

Supermarket improves energy efficiency and reduces service calls

Result

- Raised saturated suction temperature on a group of three compressors by 3°, resulting in 4% energy reduction
- Reduced time to recondition equipment for installation and wiring from 2.5 hours to 40 minutes per compressor
- Simplified troubleshooting allows 85% of compressor diagnostics to be completed remotely
- Optimized the cycling profile of all compressors on the same suction group, extending compressor and contactor life
- Integrated compressor and electronics in order to provide a simpler, more reliable rack
- Consolidated traditional accessories into one electronic package



Application

Digital capacity modulation technology was added by upgrading to Copeland Discus Digital™ compressors with CoreSense™ Diagnostics modules operating on a supermarket parallel rack.

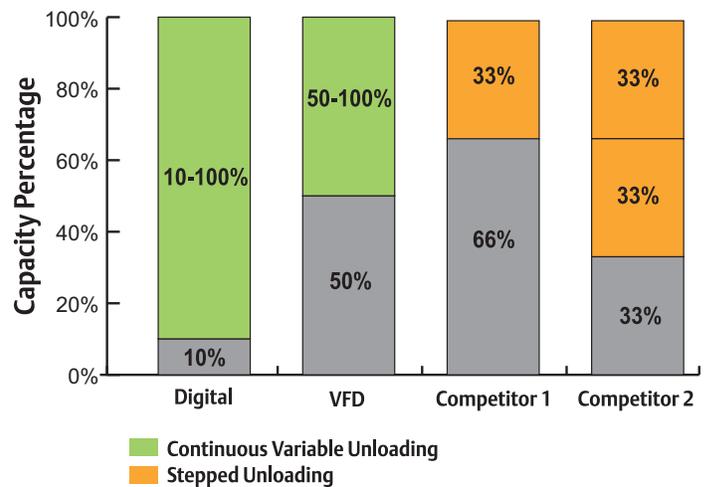
Customer

Lowe's Market, a supermarket chain with 146 stores in West Texas, New Mexico, Arizona and Colorado. Lowe's in-house refrigeration department handles all aspects of remodels and construction projects.

Challenge

Lowe's is able to stretch their equipment budget by reconditioning and custom building refrigeration racks and equipment in-house.

Unloading Range Comparison



Lowe's custom equipment strategy allows them to incorporate Emerson-enabled modulation algorithms and remote monitoring right into the equipment. Lowe's relies on 24/7 remote monitoring of refrigeration system operating conditions and compressor status so that technicians can remotely troubleshoot and isolate problems down to a specific compressor. They want to know about problems before the store does.

On average, retailers spend 1.5% of sales on energy and the cost to operate the refrigeration equipment is 65% of total store electricity used. It is the #1 concern of supermarket executives ranking above healthcare costs and competition. Seventy-eight percent of retailers have identified refrigeration management programs as the #1 way to save on energy costs. Reducing energy costs while preserving the perishable product integrity is a priority for Lowe's.

Traditional parallel rack systems separate the compressors from the electronics, leading to many electronic components and making it complicated to troubleshoot. Traditional systems do not provide the operators all of the information they need to optimize their facility.

Solution

Lowe's Market switched to Copeland Discus Digital compressors with CoreSense™ Diagnostics modules on their refrigeration racks. Copeland Discus Digital technology adds variable capacity unloading up to 90% of the compressor capacity. The extended range of unloading assumes the role of a 'swing' compressor and reduces the cycling on all compressors that share the same suction group. Copeland Discus Digital 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 supermarket applications.

Lowe's proactive monitoring and service on 50 stores saved over \$100,000 in product losses the very first year. Compressor starts were reduced and operating suction pressure increased, both contributing to reduced energy consumption. Case temperature fluctuations were reduced resulting in extended shelf life of perishable products.

With enhanced diagnostics and control algorithms, Lowe's was able to diagnose 85% of service calls remotely before dispatching a service technician to the store.



By integrating several traditional components into one control module, the Copeland Discus Digital compressor with CoreSense Diagnostics modules requires less wiring and fewer connection points, improving system quality and ensuring installation ease and consistency.

Benefits	Feature	Advantage
Guarantees consistent installations and cost savings	Integrated system electronic	Guarantees consistent installations and cost savings
Reduce food Spoilage	Greater compressor reliability	Greater refrigeration uptime
Cuts maintenance cost	Status display with fault history	Enables faster diagnostics
Reduced environmental impact	Fewer components	Reduced refrigerants leak points
Minor concerns do not become major problems	On board diagnostics and communications	Provides real-time remote intelligence for technicians

Resources

Learn more about the Copeland Discus Digital compressors with CoreSense Diagnostics modules at: [EmersonClimate.com /intelligentstore](http://EmersonClimate.com/intelligentstore)

EmersonClimate.com

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