On The Cutting Edge

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Columbus Foods was founded in 1917 in the North Beach neighborhood of San Francisco, Calif. In the days before industrial drying equipment, the Bay Area's famous fog would roll through the open windows of the building into the curing rooms, aiding in the drying and aging process of the salami.

Over the years, Columbus has automated and expanded its operations. The company added deli meats to its line in 1974 and currently produces nearly 40 million pounds of product per year — including both deli meat and salami — priding itself on selecting only the best meats from suppliers using optimum animal husbandry and handling practices.

Columbus Foods today operates three facilities and employs approximately 300 workers, along with an additional 100 employees during seasonal peaks. The 61,000-square-foot Forbes facility in South San Francisco houses the company's salami and deli meat manufacturing operation and is capable of producing up to 40 different salami varieties.

The Bayfront and San Antonio facilities are located in Hayward, a short distance from South San Francisco. Bayfront processes and slices salami and comprises 84,493 square feet. San Antonio, which houses the company's headquarters and slicing operations, is the newest and largest of the plants, with a total of 125,000 square feet.

Trial By Fire

The San Antonio plant opened in May 2011, and was built after a fire destroyed Columbus' former slicing plant — the company's only slicing facility at the time — in South San Francisco in July 2009.

Columbus turned to co-packers to keep up slicing operations in the absence of its own plant. The lapse in production cost the company nearly 15 percent of its business growth in the first 90 days after the fire, according to Tim Fallon, CEO of Columbus Foods.

While the fire created a challenge for Columbus, Fallon says the tragedy gave the business a rare opportunity — a chance for a fresh start.

Columbus, which used to manage its own distribution, made the decision to sell that sector of the business, and gutted the former distribution space in order to rebuild a

new slicing facility from the ground up.

Construction on the $31 million facility began in fall 2010, funded by insurance proceeds from the fire. Columbus worked with Stellar, a Jacksonville, FL-based design-build firm to develop the structure's design, line layout, and equipment purchases.

Europe Knows Best

Columbus viewed the rebuild as a chance to create the most up-to-date slicing facility in terms of both food safety and efficiency. A carefully chosen team of employees was sent to Europe to help select the best equipment options and to observe European food safety standards, which Columbus considers the finest in the world.

"The best is [in Europe], from an overall clean room standpoint, including slicing rooms and best practices," says Ken Neishi, Vice President of Operations for Columbus.

The team met with various equipment companies and about a half-dozen processing plants, where Columbus learned about hygienic zoning, a food safety process in which different areas of the plant are color-coded based on susceptibility to microbial contamination.

Columbus adopted this technique for the San Antonio plant with three levels: cement-colored, where non-hazardous materials such as packaging materials are stored; gray, where work in progress (WIP) is received; and blue, the most sensitive area which houses the slicing operations.

Columbus' team also adopted the European practice of dry cleaning and sanitation. "We used to love water," Neishi says. "Rooms were always wet while we were slicing product [in the old facility]. We would do washdowns in mid-shift so we could run different species of meat. We would wipe the equipment down, and all the walls and floors would be wet. We no longer wash down lines during slicing shifts."

Instead, the San Antonio team goes to great lengths to keep its slicing area dry during slicing shifts. The slice rooms feature a laminar air handling system which keeps the rooms cool during the two slicing shifts and constantly filters air in and out of the rooms. Filtered air is blown down over the top of slice lines, creating an air curtain over product contact surfaces. During the cleaning shift, all equipment, walls, and floors are washed down and sanitized. Then the air handling system employs heat and air to dry the rooms.

The facility that resulted from the European study is one of the best around, Fallon says. "What we built is one of the most progressive food safety meat processing plants in the world."

The Perfect Slice

The San Antonio plant's slicing operations begin in the receiving area, where WIP is brought in cardboard bins with plastic liners on plastic pallets. While co-packers are used to supplement some slicing bats of salami, approximately 95 percent of volume is produced through internal manufacturing at the Forbes and Bayfront facilities.

Incoming WIP is packaged in bags and stored in coolers until it is transferred to the slicing room. Deli meat is kept at temperatures between 28-30 degrees F, which helps improve yield. Salami is kept slightly warmer at around 40 degrees F.

When deli meat WIP is brought into the slicing room, antimicrobial acid is sprayed onto the bags to prevent contamination when the bag is cut open. Any dripping juice from opened bags runs down a grid on the debagging table and flows through the plant's draining system.

The deli line's slicing blade runs between 700 and 900 RPM, producing 1,400 to 1,800 slices per minute. The slicer features a camera on the line which photographs deli meat facings and communicates with a computer system to ensure accurate weight control for the finished packages.

Upper and lower control limits are established for deli meat, and checkweighers reweigh any product outside of the limits in order to increase yield. End pieces are collected and sold through a secondary outlet.

Once being weighed and reweighed, deli meat is loaded by hand. Operators shingle and fold the slices in order to create the desired packaging presentation, which cannot be accomplished through automated equipment.

Deli product is loaded onto trays, where a top film is fed and married with the bottom to create a complete package before product leaves the slicing room through an opening in the wall.

Packaged product is labeled on the top and bottom by a cutting system. An x-ray metal detector scans finished packages and detects any unintended metal down to 1.5 millimeters.

The facility's salami slicing area mirrors that of the deli line, with a few differences. Three to four logs of salami can run through the line at a time, depending on variety. The salami blade runs at 1,400 RPM, producing up to 5,600 slices of salami per minute when four logs are running through the system.

Unlike the deli line, salami bags are not sprayed with antimicrobial acid, as salami is produced using bacteria. Salami is protected from bacterial contamination through automatic loading and a modified atmosphere packaging system.

Two tray types are utilized for salami packaging: a zipper tray and a semi-rigid tray. The zipper line is a speed loading system in which salami is positioned to match the cycle of the packaging system, which automatically feeds into the zipper tray.

The semi-rigid tray line employs a robotic system. A camera system overlooks the conveyor and communicates to pickers as they drop the salami into trays. Product not meeting production standards is picked up and dropped into a tray for rework.

The Pressure Point

Once packages leave the line, non-HPP (high pressure processing) product is cased, and a description and barcode are applied. Traceability is provided for every case, and once a full pallet is complete, a “license plate” is created for each specific pallet.

Columbus invested in a $4 million HPP machine specifically for its deli line, which carries a higher risk for bacterial contamination than salami. While the system may be a large investment for a smaller company, Fallon says the company will benefit tremendously. “[The HPP machine] shows our commitment to food safety. It’s another documented skill step for products.”

Four carriers at a time enter the HPP chamber, which applies 87,000 PSI of pressure with a cycle time of approximately six to seven minutes. The HPP process improves both food safety and the shelf life of the deli meat.

Columbus’ HPP machine features a capacity of 20 million pounds, more than enough for the plant’s needs. The production capacity of the plant’s two salami lines and one deli line is currently 18 million pounds.

A Future Of Safety And Growth

Columbus products are primarily sold through club, grocery, and foodservice channels, with 80 percent of distribution located in the ten westernmost states. Fallon says the company is looking to increase its reach. “The Midwest and the East are growing dramatically for us by design, because we’re focused on expanding distribution [in these areas].”

The company also anticipates further expansion of its plants to keep pace with increased demand. Fallon says the San Antonio plant was built with the capacity to add additional slicing lines when needed. Salami processing is nearly at capacity, so plans are in the works to expand salami dripping and drying capacities in mid-2012.

The company is also keen on improving plant safety. Columbus recently completed construction of a $7 million reconfigured ammonia refrigeration system planned for the Forbes facility.

The system exceeds current Environmental Protection Agency (EPA) Clean Air Act standards, and is designed to increase safety both for employees and the surrounding community.

The system is contained in an enclosed building and features updated hardware and controls technology, safeguards including secondary containment and an air scrubbing system, as well as a complex sequence for leak detection, alarm, and

notification.

Columbus is confident in a bright future, based on the company's focus on continuous improvement and producing quality products. "We believe we make the best salami and deli meats in the United States," Fallon says. "We think our products can stand up against anything in the world."

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