



Small-vial filling finesse

Integrated line runs 5- to 20-cc vials of vaccines and bacterins for the animal health industry.

Jack Mans, Plant Operations Editor

Biomune Company is a leading U.S. manufacturer of vaccines for the animal health industry. With headquarters in Lenexa, KS, the company produces more than 50 US Dept. of Agriculture-licensed products and

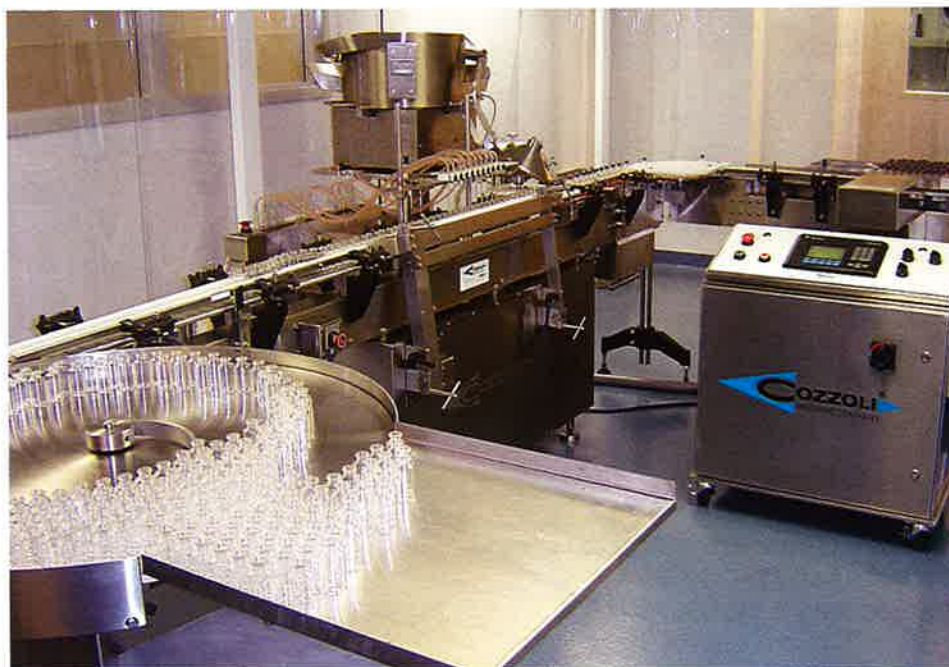
serves customers in 37 countries. Its manufacturing sites utilize state-of-the-art equipment and standard operating procedures in the production of live and killed vaccines.

In June 2005, Biomune installed an integrated packaging line consisting of a Model UT 36 rotary unscrambler, a Model VR2S-10 in-line monobloc filler/stopperer and a BT 15 dual

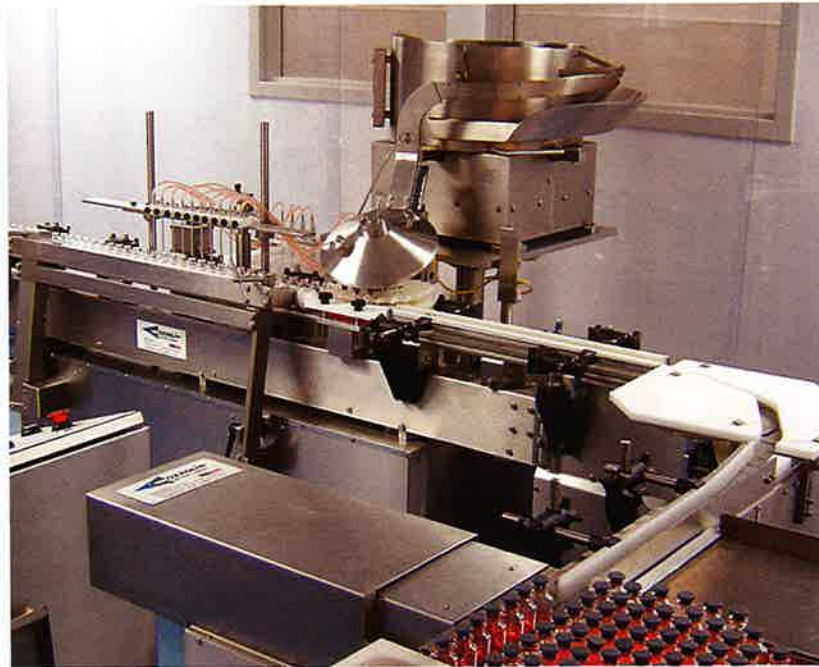
automatic tray loader, all from **Cozzoli Machine Co.** (www.cozzoli.com), to run small vials ranging in size from 5 to 20 cc. The line is installed in a Class 100 clean-room. "Cozzoli wasn't highest or lowest on our list when we started thinking about this project," says director of manufacturing Bill Krehbiel. "We looked at several other machines, but we have three other

Cozzoli machines in our plant, and we have had good experiences with them, so we decided to stick with Cozzoli."

Glass vials, which have been sterilized by hot air, are delivered to the line on trays, from which a worker manually pushes them onto the rotary unscrambler table. The unscrambler delivers the vials single-file to a conveyor that transports them to the



The vial line starts with a rotary unscrambling table from which vials are single-filed to the in-line filler, which fills 10 vials at a time. Product is dispensed by positive-displacement piston pumps.



After filling, vials enter the stopperer, which inserts stoppers into the vials. The vials are then conveyed around the corner to the dual-tray loader.

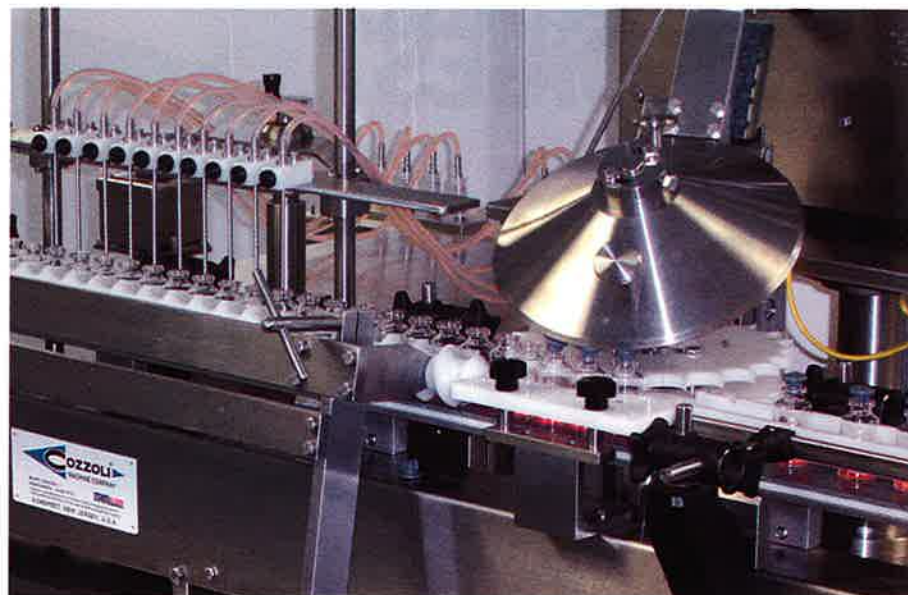
monobloc filler/stopperer. A slight plastic protrusion on the side of the conveyor near the monobloc unit causes any vials

and the amount of suck back can be adjusted manually to optimize the fill accuracy, which is typically in the 0.5-percent range.

The feedscrew ends at the discharge of the filler, and the vials enter a starwheel that conveys them beneath the stoppering wheel. Stoppers are delivered from an overhead hopper down a track to the wheel. The rotating stoppering wheel picks up the stoppers, rotates in synchronization with the starwheel and pushes the stoppers into the vials. The unit can insert lypholization stoppers, which have a slot in the center and are pushed only part way into the vials (see photograph on reverse side) and regular stoppers, which are pushed all the way into the vials.

The filler/stopperer incorporates an upstream sensor to ensure there are enough vials on the conveyor entering the unit and a downstream sensor to detect unstoppered vials. The unit is controlled by an Allen-Bradley programmable-logic controller from **Rockwell Automation** (www.rockwell.com) that stores the recipes for all of the products run on the line.

Vials leaving the stopperer continue on the conveyor, which makes a right-



After filling, vials are directed into a starwheel that rotates in synchronization with the stoppering wheel. The unit can insert regular stoppers and slotted lypholization stoppers.

that have fallen over to drop off the edge of the conveyor into a bin.

At the entrance to the intermittent-motion monobloc unit, the vials enter a feedscrew mounted beside the conveyor. The screw extends through the filling zone of the unit and spaces and controls the vials for filling. The filler runs 10 vials at a time, and the feedscrew stops during the filling operation, holding the vials while the filling takes place. The nozzles descend, creating a bottom-up fill. The nozzles rise in conjunction as the product is being dispensed, so as not to create any splashing or foaming. The feedscrew starts up again to discharge the filled vials and deliver the next group of vials beneath the nozzles. Each nozzle is served by a dedicated positive-displacement piston pump that includes a suck-back feature to eliminate dripping. Both fill volume

angle turn and delivers them to the Model BT15 dual-tray loader. An infeed system directs containers onto the tray loader, where rows of vials are pushed onto three-sided trays. This unit also incorporates an A-B PLC, which counts the number of vials pushed onto a tray and diverts the vials to the adjacent tray when the first tray is filled. A worker then replaces the filled tray with an empty tray, and the process is repeated.

“The Cozzoli equipment is of high quality and built to last, and it is relatively simple to set up and operate, since most adjustments do not require tools,” says Krehbiel. “Cozzoli also has an excellent service department, so if we do need service, they take care of us immediately.”

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