

GNC THRIVES WITH INNOVATIVE THERMAL TRANSFER CODING SOLUTION



Master-slave configuration reduces downtime, printing costs on VitaPak lines

Most innovations are born through an attempt to streamline work processes. The most successful innovations can result in some key fringe benefits, like reduced downtime and costs. In the case of Nutra Manufacturing, Inc., working with Videojet Technologies Inc. to create a better way to code packages of dietary supplements has cut coding-related downtime in half and is saving the company more than \$40,000 annually.

Nutra Manufacturing is the manufacturing arm of General Nutrition Centers, Inc., better known as GNC, the nation's largest retailer of vitamin, mineral, sports nutrition and herbal supplements. The company has more than 5,000 retail locations worldwide.



Nutra Manufacturing is based in Greenville, S.C., but has a warehouse, distribution and packaging facility in nearby Anderson, S.C. There, two dedicated vertical form-fill-seal lines for VitaPak daily or twice-daily supplement pouches, manufactured for both GNC and third-party customers, hum to the tune of 65 million packages per year, all of which need to be properly coded before entering the supply chain.

In late 2004, Nutra Manufacturing began using multiple Videojet DataFlex® thermal transfer overprinters (TTO) to print data, lot numbers and expiration dates on the two VitaPak lines. But this system had a unique element — the company worked with Videojet to configure the three Videojet DataFlex printers so all code changes could be made from a centralized control module on the line. This new master-slave format was so successful that the same configuration was developed for the other VitaPak line a year later. The format has been a boon for Nutra and Line Lead Machine Operator Damell Parker.

“When I arrive in the morning, it takes about a minute at most to change the code on the Videojet DataFlex printers,” says Parker, who has worked for Nutra for six years. “I can make the changes when the line is running, so there is no delay in productivity.”

Regulatory compliance and audits

Nutra Manufacturing's Greenville facility manufactures up to 13 billion tablets, hard-shell and soft-gel capsules annually. All of that product is transported to Anderson for packaging, on the high-speed bottle packaging lines, thermoformer blister machines or the high-speed continuous motion VitaPak lines.

VitaPaks are a key GNC product offering, and not just for high-level athletes. They are a combination of up to nine tablets that are created for the user's daily health regimen, with specific products geared toward active men and women, and customers interested in heart, diabetic or menopausal care, among others.

John Theofanous, Nutra's packaging operations manager, says that marking 65 million VitaPak packages annually translates to roughly 357,000 packs in a 24-hour period. Thus, the company's coding solution has to be robust for a variety of reasons, including the need for regulatory compliance and audits, which are industry necessities.

He says the Anderson facility is regularly audited by the U.S. Food & Drug Administration and its counterparts from 48 countries around the globe, along with the National Sanitary Foundation and private-label customers. With the addition of various internal audits, Theofanous estimates that the Anderson facility is audited roughly every other week in some form. One of the big components of the auditing process is verifying the readability of codes placed on packaging.

But regulatory compliance is only part of Theofanous' concern.

“We hold ourselves to a slightly higher measure when it comes to marking and coding,” he says. “There are typically 30 VitaPaks in one carton, and if one VitaPak in a carton has a code that is illegible, that carton fails our internal quality process. This is not an external regulation — that is our level of acceptance. It's also a challenge considering we're marking up to three lines of print.”

That means crisp, clear codes are vitally important in order to minimize the cost of tearing open packages and removing the product when a carton doesn't pass inspection.

Shifting to thermal transfer

Theofanous says the VitaPak lines previously ran three dual-head continuous ink jet printers for several years. But the only way to effectively mark the packages was random scrolling print, meaning the printers constantly printed along the backs of the packages, resulting in codes that were cut off when the packages were separated. While not as optimal as printing a dedicated per-package code, it was a workable solution. But there were other issues Theofanous had to contend with when it came to the ink jet printers.

"At times, we would have downtime for maintenance — the heads needed to be cleaned, or a tuneup was necessary," he says. "Many times, once that issue was addressed, the process to refresh the fluids would take from 30 to 45 minutes. Well, that's costly downtime."

In 2004, several private-label customers began requesting more lines of print on their packages, which created a new challenge for Nutra. Customers wanted the capability to add kosher symbols or use a particular font size in the future, which wasn't easily achievable with Nutra's existing ink jet printers.

All those new requirements, along with the rising cost of consumables like ink and makeup fluid, were the impetus for Theofanous to look into a new coding method, and the one that intrigued him the most was Videojet's TTO solution.

TTO systems feature a thermal transfer printhead and ribbon that make contact with a flexible substrate, like the synthetic films and labels that comprise VitaPak packaging. Miniature print elements under a glass coating heat small areas of the ribbon and transfer ink to the target substrate. Print elements are program-controlled to create real-time images, including clean, high-resolution bar codes, text and graphics.

The latter feature was especially intriguing to Theofanous due to his customer requests for more lines of print and ability to add graphics, but he wanted to take it a step further — using six individual printheads. But the process of staging six TTO systems on one line, not to mention the cost of ribbon for six printheads, just wasn't feasible.

"So we came up with the concept of using a larger, wider printhead on three machines, meaning each printer would be able to mark two packages at a time," Theofanous says. "But having three control units on the three printers wasn't ideal from a cost and efficiency perspective."

Around that time, Theofanous had begun investigating Videojet's DataFlex TTO systems, and in the process, presented his challenge to Videojet, which resulted in a novel solution.

"Videojet suggested a master-slave configuration," he says. "In order to create a good VitaPak, we can't affect the tension on the film, so we worked with Videojet's engineers to create a new assembly, that not only included mounting hardware for the printers, but reconfigured our drive rollers to prevent drag in the system."



Top-quality codes

It took some coordination to make the new configuration work in concert with the Videojet DataFlex printers, but the result has been golden for machine operators like Parker. The control module on his line has three screens, representing the

printheads on the three Videojet DataFlex printers. Moving from screen to screen is done with the keypad's tab function. Within each screen is the ability to choose the left or right print side. Changing the code itself requires a few simple taps of the DataFlex's touch screen.

Thus, at any given time, the three printheads could be printing six different types of variable data. But what impresses Parker even more is the consistent crispness of the codes, especially considering how many VitaPak packages he runs during his 10-hour shifts.

"I've been working with the Videojet DataFlex printers on my line since we got them," Parker says. "I run roughly 130,000 or more packages during my shift. Top speed is 155,000 to 165,000 packages. Code consistency over that time has been great."

Operations specialist Mike Kelly handles the maintenance on the Videojet DataFlex printers, which he says is an easy job because there is so little maintenance compared to when Nutra used the ink jet printers. Therefore, he's able to devote his time to more pressing projects.



"I used to spend a lot of time calibrating the ink jet printers, but with the Videojet DataFlex printers, I just change the ribbon and use a cotton swab to wipe the printhead, and that's pretty much it," he says.

Return on investment

Theofanous says that the master-slave configuration worked so well on the original VitaPak line that a year later, the same functionality was added to the second line. But return on investment, which he estimates at two years, played a major role in getting corporate approval to do so.

"Our capital budgeting process is extremely stringent, because we are competing with different plants and departments for the same dollars," he says. "We had a favorable enough ROI to be able to get the funding we needed for the second line. It was a much easier sell to incorporate the second time around because we had a proven system and a year's worth of downtime data and consumable data."

That added up to more than \$40,000 annual savings on maintenance and consumables, along with the major reduction in downtime.

"Downtime due to package coding was close to 3 percent of our total operational time, which included having to shut our VitaPak lines down early to give maintenance staff time to do their jobs, and unscheduled downtime due to print errors," he says. "The Videojet DataFlex printers have cut that amount down to less than a half percent."

What's more, GNC headquarters took notice of the change beyond those stellar numbers. Theofanous says that originally the Videojet DataFlex printers were used to code exclusively VitaPak packages for private-label customers, but after seeing the improved print clarity, corporate requested usage of the Videojet DataFlex printers on all GNC VitaPak products as well.

But perhaps the biggest benefit, Theofanous says, is "our operators are less conscious of print errors and more focused on making sure we produce good quality packs."



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