

Janesville Pick 'n Save Reduces Energy

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PARTNER NEWS UPDATE

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Grocery store managers are multi-taskers. They need to ensure that check-out lines aren't too long, that produce is fresh, and that the broken jar of pickles in Aisle 2 is cleaned up immediately, if not sooner.

It's little wonder that details about "anti-sweat heaters" on refrigerated display cases may not be on the top of their priority list. But, as in so many other areas, an ounce of prevention is worth a pound of cure—or, more specifically, a minimal investment up front can, in the long run, lead to tens of thousands of dollars in reduced energy bills.

The Janesville Pick 'n Save store, for instance, invested \$11,700 to install controls on "anti-sweat heaters" so that the heaters—which prevent condensation from forming on refrigerated display cases—are used at full power only when necessary. Based on an electricity cost of six cents per kilowatt-hour (kWh), savings are projected at \$15,900 a year. The upfront costs were a one-time expense. The savings will continue year after year.

"Too many store managers accept that they are going to consume energy and don't look at where they can save money," said Rick Schley, maintenance manager for Roundy's Inc., who oversees 114 stores, including the Janesville Pick 'n Save. "Installing anti-sweat heater controls is definitely worth looking into. It's one of the easier ways to save on energy costs."

Overall, energy is one of the supermarket industry's top operating costs. And refrigeration represents more than 60 percent of the energy use of the average grocery store. Given customers' reliance on frozen foods, especially convenience foods such as pizzas and TV dinners, refrigeration needs are far more likely to increase than decrease. Even smaller stores are finding they must devote a greater proportion of floor space to refrigerated display cases.

In February 2003, CDH Energy Corp., a national energy consulting firm with an office in the Madison area, surveyed the energy use at the Janesville Pick 'n Save.

Installing anti-sweat heater controls was one of several recommendations that were implemented.

CDH undertook the survey on behalf of Focus on Energy, a public-private partnership initiated by the state legislature to improve the efficient use of energy throughout Wisconsin. Focus on Energy provides free services to eligible energy users, from residential customers to commercial businesses, schools and local governments. All its services are voluntary.

"It's a good idea for stores to have someone survey where energy savings can be found," Schley said. "And that's what Focus on Energy did for us."

Following the survey, the Janesville Pick 'n Save worked with one of its vendors overseeing heating, air conditioning and refrigeration at the store to install the anti-sweat heater controls.

The Pick 'n Save store is large by Wisconsin standards and has the equivalent of 36 four-door refrigerated display cases. Medium-sized grocery stores average 20 to 25 four-door display cases, according to Fred Dreher, a member of the grocery store team with Focus on Energy.

"Installing the controls is one of the easier changes that supermarkets can make," Dreher said. "Many stores, however, don't realize that they may not have the controls. They don't know that proper controls on the anti-sweat heaters is a problem."

To encourage supermarkets to install the controls, Focus on Energy is offering a \$10 rebate per door. It costs approximately \$85 per door for the controls.

WHAT ARE ANTI-SWEAT HEATER CONTROLS?

To appreciate how anti-sweat heater controls can save a store money, it's essential to understand anti-sweat heaters. Due to basic laws of physics involving humidity, air temperature and dew point, when warm, humid air from a store's interior meets the cold air of a refrigerated display case, condensation occurs. This can lead to ice build-up



on door gaskets and to the fogging and “sweating” of the doors, which can not only damage equipment but prevent customers from seeing the products inside the refrigerated case.

To prevent this condensation and “sweating,” the refrigerated doors and frames are heated. (Hence the name, “anti-sweat heaters.”) In essence, the heater dries up any warm, humid air that may have gotten trapped inside the refrigerated display-cases during customers’ opening and closing of the doors.

The only time an anti-sweat heater needs to run continuously is when a store’s relative humidity is 55 percent or above, which, in Wisconsin, only happens during the warm, humid days of summer. In winter months, a store’s relative humidity is more likely to be around 10 percent and the anti-sweat heaters do not need to run at full capacity. Yet a survey by Focus on Energy found that approximately 80 percent of grocery stores run their anti-sweat heaters at full power 24 hours a day, 365 days a year.

That’s where anti-sweat heater controls come in. Installed and programmed properly, they ensure that refrigerated display casdoors and frames are heated only when necessary.

The controls work in one of two ways. They either sense the dew point in a specific area of the display case or they detect actual moisture in the air. They are pre-programmed to heat the doors and frames (sometimes called mullions) only when they detect that dew point or moisture. Generally, the heater is cycled on and off—for instance, a cycle of ten seconds on and thirty seconds off.

Typically, the controls will reduce the use of the anti-sweat heater by 2 percent for every 1 percent reduction in a store’s relative humidity. If a store’s relative humidity level reaches 55 percent in July but drops to 10 percent in winter, this would lead to a 45 percent difference in humidity levels—and a 90 percent difference in the amount of time the anti-sweat heater needs to run. In other words, while an anti-sweat heater may need to run almost all the time in July, in winter it may be needed only 10 percent of the time.

POTENTIAL SAVINGS

Anti-sweat heater controls save money in two ways. First, they reduce the amount of time the anti-sweat heater needs to run. Second, because the anti-sweat heater runs less often, the refrigeration unit does not have to compensate for that extra heat generated. Thus there are two areas of energy savings: in the antisweat heater and in the operation of the refrigerated display case.

At the Janesville Pick ’n Save, 36 electrical circuits were used for controls on 143 refrigerated display-case doors—or about one circuit for every four-door display case. The Janesville controls cost \$81.25 per door to install, with a total cost of \$11,700.

On an annual basis, the controls are projected to save 265,000 kWh of electricity per year. Based on an electricity cost of six cents per kWh, annual savings will be \$15,900. The calculations are based on data from the CDH Energy Corp., which, among other things, monitored store humidity for six months and measured the electrical use of the refrigeration system.

Of the 265,000 kWh saved, approximately 155,600 kWh was saved by reducing the amount of time the anti-sweat heater was used. The rest, 109,400 kWh, was saved by reducing the amount of refrigeration needed to compensate for the heat generated by the anti-sweat heater.

The savings from anti-sweat heater controls “are pretty straightforward and cost-effective,” said Steven Carlson of CDH Energy Corp. “The latest technology for the controls is very reliable and very well accepted in the industry.”

FOR MORE INFORMATION

If you’re interested in learning more about anti-sweat heater controls, call **Focus on Energy** at **800.762.7077** and ask for someone from the grocery team of the commercial sector.

Focus on Energy is a public-private partnership offering energy information and services to energy utility customers throughout Wisconsin. The goals of this program are to encourage energy efficiency and use of renewable energy, enhance the environment and ensure the future supply of energy for Wisconsin. It serves 85% of the state’s utility customers, both commercial and residential. (The remaining 15 percent are customers of certain municipal utilities and rural electric cooperative that currently are not participating in Focus on Energy.)

Focus on Energy offers a broad array of services, from training seminars and workshops, to advice on best practices, guidance on technical information, and help on developing to an energy survey. All of its services are completely voluntary and free to eligible institutions.