Carrier
turn to the experts

Hybrid Refrigeration Generates "Mile Hi" Fuel Savings.

Vector™ Multi-temp Units Provide Sustainable Edge for Denver Food Service Distribution Company.

Mile Hi Foods began reaping maintenance dividends from Carrier Transicold Vector™ multi-temperature trailer refrigeration units starting with the acquisition of its first unit in 2007, according to Tony Taddonio, president of the Denver food service distributor. But it was the 2011 implementation of the Vector units' electric standby capability, following electrical infrastructure development at Mile Hi Foods, when the company began to fulfill Taddonio's vision of a more sustainable loading operation. The use of standby conserves diesel fuel for highway use, and refrigeration unit engine emissions and engine noise are eliminated during precooling and loading. Taddonio anticipates recouping his $80,000 infrastructure development investment within one year.

Carrier Solution:

Hybrid diesel-electric Vector multi-temperature units have a unique all-electric refrigeration architecture. Unlike mechanical refrigeration systems, the diesel engine is dedicated to one function – driving a high-performance generator, which in turn powers the compressor, fans and operating system. Vector technology does away with many routine maintenance items, such as belts, shaft seals and alternators found in conventional systems, resulting in a maintenance-savings benefit for Mile Hi Foods.

When stationary, Vector units have the ability to be plugged into an electric power source eliminating the need to run the diesel engine and generator. Mile Hi Foods added 460-volt AC outlets to its loading docks and installed receptacles in its yard, so loaded trailers can be parked and run electrically while waiting to be dispatched.

Conventional

43%
less refrigerant

VECTOR 6600MT

Vector units use 43% less refrigerant than conventional multi-temp units, reducing environmental impact by approximately 39,000 pounds CO_2 equivalent per unit.

Location:
Denver, Colorado, USA

Customer:
Mile Hi Foods Company, a specialty food service company serving more than 300 national brand restaurants and the largest food service distributor for a major global restaurant chain in the Rocky Mountain region.

Fleet:
75 tractors; 125 refrigerated trailers including 27 with Vector multi-temperature units, acquired beginning in 2007.

Objectives:
Reduce fuel consumption, exhaust emissions and noise during multi-temperature trailer staging operations; extend unit length of service.

Decision Drivers:
Fuel savings; built-in electric standby capability; reduced maintenance due to streamlined electric refrigeration architecture.

Carrier Transicold Equipment:
Vector 6600MT multi-temperature trailer refrigeration units.

Equipment Usage:
The Vector units help to improve the energy efficiency of Mile Hi Foods' food service distribution system.

For more information please visit www.trucktrailer.carrier.com

Hybrid Units Generate Mile Hi Savings *(continued)*

Family-owned Mile Hi Foods traces its roots to a small retail produce operation founded in 1923 by Taddonio's grandfather. From those origins, the company has grown into a 400-person food service distribution and logistics operation that has also become the largest distributor in the Rocky Mountain region for a major global restaurant chain. Among the menu of food, paper and refrigerated products delivered for the chain are hamburger buns, produced by the millions at Mile Hi Foods' on-site bakery. Mile Hi Foods also counts several other global and national chains among its diverse customer portfolio, serving hundreds of restaurants in Colorado, Utah, Idaho, Wyoming, Montana, Nebraska, Kansas and New Mexico with its extensive trucking and backhaul operation that taps the Vector units' full range of cooling and heating.

"We focus on taking care of the customer," Taddonio says. "We continue to grow because we're doing the job they ask us to do, and we pay a lot of attention to the details of the business." Among those details are creating operational efficiencies – business decisions that ultimately prove to be both cost cutting and environmentally sound. Vector units from Carrier Transicold are a natural progression.

The Vector 6600MT unit provides the highest refrigeration capacity of any multi-temperature unit on the market and delivers up to 20 percent greater fuel-efficiency than its predecessor. Electric heating capability also reduces the refrigerant charge by 43 percent, relative to conventional multi-temp systems.

Performance by the Numbers

To help Mile Hi Foods take advantage of the Vector units' standby capability, Carrier distributor, CT Power of Commerce City, Colo., worked with the trailer manufacturer to install electrical wiring on the trailers, with receptacles located on the back ends to enable convenient connections at loading docks and freestanding receptacles. With the refrigeration system's all-electric architecture, Vector units deliver the same performance on electric standby as they do in diesel operation, unlike conventional units with add-on standby assemblies. When taking advantage of electric standby, fuel is conserved, emissions are eliminated, noise is reduced and operating savings of 40 to 70 percent can be achieved, depending on the price of fuel and electricity at any given time.

Mile Hi Foods' early studies indicate they are reducing "engine-on" time significantly – in some cases as much as 21 percent. With trailers dispatched twice daily, the fuel savings are adding up quickly. Taddonio calculates he is saving 1,800 gallons of fuel a month just through use of electric standby. At $3.94 a gallon for diesel, the national average at the end of July 2011, this adds up to more than $85,000 in annual fuel savings. Even factoring-in electricity costs, some of which are at nighttime non-peak rates, Taddonio anticipates a quick payback on his infrastructure investment.

Additionally, Mile Hi Foods is planning to get two trailer lives out of each Vector unit. Typically Mile Hi Foods' refrigeration units and trailers are replaced together on six-year cycles, but because engine and compressor use is less with the Vector units, Taddonio plans to use the refrigeration units longer.

"This was a good business decision," Taddonio said. "The driving factor was when fuel got up to $4 a gallon. It made us rethink a lot of what we were doing. As we considered how we could save energy, we saw the sustainability benefits, too. This was perfect. It fit everything we wanted to do."

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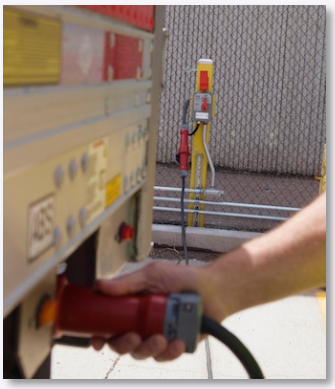
Sustainable solutions are incorporated into many facets of Mile Hi Foods' business, from use of Rocky Mountain double trailers (28- and 48-foot tandem trailers, above), to installation of energy-efficient plant lighting, recycling of cardboard and waste oil, and use of Carrier Transicold Vector multi-temp units.



Mile Hi Foods installed electric plug-in receptacles at 17 loading docks and placed 20 freestanding receptacles (above) in its yard, allowing the Vector units to run without consuming diesel fuel.

Vector units feature the Advance™ microprocessor control, allowing separate programmable settings for each of the two compartments in Mile Hi Foods split trailers. One trailer compartment carries frozen goods while the other carries refrigerated products.