

Bundler 'babies' bottles



Shrink-wrapping/bundling system in place on a Baby Magic bathcare bottling line at CCL Custom Manufacturing's Memphis plant uses a robotic pick-and-place feature to help nearly double the output of six-packs.

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Considered the largest contract manufacturer of consumer products in North America, CCL Custom Manufacturing provides manufacturing, packaging and support services for the world's top brands of personal care, haircare, OTC pharmaceutical, specialty food, household, automotive and industrial products.

As part of a production line upgrade aimed at boosting efficiencies, the division of Toronto-based CCL Industries, a \$1.6-billion outsourcing partner to some

of the world's largest producers of consumer brands, recently upgraded one of a baker's dozen of packaging lines in its Memphis plant, with a new ROKH™ shrink bundler/wrapper from Polypack.

Installed in March, the ROKH machine safely cradles bottles of assorted Baby Magic products from Playtex in shrink-film-wrapped multipack bundles for shipment nationwide. The oval bottles enter the shrink bundler in a single lane and are then robotically grouped into dual lanes to be wrapped six bottles per bundle.

CCL's Memphis plant ranks high in U.S. production and distribution of liquid, lotion and cream products. The division's success is structured around a highly trained, motivated and team-oriented workforce that is able to provide customers with resources that meet production runs ranging from startup to full-scale operation in a moment's notice.

The company's Continuous Improvement culture allows it to produce products for numerous nationally recognized marketers. Constantly upgrading and improving aerosol, stick and liquid production/packaging facilities in the U.S., Canada, U.K. and Germany, CCL strives to provide top-quality packaging. The best processing practices are only half the battle; the other half is to keep its internal operations running at their peak. The Memphis plant features 13 production lines, most of which are equipped with high-speed volumetric and level fillers, as well as tube, bottle and jar fillers.



Hair and body wash bottles, left, single file from a rotary filler and capping/pump placing station to the bundling machine infeed, right. They're grouped into two lanes, oriented into two six-packs and wrapped.

"We're the largest contract manufacturer in North America," says general manager Roger Bos. "The Memphis facility manufactures a wide range of liquids, lotions, creams and gel products for the personal care and over-the-counter pharmaceutical markets. These products are typically filled into a number of container formats, including plastic bottles and tubes, glass containers and plastic containers. Being a full-service packaging operation, well

integrated with our clients' changing needs, it's important for our production lines to remain flexible and always run at their best."

Nearly twice as fast

The time was right to increase output on the bottling line running the baby bath products and to replace a single-pick shrink-wrapping system. The ROKH Model ILB-32-DL-P machine proved it could boost efficiencies and provide the bottle stability CCL was after, Bos says. "The decision to replace the equipment was mostly to improve efficiencies. The ROKH has been a pretty good machine for us. We are pleased."

Able to pick, collate, separate and shrink wrap, the multipurpose bundler's patented robotic pick-and-place device groups the bottles and positions them directly into the shrink-film-wrapping station on a special conveyor that positively transports CCL's bottles without transfers or toppling. The machine has a rated speed of 220 bottles/min, which well fits CCL's parameters. Bos pegs current line speeds at 160/min, up considerably from the previous 80 to 100 bottles/min.

Simultaneous with the bundler installation, CCL also added a new Marq case erector, and there are more line equipment improvements to come, Bos tells PD. As of presstime, the line is being further upgraded with a new pump dispenser placer from New England Machinery.

"The case erector is replacing a manual function," Bos tells PD.

"When we started the baby products business, we had a single-lane bundler and no case erector. Many of the bottles were transitioning from caps to pump dispensers. Prior to running these products, the line ran shampoos and conditioners topped with threaded closures."

Built in 1960 to produce the venerable Old Spice fragrance, the 316,000-sq-ft, 250-employee plant in Memphis mixes and fills, and procures most of the materials for a broad range of well-known liquids, lotions, creams and other products, such as OTC pharmaceuticals. Production for half a dozen major marketers today amounts to nearly 90 million units a year.

The upgraded line bottles Baby Magic products almost exclusively, handling four bottle sizes. The oval bottles range from a 4-oz high-density polyethylene squeeze bottle of original Baby Bath up to a 15-oz pump dispenser made of clear polyethylene terephthalate for Baby Magic Nourishing Hair & Body Wash or an opaque yellow HDPE bottle for Baby Magic Gentle Baby Bath. The company sources the containers from suppliers including Owens-Brockway and Captive Plastics. Designed to accept bottle sizes from 2.5 x 1.25 x 5.12 to 3.75 x 1.75 x 7.87 in., the dual-lane bundling machine is designed to wrap up to 40 bundles/min. In CCL's case, the machine in Memphis currently runs about 26 bundles of oval bottles/min. "For us, the issue was especially about gaining uptime," the general manager points out. "We've tried other bundlers in the past and experienced downtime

trouble. The Polypack is more reliable. The ROKH system's robotic pick-and-place feature and the dual-lane system was right for us. What sold us is the ROKH's stability. Others that push bottles wouldn't work for us. Some use the bottles to accumulate, which can create back pressure, jams and squeezing of the bottles. Generally speaking, we don't experience problems. That's the big benefit."

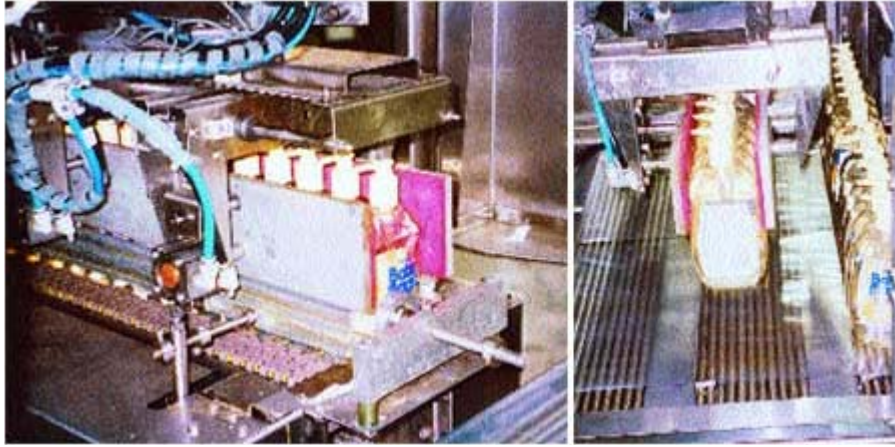
The ROKH robotic pick-and-place unit is one Polypack says it has developed to streamline the bundling process. The ROKH helps eliminate multiple transfers between conveyors and deadplates to collate and then shrink wrap products. Bos says the more simplified, smoother system requires fewer of the mechanics, traditional transfer and handling devices, and hassles. CCL needed a versatile system that could handle different product types, bottle shapes and bottle sizes, which is why Bos says the ROKH's gripper device is so handy. Able to grasp various bottle sizes and shapes, it's one reason why the bundler is suitable for a line that runs multiple bottle sizes and has pacified efficiency losses.

At the heart of the bundling system is what PolyPack calls a dual-lane "bucket" conveyor, which orients the two six-packs each in a 1x6 configuration. As PolyPack's Ron Aylor explains, though it's called a bucket conveyor, the buckets aren't actually buckets in the conventional sense. "They are discrete, separate sections, constructed of stainless-steel rods that, grouped closely, form a desired length in the machine direction. A stabilizer bar prevents the oval bottles from toppling."

The solid-steel rod conveyor transports the bottles through every phase of the shrink-wrapping process. Placed in set increments, the steel rods permit placement of many bottle sizes and shapes with stability, Bos affirms, with no adjustments or barriers needed to maintain multipack integrity. A Teflon®-coated, self-leveling seal bar is in place at the front of the system's shrink tunnel. The sealing system's electronic eye tells when a six-pack of bottles is in place, ready for wrapping.

Bottling, capping, bundling

The baby products line usually runs two eight-hour shifts a day, five days a week. Bottling begins as empty bottles are first unscrambled by a Pace Model M400 bottle sorter prior to filling on a Pacific 18-head rotary volumetric liquid filler, which impresses Bos. "We like the filler," he says. "We got this one about three years ago and recently ordered a fourth for another line."



Bottle grippers hug the sides of the dispenser bottles, left, and group them into six-packs. Upon entering the stainless-steel rodded 'bucket' conveyor, right, the bottles move on top of a web of clear PE shrink film, as the next group is staged.

Soon, the new pump placer will automatically apply the pump dispensing closures to the filled bottles, but currently, the pumps are inserted by hand. If caps are to be applied instead, that's done on a Pack West Model 200 straightline capper. The sealed bottles next single-file to the infeed of the bundler with the narrow bottle side leading. A stretch of conveyor at this point provides a bit of bottle accumulation, Bos explains. "We need just a short time to pack two six-packs of bottles."

The bundler gently turns incoming bottles 90 degrees using a set of rails and a turning screw device before the robotic pick-and-place device grasps 12 bottles at a time using interchangeable grippers and separates them into two groups of six on two conveyor lanes. The bottles are then positioned in the bucket conveyor on top of two separate 14-in.-W webs of clear, 1.5-mil Omega One polyethylene shrink film from Tyco Plastics that unwind from two rolls. There are four rolls total, two rolls per lane. "We wanted a straightline-type machine to accommodate our line layout," Bos says. "Polypack can provide other configurations, such as a 90-degree machine design that would change the direction of the bottles. We preferred this extra twisting motion for the bottles."

Moving in the parallel conveyor lanes, the bottles contact separate film curtains that loop the top film web over the product from front to back. The bucket conveyor uses a stabilizer bar to provide a solid separation of the packs, preventing bottle movement and creating a tight, snug six-pack unit, another feature Bos says CCL likes about the machine. The film is then cut and sealed by a seal bar before the two sets of six bottles head into the two-fan shrink tunnel that shrinks the PE film around the bottles, enclosing them snugly.

Changeover from one bottle size to the next takes about 20 to 30 minutes, Bos notes, and requires a few quick adjustments and a one-part switch of bottle gripper pads. The machine can accommodate different products and bottle configurations with the

use of additional gripper changeparts and by programming an Allen-Bradley SLC 5/02 PLC on the machine. Operating conditions are programmed for each product so that product selection is made through a touchscreen operator interface. The six-pack bundles discharge from the machine, two at a time.

Operators load the wrapped multipacks in 12- and 24-count corrugated shipping cases, many of which are supplied by Willamette in West Memphis, AR. The cases are erected by the new Marq Packaging Systems case former.

"Because these are six-packs and we have an automatic erector, we don't really yet require an

automatic case packer," Bos says. "We have too many packaging variations to be automatically case packing. But Polypack can integrate a ROKH case packer on the end of a line." The cases are tape-sealed on a Loveshaw Little David Model LD16AX tape sealer.

Through continuous improvements like these to its packaging lines, CCL's conscientious approach to contract manufacturing and contract packaging has made its plant in Memphis a world-class leader in the personal care and OTC products industries. Payback on the bundler is expected to be less than two years, Bos says, which is certainly justified. "We'll be looking to Polypack when we need another bundler."



Multipacks of bottles emerge from the bundling machine's shrink tunnel, in two sets of six, before they exit the machine. The six-pack bundles are then loaded by operators into shipping cases erected on a new case former also recently installed on the line. The line outputs approximately 26 bundles, or 160 bottles per minute.