VENTILEX USA Inc.
2960 Robertson Ave.
Cincinnati, Ohio 45209
513.366.3950

California Cheese Processor Increases Production 168% with VENTILEX Fluid Bed Dryer

When Vito Barrusso of Castle Importing decided he needed to change how he dehydrated cheese so he could increase production and still meet the high standards of quality at his Fontana, California cheese plant, his research indicated a fluid bed dryer would best fit his needs.

Borrusso, CEO of Castle Importing, whose family has been in the cheese industry for over half a century, researched three different dryers. The decision-making process hinged on four things: production capacity, initial moisture content, drying characteristics and ease of use. Based on these criteria, he chose a fluid bed dryer by Ventilex USA. “I felt comfortable with the technology that was being offered by Ventilex,” says Borrusso.

The advantages of fluid bed dryers, as outlined by Gustavo V. Barbosa-Canovas and Humberto Vega-Mercado in Dehydration of Foods, include, “both batch and continuous modes, large and small scale operations, few moving parts, rapid heat and mass transfer rates between the product and the drying medium, and rapid mixing of solids which leads to nearly isothermal conditions throughout the fluidized layer. They are used in the dairy, food, and pharmaceutical industries for drying, cooling, coating and agglomeration.” They point out that, “Direct fluid bed dryers use hot gas, commonly air, which passes through the food. Heating is thus further improved and made more uniform than in indirect dryers which use surface heat transfer only.”

The dryer Vito Barrusso ordered is capable of processing grated cheese at a rate of 4,500 pounds per hour. In Castle's first trial with the Ventilex fluid bed dryer, he used mozzarella cheese with a high fat content and a moisture content of 50%. One problem with this type of product is that if the temperature became too high, the fat would drain from the cheese and it would never dry. The shredded cheese enters the fluid bed dryer frozen at 18° F, with a 50% moisture content. As the product travels through the dryer, it's transported by a unique vibration system using an air bellows to control the frequency and amplitude, an exclusive Ventilex feature.

The initial air temperature of the dryer is 100 to 104° F; a third of the way into the dryer, the cheese has thawed and begins to dry. It is monitored by RTD's (resistive thermal device) until it reaches a temperature between 72 to 74° F while drying takes place in the mid-section of the dryer. The temperature controller is set to only allow a two degree differential and the Ventilex dryer regulates the air's relative humidity between 15 to 18%. This precise temperature and humidity regulation insures that the fat will not separate from the cheese and proper drying will

take place. The last stage of the dryer is a cool down section using an air temperature of 42° F. The final product leaves the machine with about a 27% moisture content and is refrozen.

The residence time on Castle's dryer is adjustable from 15 seconds to two hours and the frequency can be adjusted from 100-250 rpm. A computerized PLC control system with a graphical user interface allows a technician to easily check on the drying conditions at any time. If a problem is detected throughout the process, the system will immediately alert the technician. The end result is a cheese with a moisture content between 26-28% while still retaining all of its initial fat content. The cheese is then milled and sold as Romano and Parmesan.

L to R: John Tague - American Electric, Bertus Traa - VENTILEX/Trecom, and Vito Borrusso - Castle Importing

Castle Importing has gone from drying grated cheeses for a week on open trays in a dehydration room to using a system that can dry the same quantity in one hour – an increase of 168%. “I love it," said Vito Borrusso, his expectations for an increase in production resulting in a high quality product was exceeded.