

# REFRIGERANT AND SYSTEM REPLACEMENT LEADS TO INCREASED ENERGY SAVINGS

## Case Study

“The need... was a leak-free system, easier to monitor and maintain, with new fixtures and changes to the mechanical systems, for minimal impact on the environment. I am very pleased with the new refrigerant and system upgrades.”

— Leo Braido, Owner, Braido Foods

Many supermarkets and grocery outlets install doors on refrigerated cases for meat, dairy and beverages, because controlling the envelope is a constant challenge. However, these doors are not only expensive to replace when they fail, but also invite high maintenance costs.

Braido Foods is an IGA member grocery store in Oberlin, Ohio, about 40 miles southwest of Cleveland. Before they met with their contractor, Professional HVAC/R Services, they installed glass doors on the dairy cases, converted meat cases to beverage duty, and completed a total LED retrofit. Pro HVAC/R completed the system audit and recommended a high level of repairs and fixtures, along with a system retrofit to a reduced global-warming-potential (GWP) refrigerant.

### WHY SOLSTICE N40

An important project objective was to achieve an energy efficient refrigeration system that's easier to monitor and maintain. It was also crucial to ensure that the new upgrades would not only help to reduce costs and energy consumption, but also reduce impact



on the environment, given that Oberlin, Ohio is one of 16 U.S. cities that have pledged to be carbon-free by 2030.

Honeywell's Solstice N40 shares some characteristics with R-22, such as capacity and efficiency. It is a nonflammable, reduced-GWP hydrofluoroolefin (HFO) refrigerant for low- and medium-temperature refrigeration applications. Its environmental benefits, low maintenance costs, and excellent energy performance made it an ideal choice for this project.

“Maintenance budgets are the first thing to go when a grocer has to weigh the costs, regardless of the benefits.”

— Joe Kokinda, President/CEO, PRO HVAC/R

### THE OPPORTUNITY

Small independent grocery chains are in constant need of energy-saving alternatives for their refrigeration and air-conditioning requirements. At Braido Foods (also known as Oberlin IGA), the refrigeration systems needed an upgrade, combined with a refrigerant replacement, to save energy and boost the performance of the refrigerated cases.

### THE SOLUTION

Honeywell Refrigerants supplied Solstice N40 (R-448A). Its similarity to R-22, and its efficiency, along with the store commissioning, helped reduce energy consumption substantially.

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## THE ROAD TO A LASTING SYSTEM UPGRADE

Two Tyler Enviroguard Racks were installed with R-502 in 1992, and were retrofitted to R-22 in 2003. The equipment had experienced excessive oil in circulation, and the oversized original piping caused reduction of the velocity required during the cold Ohio winters near the shores of Lake Erie. Thus, the system required some preliminary fixtures and upgrades to ensure a successful retrofit.

First, the cases had to be enabled with sensors. Pro HVAC/R introduced an Emerson E2 system upgrade, with programming written for Honeywell's Solstice N40. Further, they replaced the refrigerant oil and installed digital compressors to hold the suction pressures at appropriate levels. Variable frequency drives (VFD) were added,

the two condensers were split, and new Zero Zone fixtures were installed prior to the refrigerant change.

**"E2 graphs show us that we run 175/190 nominal with Solstice N40, with the demand cooling used only when it rises above 90° F outside."**

**- Joe Kokinda**

Honeywell Refrigerants and their wholesaler Young Supply provided extensive support and expert guidance in ensuring a successful retrofit for Braid Foods to achieve its expected outcomes from the new system.

## RESULTS

After two years running the new system retrofitted with Solstice N40, Braid Foods has observed a monthly reduction in KWH consumption. They conducted an ASHRAE Level II Survey to assess the complete energy usage

and savings. By running evaporator pressures higher and maintaining lower discharge temperatures, the system did not call for an oil change for more than 18 months from the time of the upgrade. The head cooling fans in the store were replaced with demand cooling systems for hot days that required it.

"The MT Rack now runs on 2 compressors vs. the initial 5, and the LT rack runs with 3 compressors vs. the original 4." said Leo Braid.

## LEARN MORE

To help supermarkets retrofit their refrigeration systems to Solstice N40, Honeywell Refrigerants has developed a series of instructional videos that provide step-by-step guidance for a successful retrofit. Visit [www.honeywell-refrigerants.com](http://www.honeywell-refrigerants.com) for more information and to access our Supermarket Video series.

**"The future is here. Honeywell has helped all of us get ready, and I am ready for the next step." - Joe Kokinda**



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