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## A CAMEO APPEARANCE: PACK CLASS ACT

Cookie bagging spells out the A-B-Cs of form/fill/seal and labeling

Can't hold a candle to these labels

Pepsi case conveying really rocks

Fetzer's faster palletizing

Packaging's parameters defined

Preview of exhibits at Pack Expo Las Vegas





# The A-B-Cs of f/f/s

*Continuous-motion, dual-head vertical form/fill/seal machine runs standup flat-bottomed bags as well as pillow packs in sizes from 1 to 28 oz.*

Jack Mans, Plant Operations Editor

J&J Snack Foods of Vernon, CA, produces a multiplicity of products in its 137,000-sq-ft plant, including baked cookies, as well as frozen soft pretzels, churros and raw, frozen cookie dough. Its 12 packaging lines, which run 42,000 lb of product per hour, include eight vertical f/f/s machines running cookies. Most of the cookies are copacked for other companies, although the plant also produces some under its own label.

By early '00, the number of different bag sizes and types for cookies was stretching the plant's capabilities. "In addition to pillow-style bags, customers were asking us to run flat-bottom bags, and they were also asking for bag sizes from one to ten ounces. We needed a more versatile machine that could run all of these different sizes and styles of bags, and there are not many machines that can do that," says general manager Ron Hunt.

After evaluating available equipment, J&J purchased a dual-head, continuous-motion machine from Rovema Packaging Machines LP. Says assistant general manager Gerald Law, "The Rovema is the best combination of features and reliability we saw; it's built like a

tank. Service has been only ten percent of our other baggers, and the machine has required practically no replacement parts."



Dual-head vf/f/s machine with automated scale system, above, produces standup bags of cookies, as well as pillow-pack bags. The four edges of the standup bags, inset, are sealed on their inner surfaces to achieve a nearly boxlike shape that provides room for excellent graphics, while the flat bottom allows the bags to stand up on store shelves.

Law also likes Rovema's servo drive controls and continuous-motion operation. "There is no stop-start motion. The continuously moving film cushions the cookies as they drop into the machine so there is less breakage and a lot less waste. It also applies much less stress to the machine components, which definitely contributes to low maintenance requirements," he says.

The dual-head machine is actually two separate vf/f/s systems mounted on a single frame in a mirror-image design so one

operator can operate both systems. The systems are completely separate, including their computer controls, and can be operated

independently of each other.

## Automated dual weighing system feeds bagger

To go with the bagging



# Pressure-sensitive labels

A very interesting element of the J&J cookie bags is the pressure-sensitive label that consumers can use to reclose the bag after it has been opened. They do this by partially removing the label, folding over the open top of the bag and then sticking it shut with the label.

The roll of labels is mounted horizontally on the back of the Rovema vf/f/s. The web containing the labels travels around the machine to the front, where labels are stripped from the web, and the web then travels back to the takeup/rewind drum, which is mounted next to the supply reel on the back of the machine. The entire motive force to move the web of labels is provided by this takeup drum, which pulls the web off of the supply roll, through the machine and back. "EPI specializes in labelers that can get into tight places by pulling the label web from outside the labeling area," an EPI representative told PD.

The supply roll of labels is mounted on a low-tension spool, and the web is pulled past a spring-loaded dancer arm that uses gentle force to control the web tension. After passing the dancer arm, the web passes a registration sensor that detects the gaps between the labels.

In this patented system, the registration sensor is mechanically connected to a label position compensator that maintains proper label registration by engaging a clutch/brake that turns the takeup drum on and off without shutting off the motor.

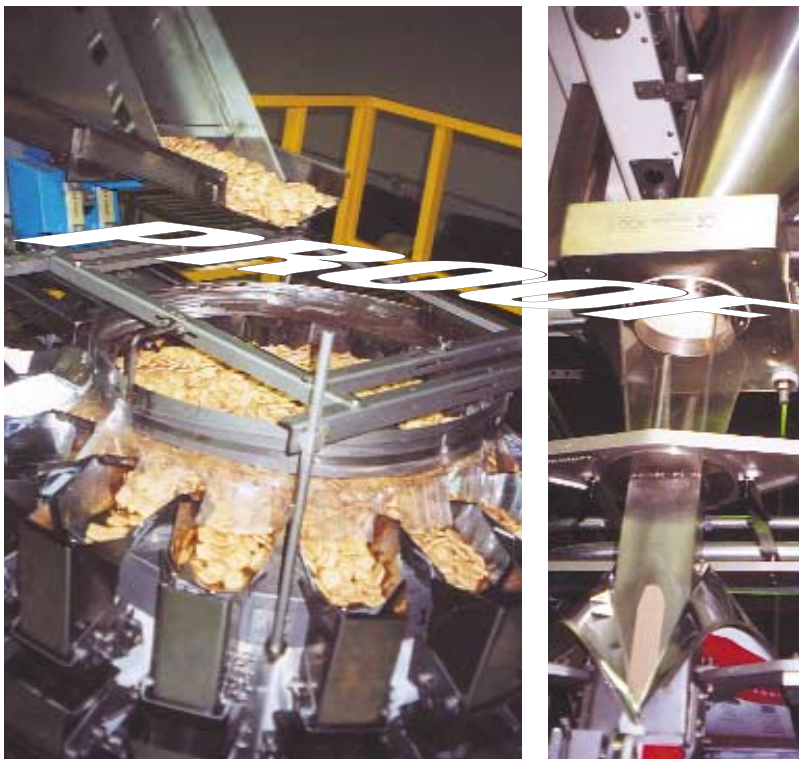
The web of labels continues to the front of the bagging machine where it makes a tight wrap around a peeler bar that facilitates the label separating from the web. The label is pulled by vacuum against a small rectangular plate located directly under the backseal bar on the bagger.

A signal from the vf/f/s machine then triggers a four-way valve that releases the vacuum at precisely the exact time and emits a jet of air to blow the label against the film. In this process, as soon as the label is blown away from the rectangular plate, another label is picked up, so it is waiting to be applied.

The labeler is mounted in a fixed position. Vertical placement of the label to the film, for example, for different bag sizes, is controlled through the bagger control, which triggers label application during film travel.

More information is available:

Labeler: EPI Labelers, 800/755-8344. Write No. 260.



Cookies discharge onto the vibrating top cone of the weighing system, above, which delivers the cookies to 16 individual scale systems. Cookies pass through a metal detector, above right, as they drop into the vf/f/s machine. Rolls of film are mounted on spindles on the back of the machine, right, and are pulled through the machine by a combination of friction drive belts and vacuum assist on the front. A sensor detects the location of the edge of the film as it leaves the roll and moves the entire film carriage horizontally to maintain proper tracking through the machine.



machine, J&J purchased a Yamato Sigma Series Model 416 16-head radial weighing system that is mounted on a platform above the bagger. "We've standardized on Yamato scales," says Hunt. "They are excellent machines and Yamato gives us outstanding service. And, standardization minimizes our spare parts requirements. They're a bullet-proof choice." This unit is also split into two separate systems, each utilizing eight scales that serve the two vf/f/s machines below.

J&J has five baking lines that produce the cookies, which are delivered to the bagging machines on belt conveyors. During *Packaging Digest's* visit, the Rovema line was running 10-oz flat-bottom bags of Newman's Own Organic cookies.

Cookies for the bagger drop into a floor hopper feeding an inclined flighted conveyor that discharges into the vibrating top cone of the Yamato weighing system. The infeed to the system is controlled by a programmable loadcell under the center cone, that turns the flighted conveyor on and off to maintain the proper product level.

The weighing system consists of 16 individual weighing modules mounted around the vibrating top cone. These are separated into two systems, each incorporating eight modules, and dedicated to one of the f/f/s systems below. Each module consists of four

stations: vibrating feed pan, feed bucket, weigh bucket and memory bucket. Cookies discharge from the cone into the vibrating feed pan, which delivers product to the feed bucket. The on/off vibrating pan operates for a preset period of time to put a set amount of product into the feed bucket.

# close open bags



A supply roll of labels and the takeup roll for the web are mounted on the back of the machine, top. The label is actually a sealing device that enables the customer to reseal the bag after opening it, above. A four-way valve alternatively applies a vacuum to hold the label after it is removed from the web, followed by an air jet to blow it onto the bag, bottom.

The feed bucket, in turn, drops product into the weigh bucket. The purpose of the pan and feed bucket is to isolate the weigh bucket from outside interaction and maintain weighing accuracy. If the wrong amount of product is being dropped into the weigh bucket, the time that the vibrating pan operates is

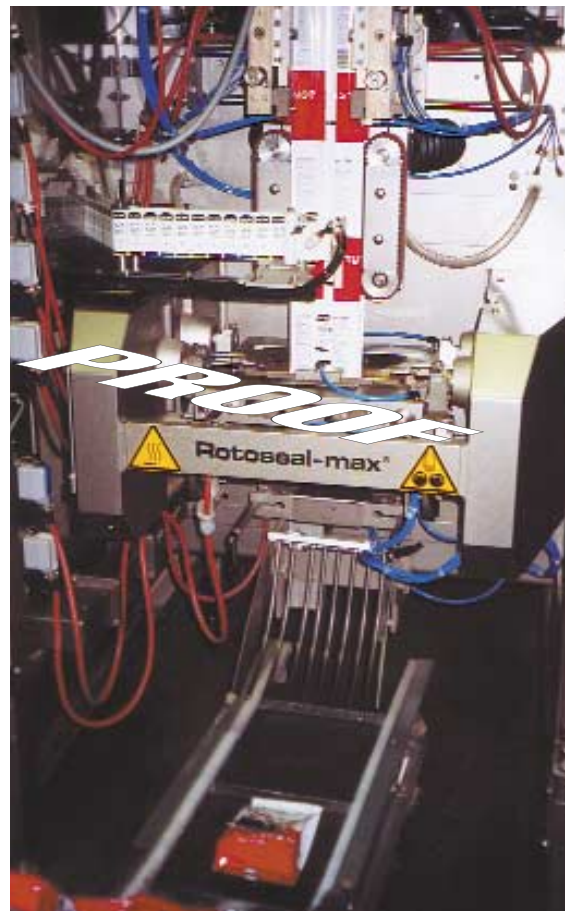
changed to correct the discrepancy.

The amount of product delivered to each weigh-bucket is about one-third of the weight of the finished package. For each weighing, the control system selects the combination of three or four buckets that comes closest to the total bag-weight without being under that weight. The amount of product in each bucket is deliberately varied to provide the difference that the computer needs to achieve the final correct weight. Individual programmable stepper motors control the feed bucket and the weigh bucket.

Each weighing module also includes a memory bucket. Scales that do not discharge directly to the bag machine discharge into these memory buckets, and these become part of the total group from which the computer selects the buckets to dump. Thus, although the system has eight scales for each side of the bagger, it actually has 16 buckets from which to choose the best combination. The system typically achieves an accuracy of 1 to 1½ g overweight.

The weighing system is computer-controlled and includes a quick-changeover, keyless, sealed touchscreen with operator prompts and menus so the operator can select the product to be run by touching the screen. It also includes self diagnostics. Each discharge is displayed on the computer monitor, showing not only the fill weight, but also exactly which scales released product. The control panel is located on the first floor next to the bagging machine so the operator can interact without climbing up to the platform. “Not only is the Yamato weighing system easy to operate and extremely accurate, but it’s really easy to clean and maintain. Product contact parts can be removed quickly and easily without tools, and modules, including stepper motors, can be removed as one unit,” says Law.

Scales discharge product through a Lock Wafertin Met 30 metal detector mounted just below the scale platform and above the bagmaker. The unit automatically calibrates itself for product bulk as it passes through the system, tracks the cookies, and continuously compensates and updates itself for optimal sensitivity. “This unit



Film is pulled through the machine by a combination of friction drive belts and vacuum assist. Sealing jaws seal bags, after which a blade cuts the bottom bag loose.

is sensitive enough to detect a one-millimeter sphere of stainless steel,” says Law.

## Bag shape and film combine for outstanding appearance

With its servo drives and PLC controls, the Rovema VPK is one of the most versatile vf/f/s machines on the market. J&J is currently running 10-oz flat-bottom bags with Rovema’s patented Stabulo Seal and nominal 1-oz pillow-style bags. The machine also runs regular flat-bottom bags and gusseted, pillow-style bags. The 10-oz bags, which run at a speed of 45 bags/min per side, have a 13.5-in. cutoff length and a film speed through the machine of about 50 ft/min. The pillow bags run at 85 bags/min per side, and have a 4.5-in. cutoff and 32-ft/min film speed.

J&J was running the Stabulo seal bags during PD’s visit. With the Stabulo seal system, the four edges of the bag are sealed on their inner surfaces by vertical sealing systems on the bagger to

achieve a nearly boxlike shape with excellent room for graphics. The bottom of the bag is tucked under and sealed so that the bag will stand up, further enhancing its boxlike appearance. "This was critical for Newman's Own Organics and other customers. They wanted the bags to stand up so they could replace boxes and to stand out on store shelves," says Law.

The film, which is converted and gravure-printed in up to 10 colors in a plant in Korea, is supplied by **Worldpack, Inc.** It is a triple lamination (inside to outside) of oriented polypropylene/vacuum metallized polyester/blended cast polypropylene. "The Stabilo bags have very stringent film requirements. The coefficient of friction is critical, and it's different on the inside and outside. The film has to be 'sticky' on the outside so the belts can pull it through the machine and 'slippery' on the inside so it doesn't stick to the filling tube," says Law. "For all of our packages, J&J selects the film, Rovema tests it at their facility, and Worldpack adjusts the components so it runs properly."

### **PLC and servo drives provide total control**

The 43-mm-wide roll of film is mounted on a spindle on the back of the machine and is pulled through the machine by a combination of friction drive belts and vacuum assist on the front of the machine. A sensor detects the location of the edge of the film as it leaves the roll and moves the entire film carriage horizontally to maintain the proper tracking through the machine. A Markem 9840 ink-jet printer applies a code date to the film also as it leaves the roll. An encoder continuously measures the speed of the film and automatically adjusts the printing speed to correspond to the film speed.

The film passes over a series of rollers and dancer bars at the top of the machine, and these plus an air bladder in the film spindle maintain the proper back pressure on the film as it moves continuously through the machine. The film passes around a forming tube on the front of the unit, and a continuous hot band sealer moving in a loop between two ceramic rollers produces the vertical overlap seal. Cookies drop

intermittently through the forming tube into the continuously moving formed tube of film as it leaves the vertical forming section.

An EPI labeler applies a small pressure-sensitive label over the vertical seam of the bag at the midpoint of the puller belts. This label provides resealing capability after the bag has been opened by a consumer. This is accomplished by partially removing the label, folding the open top of the bag down and then sticking the label over the fold to hold it in place. Details of the labeler operation are described in the accompanying sidebar.

Next, the film passes through the servo-drive-controlled sealing jaws, which move in a D-configuration. The jaws move in against the film and induction-heat a horizontal seal across the film. The jaws move downward with the film for the required time to create the seal and then move away from the film and reciprocate up to start the next sealing cycle. At the end of each sealing cycle before the jaws disengage, an air-actuated blade shoots out from the center of the jaws and cuts the bag loose. Proprietary Rovema technology then creates a flat bottom on the bag, after which it drops onto the takeaway conveyor.

A sensor mounted on the film carriage detects the eyemark on the film and initiates the start of each cycle. It compensates for any slight changes in the film length and ensures that the film for each bag will always be in perfect registration. This system basically tells the horizontal sealer and cutoff knife when to energize and tells the code dater when to operate. The machine is controlled by an Allen-Bradley Slick 500 programmable logic controller and incorporates three A-B 1394 servo drives that operate the vertical sealer, the left and right pulling belts, and the seal jaws/knife assembly, respectively.

"Our operators really like the machine because it's so easy to start and operate. We can incorporate up to twenty-five different recipes into the computer, and the operator can select the package he wants to run from the on-screen menu by touching the screen," says Law. The computer automatically sets the operating

parameters, including the sealer temperatures, and the servo drives that, among other things, set bag lengths and move the label application vertically to accommodate the different bag lengths. Additional touches of the screen display settings currently in use, causes of operating problems, and maintenance requirements.

Bags on the discharge conveyor pass through a Lock Metalcheck 9 metal detector and are then hand-packed into corrugated shippers. Full boxes pass through a Loveshaw Little David top and bottom taper and are then hand-palletized.

More information is available:

**Vertical form/fill/seal machine:** Rovema Packaging Machines L.P., 770/513-9604.

**Weighing System:** Yamato Corp, Dataweigh® Div., 262/236-0000.

**Metal detectors:** Lock Inspection, Inc., 978/343-3716.

**Film:** Worldpack, Inc., 714/670-1661.

**Inkjet printer:** Markem Corp., 603/352-1130.

**Labeler:** EPI Labelers, 800/755-8344.

**PLC, servo drives:** Allen-Bradley, 414/382-2000.

**Taper:** Loveshaw Corp., 800/572-3434.

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