Unique refrigeration system leverages Copeland Scroll Digital™ compressors

Result

- Reduced compressor starts, reducing inrush current and stress and wear on compressors and contactors
- Optimized the cycling profile of all compressors on the same suction group
- Operating suction pressure range is narrowed by 80% within minutes of activating the digital unloading technology, reducing energy consumption and extending product life through tighter temperature controls
- 100% redundancy
- Smaller footprint
- E2 communication system (monitor, alarm and report)
- Lower installation costs

Application

Commercial kitchen and refrigerated foodservice operations. Refrigeration system with digital capacity modulation was built with Copeland Scroll compressors.

Customer

Green Sage Café is a certified green restaurant serving nourishing food to the community through sustainable practices.

Challenge

Commercial kitchen and refrigerated foodservice operations include many different pieces of refrigeration equipment. Typically each walk-in freezer, reach-in display cases, or ice machine runs on its own small condensing unit. These condensing units generate heat and noise, and have no back-up if they go down.

"The Copeland Scroll Digital compressor is the centerpiece of our Eco-Cool system, providing optimal benefits of versatility and energy efficiency. This is multiplexing at its finest."

Brent Dyess, President
RDT

EMERSON
Climate Technologies

Foodservice designers want to create a pleasant space for people to work and eat. They also wanted to avoid downtime with redundancy, and to install the most energy efficient refrigeration equipment. Reducing energy costs while preserving the perishable product integrity is always a priority. Refrigeration Design Technologies (RDT) in Waxahachie, Texas came up with a unique solution to this challenge.

Solution

RDT's Eco-Cool system was specifically designed to meet the ever-increasing demands for environmentally responsible compliance within the food service industry. With the Copeland Scroll Digital compressor, the Eco-Cool system offers precise control of individual compressors, allowing an application that would typically require eight compressors, to now utilize only two digital scroll compressors (one medium temperature and one low temperature). For the customer's peace of mind, it also includes a back-up compressor for 100 percent redundancy. With fewer compressors, the Eco-Cool system has a smaller system footprint, lower refrigerant volume, lower installation costs and reduced electrical consumption.

Green Sage Cafe installed a refrigerated rack system mounted on the roof with one solitary compressor running seven refrigerated devices power by a modulating digital scroll compressor with only three moving parts. This system has the capacity to run one device or all devices and in all likelihood will never turn off, like the human heart. This piece of equipment could last a lifetime saving on repair and maintenance of individual compressors. The goal of this system is to reduce refrigeration energy by one third and reduce maintenance costs by half.

Digital capacity modulation technology adds variable capacity unloading up to 90% of the compressor capacity. The digital capacity modulation technology, which is designed to review and adapt within seconds, delivered an unloading strategy to precisely match the capacity with the product load over the variable operating conditions typical of this foodservice application.

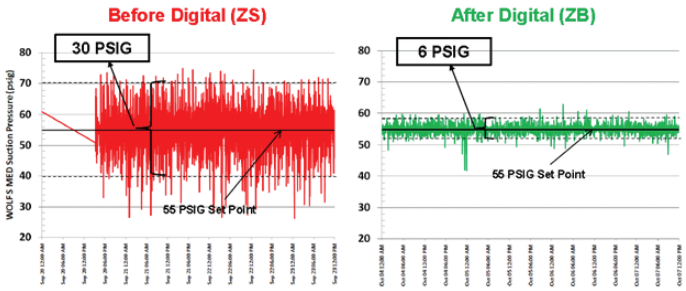
With the Emerson Climate Technologies Copeland Scroll Digital compressor and the E2 controller, the Eco-Cool system also addresses the increasing demand for closer temperature tolerances and the ability to monitor, control and record these vital temperatures.

The E2 controller, a standard feature on the Eco-Cool system, allows for remote monitoring, alarm and control of the refrigeration rack via an internet connection. The controller can also interface with building monitoring systems (BMS), maintain a backlog record of temperature readouts and alarm end-users upon high temperature or low refrigerant.

System testing and verification at a UL test facility per ASHRAE standards proved that the digital compressor system saves at least 33% in energy costs, which would save the operator $1,484 a year for a small refrigeration system.

Resources

Learn more about the Copeland Scroll Compressor at:
EmersonClimate.com



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