



Fast changeovers, healthy output

National Vitamin's new Las Vegas operation provides a public showcase for its filling/capping/labeling line, where 10 sizes of containers can switch over in 45 minutes or less.

At the top of the line in the new plant, above, top left, bottles are dumped into the hopper of an unscrambler, where they are oriented and pass through an ionizing air cleaner. Directly beneath the closure applicator, above, bottom left, an accumulating table builds dwell into the line for any problems that might occur downstream.

Bernard Abrams, Eastern Editor

If you're planning something new for one of the nation's entertainment meccas, it had better be spectacular enough to seize public attention. Earl Courtney Jr. believes he has just the thing.

The president of National Vitamin Co. is giving much of his personal attention to the company's new Las Vegas facility, built specifically to expand capacity beyond the five production lines running full steam at its Porterville, CA, headquarters. Along with added output to help National Vitamin compete more effectively in eastern markets, the new plant offers public tours that include the packaging operation. These end with visits to the retail shop, where consumers may purchase the vitamins, minerals, herbal products and supplements marketed by the company under its Nature's Blend, Life-Line, Chantal and Captain Carrot trade names.

While the public might be impressed with the cleanliness, efficiency and order of the packaging line, it would take an audience of packaging engineers to fully appreciate what's happening with the specific machine functions. Altogether the line, onstream almost seven months, is working smoothly at an average 68 per minute for 10 different bottle sizes—higher for the smaller containers—Earl Courtney informs PD.

And, the engineers might be even more impressed to know a size switch takes 45 minutes or less. This translates into higher per-shift output than that of some faster machines. It also means careful attention to details by the five people who operate the line, assuring that the quality of the packaging reflects that of the products they hold.

Through the combined efforts of NJM/CLI and a few of its friends, the packaging line is a virtual turnkey operation that presents an almost idealized argument for single sourcing. Built to gently handle high-density polyethylene and transparent polyethylene terephthalate bottles, the line works under the guidance of five gowned,

capped, masked and gloved operators whose sight reassures visitors regarding the cleanliness of the packaging function.

Filling tablets, soft-gel and 2-pc hard-shell capsules in 30- to 500-count quantities in the Nature's Blend and Life-Line series, the line "has fewer change parts than any line I've seen, including those in our California operation," Courtney comments. "And, the transitions from station to station are the smoothest I've ever observed. There's none of the manual bottle uprighting so common to plastic bottle lines."

Especially not at the top of the line, where a Model P-3-H unscrambler built by Palace Packaging Machines accepts caseloads of bottles into a hopper with a capacity up to 2,500 units. It aligns them, neck and base leading, for travel base-first, to ionized air rinsing and feeding, single-file, onto a powered conveyor. With an auto-reversing sorter disc that enables a paddle wheel to reorient bottle feed, the machine has, at most, a nine-minute tool-free changeover time.

Acquired through NJM/CLI, the unscrambler works smoothly under guidance of an Allen-Bradley programmable logic controller, shifting the bottles onto a motorized conveyor with raised rails hand-adjusted for varying diameters. They single file under NJM/CLI's 12-track Cremer CF-1220 electronic counter/filler, which fills from two heads.

For hygroscopic or fragile products, the bottles next encounter the NJM/CLI Model CL-110, a heavy-duty cottoner with insertion at two stations. Since this machine is rated to 120 per minute and is regulated by the PLC, there's no slowdown in output when it is incorporated into the packaging function.

Capping flexibility

Compounding its quick-change capability, the line's

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automated capper is also up to the demand for flexibility. Because it must work with threaded and press-on tamper-resistant closures, the NJM/CLI Model Unicap 100 applicator is customized to NVC's needs.

Built on a heavy stainless-steel frame, the machine has a modified elevator picking closures from a hopper with minimal 30-min supply with pre-feeder. Standard threaded closures are torqued by three sets of spring-loaded tightening discs; for the tamper-evident closures, a stainless S-style cam swings into action. Changeover time is about 10 seconds, with no tools needed.



Smooth flow of containers and closures is assured by a Siemens PLC, while the system's near-silent running is the partial result of the absence of vibratory bowls. Its bottle-holding belts are quickly adjusted. Also quickly modified are the air clutches for torque control.

This seal won't peel

Immediately downstream of the

capper, Enercon's Compact induction sealer attaches the liner pre-inserted in each closure. While providing a secure seal, the machine is mounted over the conveyor to save floor space and contains within its cabinet the control, sealing coil and power supply.

Knowing that bottles tend to whip out of the sealer and bunch on the conveyor, Earl Courtney calls for



Elevated from a bulk hopper, above left, standard threaded and specialTE closures are affixed to the bottles by a high-speed, versatile applicator with no change parts. Single-filing under a 2-headed filler, above right, that operates through slat feeding and counting, the bottles jog, where appropriate, for automated cottoning.

an accumulating table at the next station. While smoothing line flow, this table also provides dwell as the bottles single-file down to the label applicator, NJM's Auto-Colt II, Model 236, which has capabilities to 200/min and the ability to adjust quickly for all 10 bottle capacities.

As the pressure-sensitive labels are applied, a Norwood hot-stamper simultaneously applies two codes beneath the bar code; a 4-unit alphanumeric lot number and 3-number expiration date. The versatile applicator, as with all upstream equipment, changes over quickly at the end of a production run.

At the foot of the line sits a collection table, where two people visually inspect and manually pack off the containers into 12-bottle trays. Offline awaits a Shanklin shrink-wrapper on the way to loading into 72- and 144-tray master shippers.

So pleased with the smooth integration of the packaging line is Earl Courtney that he is doubling his bet with a second line that virtually duplicates the first. On stream less than three months, the second has subtle differences that suit it to specific marketing needs.

First is the single-head filler, Courtney explains, that makes it more appropriate to larger bottle sizes. Second is a unit shrinkwrapper for outlets that require added security. Third is an end-of-the-line bundler for 3-, 6- and 12-packs aimed at specific types of retail situations.

He is no less proud of the packages that emerge from the two lines. Along with the smallest and largest bottle sizes are 50-, 90-, 100-, 120, 180-, 240-, 250- and 360-count bottles that meet the merchandising needs of just about every retail store as the company expands and deepens its distribution.

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Following application of wraparound p-s labels, two operators inspect and pack off the completed packages into trays for insertion into master shippers.

Among the first

Even his bottles are forward looking. The amber PET containers are provided by Waddington Jaycare, and are among the first to be produced with a new oil-based colorant produced by M. A. Hanna Color (see PD, May '00, p. 90). Satisfying Federal migration-testing protocols, the colorant also meets the molder's processing and light-transmission requirements, with a letdown ratio of 0.5 lb per 100 lbs of resin.

The J-style polypropylene closures are also supplied by Waddington Jaycare, with an additional child-resistant PP closure produced by TricorBraun and standard threaded units from both.

Mirroring the amber glow of the bottles, labels for the Nature's Blend and Life-Line bottles are converted by Chromatic Production using a semi-gloss elite stock from Fasson consisting of 60# face sheet, permanent adhesive and 40# kraft liner. Chromatic prints the former in three colors and the latter in six with ultraviolet inks, overcoat and curing in line on an 8-color Mark Andy 2200 flexographic press.

For the same two label groupings, Lord Label says it's getting similar results with a 55# Champion Kromekote with AT20 adhesive and 40# kraft backing, which it runs up to six colors on an 8-color Mark Andy press using water-based inks and UV coating; plus an 8-color flexo Arsoma press from Gallus, running with UV inks, overcoat and curing.

Earl Courtney tells PD, with the two packaging lines working near

full efficiency, he's ready to move into extra shifts as demand continues to grow. He feels their ability to work up to production requirements without strain on people or machinery is a sure bet.

In a town like Las Vegas, that's rare.

More information is available:

Filler/cottoner/accumulating tables/capper/labeler: NJM/CLI

Packaging Systems International, 800/432-2990. Circle No. xxx.

Unscrambler: Palace Packaging Machines, 610/873-7252. Circle No. xxx. **PLC: Allen-Bradley Co.,** 414/382-2000. Circle No. xxx.

PLC: Siemens Energy & Automation, 800/964-4114. Circle No. xxx.

Induction sealer: Enercon Industries Corp., 262/255-6070. Circle No. xxx.

Hot-stamper: Norwood Marking Systems div., ITW, 800/626-3464. Circle No. xxx.

Shrinkwrapper: Shanklin Corp., 978/772-3200. Circle No. xxx.

Bottles/closures: Waddington Jaycare, 201/507-0900. Circle No. xxx.

Colorant: M.A. Hanna Color, 800/511-3801. Circle No. xxx.

Closures: TricorBraun, 800/325-7782. Circle No. xxx.

Labels: Chromatic Production, 714/546-4141. Circle No. xxx.

Label stock: Fasson Films div. Avery Dennison, 216/639-3000. Circle No. xxx.

Labels: Lord Label, an AOL co., 714/992-2574. Circle No. xxx.

Label stock: Champion International Corp., 800/348-1770. Circle No. xxx.

Press: Mark Andy, 800/700-6275. Circle No. xxx.

Press: Gallus, 215/677-9600. Circle No. xxx.

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Global market vitamins to reach \$2.7 billion by 2005

Although the market for vitamins has seen a reduction, not only in the volume of vitamins sold, but also in prices, a turnaround is expected in the coming years. According to a new study from Business Communications Co., the worldwide market for vitamins was estimated at \$2.65 billion in 1999 but should grow to \$2.74 billion by 2005. The last four years, from 1995 to 1999, have seen major reductions in the value of the vitamin markets. For example, Vitamin C fell dramatically from \$800 million in 1995 to \$500 million last year. There was virtually not a single vitamin that did not suffer from a shrinking market value.

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