensure food safety, through incident handling and predictive maintenance.

Intuitive controllers, specifically Transcritical Stepper and TDB models, are used to control the rack and hot water heat reclaim system. On the sales floor, each refrigeration case is fitted with a Mercury Case Controller connected to IP Hubs with integrated pressure control. Allowing for just one transducer per HUB to be used to control the cases based on suction pressure for superheat control, because of the fast communication speed from the HUB to case. Using only one transducer reduces piping failure potential, with the additional benefit of reduced cost, compared

to using more transducers. Within the walk-in boxes, Coldroom Panels control each evaporator. Providing superheat pressure control by pulling the suction pressure from the rack and using a parameter for pressure drop to obtain accurate pressure reading at each panel.

Across the rest of the site, Intuitive TDB Controllers, are used to control the lights, leak detection, RTU units, and unit heaters. They also integrate other systems, including DENT power monitors, Exhaust Hoods, and MUA systems using, open protocol, BACnet and Modbus communications.

BENEFITS

The White Bear Lake store's transcritical system delivers a low-temperature capacity of 205.5K BTUH (-16°F) and medium-temperature capacity of 873.1L BTUH (19°F). The CO₂ system has consumed less energy than an R407A system at a

comparable nearby store. Ryan Welty, vice president of sales and operations for South-Town, advised that the system consistently performed, even during warm periods in late summer and early fall. Welty acknowledged the first-cost premium for CO₂

equipment but said that installation costs were no higher than for traditional systems. He attributed higher initial costs to the greater use of electronic case controls.

RDM PRODUCTS AND SOLUTIONS

Hardware

- DMTouch Part Number - PR0510
- Intuitive Transcritical Stepper Part Number - PR0652 STCO2

- Intuitive TDB Part Number - PR0650 TDB
- Mercury MK3 Case Controller Part

- Number - PR0740 ER 232 CAS
- Coldroom Panel Part Number - PR0150 ESBIP

Software

- ActiveFM™

- The Data Builder (TDB)



South-Town
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