

## *Cheese cutter-packer blows away moisture problems*

***Cutter-packer of 10,000 pounds of cheese a day deploys labor more effectively and increases production with air knife system for drying packages of cheese...reports Associate Editor Craig Barner.***

**A** visitor might meet enthusiastic cheeseheads at Family Fresh Pack in Wisconsin, but shouldn't underestimate their cutting edge technology.

Most of the 8,000 to 10,000 pounds of cheese cut and packaged daily at the specialty cheese cutter passes through a hot water shrink tunnel that deposits moisture on the packaging. Packaging must be dry so that labels adhere to it. As standard practice, two employees normally wipe the cheese packs dry.

"We thought there was no way of getting around that," recalls Paul McShane, vice president at the 10,000-sq-ft plant in Belleville, Wis. "We talked to other people in the business. They said, 'That's all we do: we dry the cheese by hand.'"

Last January, in an experimental mood but with a healthy dose of skepticism, Family Fresh Pack installed a demo version of a high-velocity sonic centrifugal blower with airknives from Sonic Air Systems. Three months later, the company installed a permanent unit.



***Previously, Family Fresh Pack dried wet packages of cheese manually, top. In April, the cutter and packager of cheese installed a high-velocity centrifugal blower that literally blows water droplets off the pack, thereby increasing production and deploying labor more effectively, above.***

Packaging is an integral part of the firm's business. According to McShane, Family Fresh Pack cuts about 25 varieties of cheese in up to 10 shapes: wedges, pies, full faces, sticks, half moons, squares and the like. All cheese is shrink-wrapped and labeled for wholesale distribution, with many pieces being sold in gift packs.

With the installation of the blower system, Family Fresh enjoys a speedier packaging line and labor deployed more effectively than before. Holes might be in some of the cheese at Family Fresh Pack, but they're not in the guts of employees willing to disrupt their routine and experiment with something new.

## MegaShow piques interest

Witnessing a demonstration of the blower system at MegaShow '95, executives of Family Fresh Pack were intrigued about the possibilities that it suggested for their plant, but skeptical about whether it would make a match with their products. Some cheese cut by the firm weighs only 2 oz, a portion for a mouse.

"That was a concern," says McShane. "Some of the pieces we've done for gift packs tend to be very small. We didn't want those pieces blowing off the conveyor belt like popcorn."

Steeling McShane's skepticism was the demonstration. For MegaShow, Sonic Air tied wrapped sample products to a conveyor belt. Water hit them, the conveyor turned, air knives blew the products dry and the process started again.

McShane discerned that the sample products were tied to the conveyor because of the limitations of demonstrating machinery at a show: continuous, full-speed drying of products of various weights and sizes isn't possible in a booth at a trade show. That the sample products were tied to the conveyor line stuck in McShane's mind, like an obsessive worry, especially when he thought of some of the small portions of cheese processed at the plant in Belleville.

Normally, the firm assigned two employees to the glum task of drying

wrapped cheese after packs had emerged from the hot-water shrink tunnel, says McShane, noting that Family Fresh also uses a hot-air shrink tunnel. Employees on the drying detail wiped the cheese with paper towels, though eventually Family Fresh retained a linen service as a supply line of cloth towels. McShane recalls that the towels were hung over a steam tunnel used as a makeshift dryer.

Wanting to allay McShane's fears, Sonic Air Systems offered to install a demo system for a one-month trial at Family Fresh Pack. Skeptical, McShane still agreed to the offer.

According to John Wilson of Sonic Air, the system pitched to Family Fresh consists of two airknives and one blower. Heat is generated by the compression of air, introduced into a small space at high speeds and then expelled from the system.

Airknives refer to the narrow slits in cylindrical manifolds through which air is expelled. Made of EPDM rubber, the airknife manifolds create a very high discharge velocity of air, blowing moisture off the surface of packs of cheese.

Though there was tweaking of the blower eventually installed at Family Fresh Pack, the specs did not change radically from the demo unit. A 5-hp intake, with bearings on the blower head rated for use in the aerospace industry, rotates at 20,000 rpm, generating a flow of heat that's 35 deg F above ambient temperature at a discharge velocity of air at 22,500 fpm.

One airknife, with an 18-in. slit, is above the packaging line, while another, with a 16-in. slit, is below it. Installed one above the other, the two airknives neutralize the air velocity of the other, preventing the small portions of cheese from flying off the packaging line.

Air alternatives are available. Compressed air is popular, according to Wilson, saying that it uses 75 percent more energy than a blower with airknives and also that compressed air tends to be wet and cold. Moreover, many factories employ do-it-yourselfers, who try their hand at the design of a blower system themselves: "That happens all the time," says Wilson.

"Sonic wanted to prove their point, that this was an efficient system," says

McShane. "We were skeptical when we saw that thing in our plant. But it wasn't long before we were saying, 'Gee, this is neat. We can't believe it.'"

## Problems noted, solved

The air system wasn't totally solid. Two problems were noted early on, and Family Fresh believed these to be beyond solution:

- First, the demo unit dried 90 percent of the moisture. Apparently, air didn't blow across the span of the widest packages of cheese. Underlining this concern, McShane notes that packages of cheese look sloppy with poorly applied labels due to poorly dried packages.

- Second, the blower was noisy. McShane estimates that the discord produced by the blower exceeded 150 decibels. A system with aerospace-rated parts is noisy.

Doubt remained, but the airknives were well-suited to their function. Production moved quicker, saw McShane, and two employees didn't have to endure the reviled task of drying packages of cheese with towels.

After the one-month period of testing had expired, the manufacturer's representative pulled the blower system from Family Fresh, though McShane recalls avoiding him as a way to buy time and think it over. In conversations with Sonic Air, he outlined the two predominant concerns.

Sonic Air responded that these problems could be remedied. The slit on one airknife could be lengthened from the original 12 inches to the eventual 16 inches, thereby drying the packages completely, and the compressor motor could be isolated in an empty room, thereby silencing most of the clangor.

With these solutions, Family Fresh was sold. Now, it is reaping the benefits, McShane says. He estimates that production has increased from 15 packages per minute to 20 to 22 per minute—a 33 to 46 percent increase—and employees aren't assigned to the dreary task of drying cheese, thereby improving morale.

Moreover, Sonic Air's answers to the problems that plagued the demo unit worked. With the elongation of the slit on one air knife, packages are dry and able to accept a label; with the isolation of the motor, the noise has been reduced to a livable 78 decibels.

"It has performed very, very well," says McShane. "You can adjust the air pressure and the angle of the knives. You can also adjust the air pressure so you won't have product bouncing around."

### Two sealing methods

Family Fresh Pack has one packaging line, though the firm exploits two methods for shrinking the film wraps for cut cheese:

After the cheese has been cut, it is loaded into bins and transferred to the packaging operation. Two employees are stationed at the loading section, where there are two taped-bag loaders produced by Cryovac. Each bag is pulled into loading position by two adhesive tapes, which are advanced by a driven reel. The bag is automatically held open by a steady stream of low pressure air, so the product can be pushed into the bag by employees and onto a Cryovac rotary chamber vacuum machine. (Family Fresh uses three bag materials from Cryovac: BDF141 bag for waxed cheese, B190 for Swiss cheese and B150 for all other cheese products).

Once the bagged products are loaded onto the packaging machine, they are vacuumized, heat-sealed and then discharged onto a Cryovac takeaway conveyor.

As cheese proceeds down the conveyor, a Videojet printer puts the expiration date on the bag. The cheese proceeds through a hot water shrink tunnel, also manufactured by Cryovac, causing the excess wrap to shrink tightly around the cheese, making for a neat appearance.

Most of the cheese is shrunk via hot water spray. Family Fresh also cuts

some waxed cheese, which could melt in the hot water shrink tunnel. Consequently, a mobile hot air shrink tunnel, manufactured by Creative Packaging Machinery, is wheeled and temporarily installed on the line for wrapping waxed cheese.

the line for weighing.

"There's a definite advantage to the Sonic Air system," says McShane. "Our packaging operation is more efficient, employees are less frustrated and we didn't have to lay off any people."



Next, all packages convey through Sonic Air's air knife system, drying any moisture on the package so that it can accept a label. A Dispensa-Matic labeler applies a label from Bel-Mark to the package.

From there, employees load cheese into corrugated cases from Green Bay Packaging. A 3M case sealer closes the case, while an Abaljet ink jet printer puts a product code on the case. Some cases of cheese are sold by weight, so a Doran scale is stationed at the end of

**Every day, Family Fresh Pack cuts about 10,000 lbs of cheese in a variety of shapes and sizes. The recently installed air knife system has simplified packaging of all varieties.**

For more information on our drying systems, or a free evaluation of your drying needs, contact **Sonic Air Systems, Inc.** or the **Sonic Air** distributor nearest you.

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