



Pete Savage, AAA Refrigeration

Fear Strikes Out

AAA Refrigeration was able to move its technicians past their worries about the high pressures of CO₂ systems with an extensive training program

– By Michael Garry

“Once the techs were educated, they came to realize that the systems aren't much different than a standard DX or glycol system.”

When AAA Refrigeration Service, a Bronx, N.Y.-based contractor, found out in 2015 that it would be starting up and servicing a transcritical CO₂ system at a DeCicco & Sons store in Larchmont, N.Y., its technicians were a little taken aback.

“They said, ‘The pressures are too high, we don’t want to work on that,’” said Pete Savage, head of controls division (N.Y. office) and Long Island Zone service manager, for AAA Refrigeration, at a food retail session in June at the ATMosphere America 2017 conference. He provided a contractor’s perspective for a panel otherwise populated by supermarket executives. (See [“Meeting the Retrofit Challenge,” *Accelerate America*, June-July 2017.](#))

But AAA Refrigeration addressed its technicians’ “fear of the high pressure,” with ample training on CO₂ technology, said Savage. “Once the techs were educated they came to realize that the systems aren’t much different than a standard DX or glycol system. They were able to embrace [CO₂].”

AAA Refrigeration has since then become one of the more proactive contractors with commercial CO₂ refrigeration systems, handling all of DeCicco & Sons new and retrofit stores as well as CO₂ systems used by other retailers.

Following its Larchmont store, DeCicco & Sons, a seven-store food retailer based in Pelham, N.Y., opened a second transcritical store in Millwood, N.Y., and retrofitted an existing store in Pelham with transcritical. The retailer is retrofitting another store in Harrison, N.Y., and plans to open another store with a transcritical system in Somers, N.Y. DeCicco & Sons uses an adiabatic condenser at all of his transcritical stores (as do other AAA Refrigeration customers), but is opting for a geothermal system instead for one of his upcoming projects, noted Savage.

In addition, AAA Refrigeration has worked on a transcritical store opened by Whole Foods Market in Closter, N.J., and a cascade CO₂ store operated by ShopRite, with plans to service an upcoming transcritical ShopRite store.

Education-oriented

Recognizing eight years ago that the tide was turning in the refrigeration industry, AAA Refrigeration launched what has become an annual Refrigeration Symposium; the most recent, hosted with CO₂ OEM Hillphoenix, was held in late March in Tarrytown, N.Y. The Symposium features presentations on CO₂ technology, energy efficiency and other related issues for an audience of contractors and food retailers.

“We’re a very education-oriented company,” said Savage. (See [“Shifting Gears,” *Accelerate America*, November 2015.](#))



Eric Berman of HillPhoenix (at right) with AAA Refrigeration technicians

▶ To prepare for the DeCicco transcritical stores, AAA Refrigeration partnered with HillPhoenix (provider of the retailer's transcritical racks) and component manufacturer Emerson, supplier of its case and rack controllers. The manufacturers provided the contractor with "initial and ongoing education, both in a classroom setting and hands-on in the field," said Savage. "Suppliers have been integral to our ability to do this. They are all working together to make this technology viable and successful."

Case controllers represented another new technology for AAA Refrigeration's technicians, necessitating training on controller installation, start-up and troubleshooting. "This region of our territory had little to no case controller stores prior to the introduction of transcritical CO₂," Savage said.

HillPhoenix representatives were on hand when AAA Refrigeration technicians installed DeCicco's transcritical system in Larchmont, N.Y., in 2015. The smaller line sizes of CO₂ systems help expedite the installation process, noted Savage. Moreover, the use of Mueller XHP copper-iron piping eliminated the need for stainless-steel welders and helped "ease installation."

He recommended creating a start-up log of all measures and readings after the transcritical system has been commissioned. "It's important to document start-up readings and conditions, which can be used as a service tool down the road," he said, adding that accurate as-built drawings should be kept on-site.

He also suggested making sure that the CO₂ used is refrigerant grade. AAA Refrigeration gets CO₂ from a few suppliers, and keeps a full back-up of CO₂ charge in one store.

It's a good idea, he added, to include servicing technicians at a transcritical start-up "so they can familiarize themselves with the site."

Troubleshooting a transcritical CO₂ system is no different than doing so for a standard DX system, though "piping and controls are a little more complex," he said.

Retailers interested in transcritical CO₂ should "work with your prospective contractors, starting from the design phase," said Savage. "Make sure they are on board with new technologies and are willing to provide training." ■ MG

Energy Savings at DeCicco's

AAA Refrigeration has a bird's eye view of the energy savings made possible by transcritical CO₂ systems.

At the ATMOsphere America 2017 conference, Pete Savage, AAA Refrigeration's head of controls division (N.Y. office) and Long Island Zone service manager, shared the contractor's experience with the energy savings documented at DeCicco & Sons' first transcritical store in Larchmont, N.Y.

The 24,000-sq-ft store, with a total system capacity of 1.02M BTU and a CO₂ refrigerant charge of 1,000 lbs, used "anywhere from 7% to 37% less electricity than the baseline system," a store with an R404A DX system, during a 10-month period from January through October 2016, said Savage.

As expected with transcritical CO₂, efficiency gains were greatest in the winter, lowest in the summer. The total dollar savings from both reduced electricity use and lower demand was about \$75,000 on an annualized basis (based on a utility rate of 18.8 cents/kWh). He attributed the savings particularly to the case controllers and adiabatic condenser.

(John DeCicco, Jr., president of DeCicco & Sons, talked about the energy study at AAA Refrigeration's Symposium in March 2017. [See "Transcritical Cuts Energy Costs by \\$74,000 for DeCicco & Sons," *Accelerate America*, April 2017.](#))

Both the transcritical store and the HFC store employed other energy-saving equipment, such as LED lights, motion sensors, night curtains, anti-sweat heaters and variable-frequency drives.

In addition to the savings in energy consumption and demand, the transcritical system offers 1.1 million BTUs in recovered heat, used for hot water, the entrance vestibule and in the kitchen.

DeCicco's latest transcritical store in Millwood, N.Y., also has five self-contained propane under-counter sandwich-prep units in the deli.