

National Frozen Foods Corporation Vegetable processor nips energy costs in the bud



Customer Need

For several years the staff of a National Frozen Foods' vegetable processing and cold-storage facility in Albany, Oregon, had been searching for ways to improve energy efficiency and better manage the facility's extensive refrigeration operations. Those operations include a blast freezer, four freezing tunnels and six cold storage rooms spread among three distinct plants. Complicating matters was the seasonal nature of the company's operations, which vary considerably from the production-intensive harvest season to the storage-intensive off-season.

Logix Solution

Based on the recommendation of Cascade Energy Engineering, which the Albany plant hired to identify refrigeration energy efficiency opportunities, the Albany facility deployed a multi-faceted Logix system in the spring of 2009.

Business Value Delivered

Energy consumption at the Albany facility dropped significantly after installation of the Logix system—enough that National was able to qualify for electrical utility subsidies and state energy tax credits that paid a portion of the system's cost. The Albany plant has also benefited from the Logix system's trend analysis features, its ability to store and change groups of equipment settings optimized for their seasonal variations, and a range of other operational and labor-reduction capabilities.

Reduced Energy Consumption and a Range of Other Benefits

National's Albany facility has realized a range of benefits from the Logix system deployment. Most notable has been a significant drop in the facility's energy consumption—900,000 kWh in November 2009 compared to 1,440,000 kWh in November 2008.

The Story Behind the Logix Solution

Having celebrated its 100th anniversary, National Frozen Foods Corporation, has become one of the nation's top five private-label processors of frozen foods. Launched in Seattle in 1912, National has four processing and cold storage plants throughout the Pacific Northwest, in Moses Lake, Chehalis and Quincy, Washington and in Albany, Oregon. All told, the company processes, and freezes almost 300 million pounds of fresh vegetables each year, and can store 120 million pounds of product in its own facilities (while leasing additional space from others).

As National's facilities grew in sophistication and automation over the years, along with the volume of the product it processed, the company's energy usage increased. The costs associated with rising energy usage prompted the Albany plant to commission Cascade Energy Engineering to perform an energy audit in 2002. Cascade, with offices throughout the Northwest, works with a wide range of clients to formulate energy-efficiency strategies and identify suitable vendors to help achieve the clients' energy objectives. In 2002, the engineering experts at Cascade made a series of recommendations for a "swing-for-the-fences" comprehensive overhaul to improve the Albany facility's energy profile, according to Rob Morton, vice president of Programs and Engineering at the consulting firm. Cascade's recommendations included Logix control systems for the facility's refrigeration energy management. The recommendations also included variable frequency drives (VFDs) for the fans, new hot-gas evaporators and a number of other capital investments.

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Armando Nunez
National Frozen Foods



At the time, National couldn't cost justify such a comprehensive overhaul, says Armando Nunez, production manager at the Albany facility, so the project was shelved. The need didn't go away however, and National approached Cascade in late 2008 to perform another analysis. This time around, though, the analysis focused specifically on the benefits possible through the deployment of a modern refrigeration controls system, which would impact the 60-70% of Albany operation's energy usage attributable to their core business of freezing and cold storage of food products.

Cascade again recommended a Logix control system to replace the Albany plant's aging electro-mechanical refrigeration control units. National's Albany facility moved ahead with Cascade's recommendations and a Logix control system was installed to manage all of the Albany facility's refrigeration operations, including the various production freezing lines as well as the six cold storage rooms.

Realized Benefits

National's Albany facility has realized a range of benefits from the Logix system deployment. Most notable has been a significant drop in the facility's energy consumption. In November 2009, for example—a month in which most of the refrigeration demand is associated with the cold storage units—energy consumption dropped to 900,000 kWh, compared to 1,440,000 kWh in November 2008.

Beyond its ongoing energy savings, National is benefiting from a number of the Logix system's advanced control and data-tracking capabilities. With the system's trend analysis feature, for example, National has been able to compare system configurations and settings from earlier periods to determine ways to optimize Albany's refrigeration

Plant Efficiency = Labor Cost Savings

Thanks in part to the labor-reduction aspects of the Logix system, National is able to manage the entire Albany facility more efficiently and save money on labor costs.

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Rob Morton
Vice President of Programs
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Cascade Energy Engineering



Logix system optimizes refrigeration operations at NFF Albany

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operations. The Logix system has also allowed them to establish and store different groups of settings for different conditions. For instance, the summer peak-production period has heavy loads and hot weather, while the winter has light storage loads and cool weather. This ability to automatically implement seasonally-tuned settings is especially useful for companies like National, whose refrigeration operations vary significantly over the course of the year.

"We have different settings in terms of how the equipment responds to the load," Nunez explains. "For example, we have set points for our fresh pack season, different set points specific to vegetable puree only, set points for just cold storage, and so forth. We assign the group name based on the time of the season and the task, and then just have to select a group number to automatically change all the settings. It's much less labor intensive, plus we don't have to remember all the set points ourselves."

Thanks in part to the labor-reduction aspects of the Logix system, National is able to manage the entire Albany facility more efficiently and save money on labor costs. "People in our business are amazed that we have only three people to run our plant: one supervisor and two operators," he says.

Cascade's Morton agrees that the Logix system's ability to provide a clear window into all aspects of a refrigeration system's operations has been critically important. "An operation such as National's is a big complicated plant and system," he notes, "and it's really tough to see what's going on. A good refrigeration control system that's easy to use and comprehensive is extremely useful. It lets you find problems and address them within hours versus months."

Always Striving

National's Albany facility has continued to seek out new ways to cut energy usage and costs, and is now using the Logix system as a foundation for many of those efforts. In fact, National hired Cascade Energy Engineering in the fall of 2009 to conduct a "Kaizen Blitz" assessment, an intensive review to identify relatively fast and inexpensive ways to achieve further energy reductions. One recommendation was to install motion sensors in the cold storage rooms to control lighting in the rooms more efficiently. But, according to Cascade's Morton, "The easiest and best place to find energy savings is often by taking advantage of every control feature offered by the refrigeration control system."

To that end, the Albany plant installed eight new Logix screw compressor controllers just tens months after the system installation. The controllers have improved compressor capacity control and response plant wide as well as on each screw compressor.

Cascade, which has consulted on hundreds of refrigeration engineering projects—as well as hundreds more non-refrigeration energy jobs—works with a wide range of refrigeration vendors and technologies. Morton says he has gotten to know Logix well over the years and places it in the top tier of vendors with which Cascade works. "The Logix system is easy to use, it's got a full range of energy efficient capabilities, and it's got the technical support for successful implementations, he says. "Furthermore, Logix is well aligned with all the other players to make a project like this successful."