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**Design Solutions: Hood Controls Improve
 Efficiency, Comfort**



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DESIGN SOLUTIONS

Hood Controls Improve Efficiency and Comfort at Supermarket Headquarters

Reduce fan speeds 30-40%, save more than \$3,000 a year

Shaw's Supermarkets owns and operates 187 stores throughout the New England states, serving more than 4 million customers a week. With electricity its second-largest operating expense—annual electric bills are about \$35 million chainwide—cost-cutting energy programs are part of the company's culture. In fact, Shaw's ongoing commitment to reducing energy was recognized when the company received an Energy Star Building Partner of the Year award from the Environmental Protection Agency in 2001. The company seeks suppliers that match its high standards for energy conservation, typically requiring that programs and products yield a payback of three years or less.

Shaw's applies efficiency standards similar to those of its stores to its headquarters in West Bridgewater, Mass. Working with the local utility company to design a comprehensive energy upgrade, the energy and maintenance departments discovered that the kitchen hoods in the employee cafeteria were wasting a lot of energy (there are frequent slow times throughout the day



Optic sensors monitor smoke and vapors and adjust fan speed automatically.

when the fans do not need to be running at full speed). The company researched Melink Intelli-Hood ventilation controls as a possible solution to the problem. These controls include micro-processor and sensor technology that reduces fan speed during slow cooking periods to save both fan energy and

conditioned air. During its research, the company learned that the region's utility company, Massachusetts Electric, independently endorsed the controls.

Ted Owen, vice president of sales for Melink, worked with Shaw's to conduct a preliminary energy analysis of the kitchen hoods based on the current

energy costs and usage patterns. Payback figures came in at just under two years. With that data in hand, Shaw's agreed to move forward with the project in January 2002.

The job consisted of installing Intelli-Hood controls on two 9-ft wall canopy hoods. The hoods were designed with front discharge makeup air from end to end in the kitchen area. They were treated as one 18-ft hood, which meant the Intelli-Hood optic and temperature sensors could be programmed as a single hood. Because of the center V-bank layout and the associated cooking equipment, a set of optic sensors was installed on each side of the hood to ensure an adequate system response to smoke and steam on either side of the filter bank. All of the hoods shared a common exhaust and supply fan, so only two variable-frequency drives (VFDs) were required.

The first step in the installation was locating the existing motor starters and 110-v panel and mounting the Melink processor. The processor was powered using 14-2 MC cable. The VFDs were tied in to the load side of the starters using the separate runs of 12-3 MC cable specified in the installation guide. The hoods then were measured and marked for the installation of the sensors.

The optic-sensor sets were installed by drilling 1.5-in. holes as marked and installing the quick-seal fittings and purge pipes. The sensors then were mounted on the sides of the hoods. The temperature sensors were in-

stalled by drilling 1.25-in. holes in the exhaust duct and attaching the quick-seal fittings. Air-purge units then were installed on the purge pipes, and all sensor and VFD cables were connected and secured. The Intelli-Hood system then was powered up. After the proper fan rotation was verified, full-load-amp settings were programmed for proper motor protection. Next, the hoods were capture-tested, and the programming for the system was adjusted as necessary.

The installation took 14 hours and was performed by a Melink technician, with assistance from Shaw's on-site

maintenance associate. Since the installation, the fan speeds on the hoods have been reduced an average of 30 to 40 percent per month. Estimated savings stand at more than \$3,000 per year. Even though energy savings were the driving force behind the installation, improved kitchen comfort has been a secondary benefit.

"In our corporate headquarters, the cafeteria staff has noticed the improved comfort," Kathy Loftus, director of energy and environmental management for Shaw's, said.

While the Intelli-Hood controls were being considered for the corporate headquarters, Shaw's energy department also was considering the benefits of installing them throughout its network of stores.

"In addition to our own due diligence, we also learned that other supermarkets were beginning to use these 'smart' controls in their kitchens, so the timing was right," Loftus said.

Shaw's since has installed Intelli-Hood controls in a number of new and existing stores, including the one in Williston, Vt., where estimated savings are more than \$4,500 per year.

"The preliminary ROI figures from those locations show that the ventilation controls fit our payback criteria, and that's even before the utility incentives kick in," Loftus said.



Optic sensors monitor when cooking is taking place. The fans then are ramped up accordingly until all effluent is removed from the exhaust-air stream.

Information and photographs courtesy of Melink Corp.