

Smother Sour Cream

Liquid ring centrifugal pump imparts exactly right amount of shear to product

Demand for sour cream was outpacing production at Schneider's Dairy, Pittsburgh. The product had always been a small-volume item that was manufactured in small batches that were transferred to the filler by hand.

Schneider's Dairy is a 63-year old family business that produces fluid milk, fruit juices, drinks and cultured dairy products. To meet increased demand for sour cream, Schneider's decided to install new equipment that would allow larger, more continuous production.

This included a new 600-gal processor as well as a pump to transfer the sour cream. A means of eliminating lumps and smoothing the product was also needed. After some research, Schneider's learned that most manufacturers smooth sour cream by using a positive displacement pump to force the product through a screen. As the sour cream passes through the screen it is sheared into a smooth consistency.

This method had drawbacks however. A constant back pressure is needed against the screen to achieve the desired texture, and this requires an operator to monitor the pressure and adjust a back pressure valve throughout the run. Also the positive displacement pump requires manual cleaning, and must be replaced with a

centrifugal pump during CIP cleaning. With these concerns in mind, Schneider's began looking for other alternatives.

A local equipment supplier suggested that Schneider's investigate a specialty Fristam pump used successfully in similar applications. The Fristam FZX Series liquid ring pump was used primarily for returning CIP solution with large amounts of entrained air, but several processors discovered the unique vane-shaped impeller imparted exactly the right amount of shear for products such as sour cream. Lumps were broken up and a highly desirable texture was produced. The pump also could be easily cleaned in place.

The secret of the FZX pump appears to be the unique geometry of the impeller, which provides sufficient shear to impart a smooth consistency to the sour cream without overworking it. The wedge-shaped impeller openings and tight internal tolerances, only 0.008 inch, adapt the FZX to shear-sensitive products

Variable frequency drive

Although the FZX had been successfully applied in this application elsewhere, Schneider's was the first in the Northeast to try it. There were also concerns about starting and stopping the pump as much as was required to match the filler flow rate.

Working with Fristam and the local supplier, Schneider's made arrangements to try an FZX 150 10-hp pump running at 1750 rpm. The pump is mounted under the processor and feeds a filler reservoir. A variable frequency drive responds to the reservoir level by changing the pump speed. During filling the pump runs relatively slowly. The speed is increased when the processor is being cleaned during CIP, and the FZX acts as a recirculation pump.

"We're very pleased with the pump," says Joe Noro, Schneider's plant manager. "The viscosity of the final product is perfect. We've experienced none of the wheying off that we sometimes used to see and our consistency is greatly improved. Sour cream sales are up, a fact that we attribute in part to improvements from this pump. In addition, we've been very happy with the cleaning results. Our bacterial counts are well below the standard."

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