

Milk Spray Dryer Case Reference 100507

This award-winning regional dairy cooperative produces non-fat (dried) milk that goes into cake mixes, chocolate milk mixes and many other food ingredients. During the process of turning the (liquid) non-fat milk into powdered form, the spray dryer atomizes the solid milk particles, creating milk powder laden with moisture and sub-micron particulate. The cooperative uses a stainless steel pulse-jet bag house for “BACT” product recovery and air-pollution control.

Working with milk powder can be a sticky situation for many reasons. Powdered milk products are inherently high in moisture content. When dried milk powder becomes moist for any reason, it creates a pasty concoction that is hard to clean from conventional filter media, limiting the flow and reducing the drying capacity. This high grain-loading application is further complicated by the fact that all product from the spray dryer goes directly into the bag house, with no cyclone in-between.

Another challenge thrown into this mix: FDA approval requires scrupulous cleaning and disinfecting procedures every time someone enters the bag house (or dryer) for maintenance. Since the late 90’s, the customer had used (regular) Tetratex/polyester felt, allowing them to run above design flow. This enhanced the drying process and extended bag life to 12-15 months on average (vs. 6 months on average with conventional filter media).

In addition to limiting fine particle penetration and preserving the substrate’s integrity, the “non-stick” nature of Tetratex expanded PTFE membrane means there is less cleaning required, which lowers maintenance costs and adds to bag life. As an industry leader, this customer was proactive in looking for another incremental increase in flow via Donaldson Membranes—so more recently, they tried our advanced generation of higher flow membrane, known as Tetratex 2. This product allows for an incremental increase in flow (provided the fan has the added capacity), albeit at no loss of efficiency.

The results speak for themselves: the incremental increase in flow and easier-to-clean nature of Tetratex 2 has proven to be a cost-effective solution for this dairy cooperative. Due to the enhanced cleanability of Tetratex 2, bag life is now 18 months, allowing for an extension in the ongoing reduction of feed grade powder.

Ready to “milk” your spray dryer filters for all they are worth? Tetratex 2 delivers the process solution required, with energy savings and near-zero emissions to meet or exceed the strictest regulatory standards.

Application/Industry	Dairy / Milk Spray Dryer _____
Product Code	Tetratex 2 / Polyester Felt _____
Country	USA _____
No. of bags	1,080 (2 compartments at 540 bags each) _____
Bag Size	5 inches x 10 feet _____
Air to Cloth Ratio	5.65/1 cfm _____
Temperature	185 to 200 degrees F _____
Pressure Drop	3 inches _____
Emissions	<0.005 gr/acf _____
Dust Load	High (no cyclone between dryer & bag house) _____
Particle Size	Primarily sub-micron _____
Operating Flow	Over design of 75,000 cfm _____
Outlet Load	Meets all permit standards, <0.005 gr/acf _____
Bag Life	18 months-to-date _____