Water Filter Defies Acid Rain

STEVE BERNE, Senior Editor

When processing up to 500 jars a minute of jams, preserves and other products, the last thing maintenance needs to worry about is the process water of the spray pasteurizer.

But, that is the only thing a dedicated maintenance worker was assigned to do: Monitor the filtration system. In-line carbon steel filters, designed to filter particles on a pasteurizer-cooler line, were pitting and creating a maintenance and operation nightmare at the Knott's Berry Farm Foods plant in Placentia, Calif.

The plant produces everything from its famous jams, jellies and preserves to salad dressings, syrups, bakery fillings and yogurt bases. "All our products come out of this one 250,000-sq.-ft. facility," says Tom McMahon, maintenance supervisor. "We run production 171/2 hours a clay. The last thing we could afford is to shut down the pasteurizer because the filter would lose integrity and allow particles such as fruit seeds to pass through and clog some of the 200 nozzles spraying 210°F water on the jars."

As with any filling and capping system, a container periodically gets overfilled or a lid is misapplied.

When this container enters the tunnel pasteurizer and heats up to 180°F or more, the lid may pop off and spill product (usually acidic preserves or jams) into the pump system," explains McMahon. Not only did this cause product to enter the filter but the products' acidic nature was pitting the carbon steel filter, requiring constant maintenance.

"We were manually cleaning the system four to five times per day," adds Louie Delgadillo, maintenance mechanic on the line. "Each delay caused about 20 minutes of downtime. At up to 500 containers a minute, it really added up fast." The company turned to Automatic Filters for a solution to this blatant problem.

■ **Self-cleaning back-flush system automatically kicks in when the pasteurizer process water filter reaches a seven-psi differential between in- and out-flows.**

Back-Flushed Success

In January, Knott's Berry Farm Foods installed a stainless steel Tekleen® filter system with a 400-micron mesh screen from Automatic Filters Inc. The filter is a two-stage design with an automatic back-flushing system. triggered by a preset pressure differential between the in-flow and out-flow pressures.

Process water enters through a course screen into the interior of the filter. The flow then transfers to the second stage where it passes through the fine mesh screen to the filter's perimeter and is discharged. As water flows through the fine filter, there is a gradual buildup of seeds and other fine particulates on the. mesh screen. This debris causes an increase in pressure differential between the inlet and the outlet of the filter.

"When the pressure difference reaches seven psi --- a setting we determined based on number of cycles and amount of debris -- it triggers the back-Rush valve and the cleaning cycle begins," says McMahon.

A vacuum rotor with several suction nozzles, suspended within the filter, connects to a pipe that traverses to a separate discharge chamber. As the flushing valve opens, it creates a suction in the discharge pipe causing the nozzles to rotate as they stick in trapped debris. "The whole process takes only 2-3 seconds per cycle and leaves a. clean filter surface," adds McMahon.

The all-stainless steel Tekleen is rated to 210°F and-handles up to 250 gpm. It also has a high performance screen sintered to perforated metal, yielding about 80% more filter area than other filters sintered to PVC. "To top it off, the Tekleen's price is almost $1,000 less than a carbon steel filter. What other justification does anyone need?" says McMahon. "The choice was obvious."

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