

Probing Deeper

More information about needle-injector maintenance. By D.J. Castaldo, Ph.D.

A recent Maintenance Workshop column focused on needle-injector maintenance in meat marination systems ("Needle Work," *Meat Processing*, October 2004, page 24). The experts quoted in the article recommended frequent cleaning of needles, re-

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Dre Waelput, product manager of meat curing equipment at Townsend Engineering, tells *Meat Processing*: "Customers are recognizing the importance of needle cleaning more and more." He advises meat processors to clean their needles every day. "When using heavy viscous brines, it is better to flush the needles during every break," he says. To facilitate frequent flushing, some injectors have a small water tank attached to the main brine tank for needle flushing. The brine pumps flush water through the

system and drain directly to the floor, so that they do not dilute the brine. Waelput, as well as David Enders and Tom Niverth, product specialists at Nu-Meat Technology, advise processors to remove the needles from the manifold and clean them thoroughly in a detergent solution followed by a rinse. "You may need to soak them in a citric or phosphoric solution to prevent build up of limestone and/or other crystals," Waelput notes. "After this, you can rinse the needles with water and check them with an air pressure pistol/gun." He shares that some maintenance departments are now using ultrasonic cleaners. "Those do a thorough job of cleaning the inner bore of the needle," he says. "Needles are the parts that need the most attention to assure a process with minimum variations."

Regarding the debate over whether dull needles should be replaced or reconditioned, he comments: "Needles must be replaced when the tip is blunt. The tips can be sharpened a few times when it is done with craftsmanship. Be warned, however, when the tip is sharpened incorrectly, there is a chance that the tip will break off. On hypodermic-style needles for bacon injectors, Townsend ensures that the tip is 'hollow ground' rather than ground at a straight slant. This shape must be maintained to prevent product coring and needle blockage."

As with all meat processing equipment, needle injectors require diligent cleaning and sanitation to prevent microbial contamination of products. "In general, processors should follow the (needle injector) manufacturer's recommendations for cleaning and sanitation to the letter," Enders emphasizes. "Manufacturers have spent a lot of time developing the proper cleaning methods for their machines. It is important that users don't try to reinvent the wheel. Processors must read the manual, and follow the equipment manufacturer's recommendations."

Some cleaners are not compatible for use on needle injectors. "A powdered clean-



A correctly maintained marination injector system can add value to meat and poultry.

Maintenance Contacts

For more information about needle-injector maintenance contact these experts:

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Or refer to *Meat Processing's Gold Book* (November 2004) for a list of injector suppliers.

ing agent can cause the same (clogging) problems in the needles as salt, sugar, or spices that don't stay in solution," he adds. "However, it is hard to give a general comment because each equipment manufacturer has its own theories. The most widely used cleaning agent for brine circuits is caustic soda. It cuts fat, and a small amount works well."

Enders advises processors to thoroughly rinse the injector to completely remove the residual cleaning agent from the machine. "We've seen more than one incidence when cleaning solution was left in the machine. This has occurred

most frequently when a processor hires a new or untrained sanitation staff. We work very closely with a plant's sanitation staff," he says. "We can't get good injection without good sanitation."

Meat company employees can inadvertently damage a needle marination system during cleaning and sanitation, Waelput cautions. "Incorrect use of cleaning equipment and uncontrolled reassembly of the equipment cause the most damage," he says. "Make sure the cleaning staff is well acquainted with the procedures specified in the technical manual."

For an equipment manufacturer's service technician, one of the biggest challenges of diagnosing a problem with a needle injector is obtaining accurate information about what procedures a plant's maintenance staff has performed to try to correct the problem. "You may have three different people working on the injector over a two-day period," Enders explains. "When they call us, we need to analyze what was done in order to correctly diagnose the problem. Communication between the plant's maintenance people and the technician is one of the biggest things we need to overcome." As a result of better communication, repeat calls to fix the same problem at a plant are becoming less common.

Needle injector suppliers are constantly improving their equipment. "The next generation injectors will have more technology to monitor and control the process," Waelput says. "This will make the equipment more complex and will shift the majority of the maintenance towards the electronics. To reduce downtime, new machines will be equipped with self-diagnostics systems."

"We are seeing more PLCs being added to needle injectors," Enders says. "Customers are asking for them." Controlled-greasing systems are also becoming common on injector systems. He believes predictive maintenance will be used more frequently in the future. "Predictive maintenance is going into a job expecting something to break," he explains. "It attempts to pin-point when the part will break or wear out so the maintenance staff can replace or repair it before it creates downtime."

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