

CaseHistory

Wrapping Up the Right Solution

A manufacturer of blood management products more than doubled packaging capacity with one form-fill-seal machine.

By Daphne Allen
Editor

Marvin Joiner knew he needed another thermoform-fill-seal (TFFS) machine. As an engineering manager at Haemonetics Corp., Joiner was working to ensure that intravenous solutions manufacturing kept pace with overall company growth.

Haemonetics has three families of products: blood bank and plasma products, which include medical devices that automate blood donation and processing; and hospital products, which include surgical items such as autotransfusion devices, blood suction systems, and diagnostic instruments. Joiner's division manufactures IV solutions, such as anticoagulants and other fluids, which are used with Haemonetics' medical devices.

Haemonetics projected that IV solution production would double, and therefore the company needed to more than double its packaging capacity. As part of the packaging process, Haemonetics uses a TFFS machine to form an overwrap for PVC IV bags to provide moisture barrier, longer shelf life, and shipping protection. "We were already running our TFFS machine six days a week," explained Chuck McGill, Haemonetics' quality manager. "We had just increased production, and it was impossible to handle any more growth on one machine."

With limited capacity, the compa-

ny "had to either double the machine or purchase a higher-throughput machine. Haemonetics' existing TFFS machine was 11 years old, with minimal wear, but it was at capacity. The company was prepared to run two of the same machines if needed."

But doubling the existing machine would only give Haemonetics 100% increased capacity. "What we really needed was to get to 150% capacity," says Joiner.

Adds McGill: "Before making an investment, we had to consider longer-term growth needs."

McGill says that they thought briefly about upgrading the existing machine to increase capacity. "But we couldn't afford the extended downtime," he says. "We couldn't build the inventory to allow it."

The sterile solutions division had only 10 months to make a change. Because of the timeline, Haemonetics would not have time to qualify, test, and validate a new overwrap process. "We wanted it all," says Joiner. "Not only did we have to more than double the capacity of our process, but we had to do so using the same material and maintaining the same level of quality. Packaging appearance could not change from the high-quality, clear appearance our customers are accustomed to. Finally, the transition had to be seamless."

Joiner and his team posed this challenge to Ossid LLC (Rocky Mount, NC), a division of Pro Mach, and its vice president of sales, Jason Angel: "How do you make a thermoform-fill-seal machine that can seal our film, one that normally requires a slow dwell, but still maintain sufficient overall equipment effectiveness (OEE)? In other words, maintain sufficient quality, availability, and performance?"

The solution? Maximize the number of units per cycle and decrease all inefficiencies between cycles, Joiner decided. This would require the following objectives:

- Reducing inefficiencies in machine movements with servos.
- Reducing film changeover time with multiple spindles.
- Reducing label change by hot swappable label rolls, improving product discharge for better product registration for automation in the next step.

Joiner and his team chose the Ossid Sureflow 8000MH, taking the place of what would have been two alternative form-fill-seal machines. While the base machine was standard, Ossid worked with Haemonetics to customize the dies and other parts of the machine to meet the company's unique needs.

The 8000MH machine was installed in Haemonetics' intravenous solutions

Class 100,000 cleanroom reserved for overwrapping. The machine is fed by a bag-transfer conveying system that washes and dries bags as they exit the Class 100 filling room. Despite the new machine, “our process never changed,” Joiner says. “Even the roll size stayed the same, requiring no change from our material supplier.”

Servomotor technology enabled Haemonetics to increase output. “Other machines use pneumatic cylinders to control forming cycles, requiring full machine strokes,” explains Joiner. “Because it is controlled by servo drives, the 8000MH can do half strokes, with the dies opening just enough to accept the advancing material. This trimmed time between cycles.”

Haemonetics also increased the amount of cavities it formed on a TFPS line. “We went from a four up to an eight up,” Joiner says.

Ossid extended the loading bed from its standard 6 ft up to 9 ft to be able to accommodate an evolution from manual loading to automatic loading.

The machine also allows Haemonetics to stage new rolls. “We don’t have to stop to make a roll change,” says Joiner. Labels, too, can be hot spliced without stopping the machine.

A different label print-and-apply method (from Koch Equipment [Kansas City, MO]) enables Haemonetics to employ a paper liner instead of a Mylar liner. “The labeler doesn’t hold the tension like the older one did, which made it prone to breakage. Switching to paper saves us money and is eco-friendly,” says Joiner.

The 8000MH is running at an OEE of 88–89%, unattended, which the company considers world class. “Quality and volume mandates have been met,” says McGill. “We could have hit that number with our older machine, but we would have needed an engineer on the line to do it.”

Haemonetics has been trending its OEE for the last two years, partly on the old machine and now on the new. “OEE is a composite of our quality,” says Joiner. “Packaging is a bottleneck

in our facility, so we cannot go below 80%; otherwise, we cannot meet our commitments. But OEE is more than just a number. It is also quality. If reject rates climb along with output, we could run the risk of shipping bad product.” He adds that if they have trouble in the future hitting 80% or higher, it could indicate that another new machine is needed.

Joiner found the Allen Bradley PLC and HMI particularly important, especially for validation purposes. “Instant visibility of a single metric, or parameter, on a dashboard, can be a key process indicator for us,” he says. “We get instant feedback.”

Standard components include the Allen Bradley PLC and HMI as well as such consumables as gaskets and blades. Adds Angel from Ossid: “Because our machine is manufactured in the United States, if any customization is done, such as in web width, tooling, or software design, we can make faster decisions than we could if machine manufacturing were overseas,” he says. ■

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