



LABELING, CODING & MARKING

PART 2

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WELCOME TO OUR SEPTEMBER 2016 eBook

ON THE LABELING, CODING & MARKING SEGMENT

Welcome to our second eBook this year on the vast topic of labeling, coding and marking. In this edition, we share more examples of cutting-edge coding and marking technology that is helping packagers keep their products safe for consumers. We also cover some hot labeling topics like shrink sleeve for craft beer and pallet labeling challenges. Scroll through this eBook to learn more about these important packaging machines.

Again, we reached out to other BNP Media brands like *Flexible Packaging* and *Beverage Packaging* to gather a larger view of the industry and to provide you with more diverse content. So turn the page and enjoy. **PS**

Best,



ELISABETH CUNEO
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SHRINK-SLEEVE LABELING

SHRINK-SLEEVE LABELING MASTERS A NEW MARKET

Aviator Brewing implements flexible shrink-sleeve can labeling for seasonal craft beer.

by **BOB WILLIAMS**, VP sales & marketing, Axon Corp.

As the demand for beer grows, the industry has experienced phenomenal growth. According to the Brewers Association (brewersassociation.org), there were a total of 4,144 breweries of all types and sizes in 2015 – an increase over 3,464 in 2014 and surpassing the historic high of 4,131 in 1873. The association also found that craft brewing added \$55.7 billion to the U.S. economy in 2014, including 424,000 jobs. (This accounting includes the impact of craft beer from brewery to wholesaler to retailer plus the totals from food and merchandise sold at brew pub restaurants.)

Aviator Brewing Company’s standard and seasonal craft beers have soared, along with the increasing popularity of beer. When the company was founded in Fuquay Varina, NC in 2008, it brewed 600 gallons of beer in two dairy



Since seasonal beers and limited runs are small quantities, printed cans are not an economical option. Instead, the company uses shrink-sleeve labeling over the cans.

tanks in an airplane hangar. Since then the company has expanded its facilities, implemented state-of-the-art technology and developed a broad product offering. During six

years of operation, Aviator has produced 1.2 million cans (1,125,000 gallons) of beer.

Today, the company operates a 22,000-square-foot brewery, the Aviator SmokeHouse BBQ Restaurant and the Aviator Tap House, located in Fuquay Varina. The company produces core brands, including Devils Tramping Ground Tripel, Hogwild India Pale, Madbeach American Wheat, Hot Rod Red, Blackmamba Oatmeal Stout and Steamhead California Common. It also produces spring, summer, fall and winter seasonal beers, as well as 10 flavors of its Hangar Series that are brewed occasionally.

MAKING THE MOVE TO CANS

The number of craft breweries packaging beer in cans instead of bottles has more than doubled since 2012, reports the Beer Institute (beerinstitute.org). While the shelf life of bottled beer is two months because exposure to light compromises product quality, cans offer four to six months of shelf life because no light or air enters a sealed can. Additionally, glass bottles are heavier than cans and more costly to ship. Aluminum cans are almost universally recycled in the U.S., making them an environmentally friendly packaging option.

“Before we moved to cans our business was about 70%

on-premise consumption in tap rooms and restaurants,” Aviator Brewing’s CFO Buddy Everhart reports. “As part of our business growth strategy we are targeting off-premise consumption so our products are available in grocery and convenience stores. Moving into the off-premise market was the key to our growth and expansion as we moved into Georgia, Florida, Alabama, North and South Carolina, and portions of Virginia.”

Aviator Brewing’s core brand products are packaged in printed cans because the products are produced in volume. Since seasonal beers and limited runs are small quantities, printed cans are not an economical option for two reasons. First, manufacturers require large minimum orders, and second, because the brewery does not have the space to store unused cans.

INCREASING PRODUCTION FLEXIBILITY

To accommodate the need for production flexibility for its seasonal and limited-run craft beers, Aviator Brewing bought a used Axon (axoncorp.com), powered by Pro Mach, EZ-100 shrink-sleeve applicator. The applicator enables the company to buy 12-ounce blank cans and apply shrink-sleeve labels to the desired quantities of each type of beer.

“Last year we ran 60,000 labels for 18 SKUs,” Everhart explains. “This year we expect to run about 180,000 labels for our seasonal Pumpkinbeast beer alone. Since our other seasonal beers, including Saison De Aviator, Double Ugly Rye Pale Ale, Oktoberbeast and Frostnipper are also gaining in popularity, we anticipate a significant increase in the total number of labels.”

The company uses PVC shrink-sleeve labels because they provide a vibrant look to the labels’ unique, bold 360-degree graphics. Unlike adhesive labels, the moisture-rich brewery environment does not adversely affect them so they retain their vivid colors.

The EZ-100 shrink-sleeve applicator’s electro-pneumatic film control system enables quick and easy changeover to different container sizes without expensive or time consuming tooling changes. Although Aviator usually uses 12-ounce cans, when a customer wanted a short run of 16-ounce cans, line personnel were able to make adjustments to the machine in about 30 minutes.

THE CANNING LINES

A feeding mechanism supplies the cans to a conveyor that delivers them to the Axon EZ-100 applicator. There,



- >> Labels are applied at a rate of between 40 to 45 cans per minute. After the labels have been applied, the cans travel through an electric heat tunnel where the PVC labels shrink to the outside dimensions of the can.

the labels are applied at a rate of between 40-45 cans per minute. With its stepper drive film feed system and guillotine knife system, the Axon machine provides precise and repeatable film cut lengths, ensuring that the label shrinks within the specifications. Aviator Brewing worked with Image Press, who supplied the high quality labels that met its stringent specifications.

After the labels have been applied, the cans travel through an electric heat tunnel where the PVC labels shrink to the outside dimensions of the can. At the end of the tunnel they arrive at an off-feed table where operators stack and layer cans. Once five rows are filled, the cans are moved to a Cask Brewing Systems (cask.com) automated canning line. The first stop at the Cask line is the automatic depalletizer. The depalletizer feeds the cans through a twist rinse operation to ensure the cans are clean. They then go into the purge station where carbon dioxide is injected to remove air. Next, the cans move to the automated filler. A lid is then dropped on the cans and they go to a seaming table where they are automatically seamed and sealed. Once sealed, the cans are conveyed to a six-pack applicator. The six-packs come off the line and are placed in a cardboard tray in case quantities of 24 six-packs.

“Axon’s EZ-100 gives us the flexibility we need to label our seasonal and limited run craft beers economically. It has given us a cost effective way to produce smaller quantities of our products until market demand reaches a volume where it becomes feasible to use printed cans. And, the incredible, vibrant graphics of these labels makes our products stand out. It is a great solution for a craft beer organization looking to expand,” says Everhart. **PS**

To see a video of this technology in action, go to packagingstrategies.com/AviationVideo

Bob Williams is the vice president and general manager at Axon Corp. During his 20-year career in the packaging industry Williams has held senior-level management and sales and marketing positions with such firms as Triangle Packaging Machinery Company, SWF Companies and GD Package Machinery Inc. Williams, a graduate of the United States Military Academy, West Point, holds a Bachelor of Science Degree in Engineering.



CHALLENGING SUBSTRATES? TRY HP THERMAL INKJET TECHNOLOGY

“Product coding and marking is critical to nearly every segment of the packaging supply chain. Consumer packaged goods (CPG) companies and brands need to ensure that text, logos and barcodes will remain intact after printing,” says Annette Friskopp, vice president and general manager, Specialty Printing Systems, HP Inc. “Original equipment manufacturers (OEMs) continually turn to HP for reliable, high-quality coding and marking solutions to meet strict CPG and brand standards.

The release of the HP2580 ink in the newly developed HP Thermal Inkjet solvent cartridge and HP Bulk Solvent





Ink System has set a new threshold for what you can do with HP Thermal Inkjet technology to address your product coding needs, while at the same time reducing cost and operator intervention rates.

HP2580 ink is already successfully being used on PE, PET, BOPP, PVC and UV-coated substrates in food, pharma and healthcare markets, and it has opened new markets for HP Thermal Inkjet in electronics, cabling, piping and other industrial markets.

HP is listening to our Partners and continuing to improve on our products to better meet your needs. Therefore, HP is excited to announce that we have two products (B3F58A and B3F58B) each tuned for different performance characteristics to address a wider range of substrates and manufacturing environments. The B3F58A product is tuned for fast dry times on coated foil, UV varnish and aqueous

coated substrates. The B3F58A provides outstanding high resolution print quality on BOPP, LDPE and PP substrates. The B3F58B product provides proven consistent performance in vertical and horizontal printing configurations for a wide range of challenging manufacturing environments when printing on non-porous substrates.

NEW HP BULK SOLVENT SOLUTION

In order to meet the needs of high-volume printing applications, HP is extending the capabilities of our solvent portfolio to a new solvent bulk platform. HP's new robust and flexible Bulk Solvent Ink System brings the benefits of HP Thermal Inkjet (TIJ) 2.5 printhead technology to high-volume coding and marking applications. With this new system, OEMs can quickly and cost-effectively build customized bulk solutions with the confidence that comes

from using HP's proven technology. The advantages of HP Bulk Solvent Ink System are multi-fold. The innovative solvent print cartridge (patent pending) and large 400 ml ink cartridge enable a maintenance-free, high uptime production environment, with superior print quality. Furthermore, HP system components provide OEMs with design flexibility, fast time to market, and in building maintenance-free print solutions, while delivering HP's superior print quality at a low total cost of ownership.



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The end result is a complete system that meets the needs of high-volume printing where superior print quality, low cost per code and minimal user intervention are required. Single use and solvent bulk cartridges are quickly and easily replaced by operators to eliminate time-consuming and routine maintenance.

Work with a solution that's clean, easy, reliable and always on. Put the HP TIJ advantage to work for you today. Visit **HP Specialty Printing Systems** and see exactly what TIJ technology can do for you. **PS**

ACTIVE & INTELLIGENT LABELS



SMART LABELS – THE NEXT BIG THING IN PACKAGING?

Smart labels are classified as anything beyond traditional print methods that can be used to add to a product’s functionality. Such technology is becoming cheaper and smaller, making them more viable for label solutions.

by **ERIC FISH**, editor, Flexible Packaging

Earlier this year, Mary Greenwood – the director of new technology and business development, materials group, Avery Dennison (averydennison.com) – had to purchase a new washing machine for her home. After making her selection and arranging for it to be delivered, she was surprised upon the appliance’s arrival to see a small image of a smartphone on the machine. Naturally, Greenwood took her phone and held it up to the image on the machine. From there, she was prompted to download an app, which enables her to now start her washing machine from anywhere in the world. The app also allows her to access the machine’s user manual.

“Really, what (the manufacturer) wanted to do was continue to communicate with the customer,” she says.

While a washing machine sticker might not have much to do with packaging, Greenwood’s experience is a prime example of what brands are increasingly attempting to accomplish with smart label packaging – keeping in touch with the consumer beyond the store.

“There are a number of different uses for smart packaging,” says Greenwood, who defines “smart labels” as any type of label with technology that can extend the functionality and/or content of labels or packaging beyond traditional print means. “It can be NFC (near field communication) and that’s a microchip. A consumer just has to hold their phone close to the package and that brand could deliver any kind of digital content. NFC can do that, image recognition can also

NFC technology on labels can help brands communicate with the customer after purchase. >>



do that, a QR code can do that. But there are differences in those technologies.”

With NFC, for instance, usually an app isn't required for the phone. Greenwood says most phones these days include software to accommodate NFC and estimates that some 1.2 billion NFC-enabled smartphones will be shipped by 2018. Image recognition and QR codes offer the same type of data access, but usually require consumers to download an app to access it via these means. Another smart label technology

gaining momentum is sensors and microchips.

“There are a lot of time and temperature sensors and data loggers in the marketplace today,” Greenwood says. “Because of the way sensors and microchips have gotten so small, you can now incorporate that technology into something that's the size of a label or as thin as a label.

“There are so many different things that are being developed, particularly around the microchips and sensors. Someday, you could see that food companies could guarantee

freshness and quality all the way from farm to table.”

Greenwood says Avery Dennison has an increased focus on directly connecting to the consumer, an initiative that is evidenced by a recent project with natural cosmetics company Mineral Fusion. Avery Dennison’s DirectLink NFC-enabled labels were placed on Mineral Fusion’s 2015 cosmetic collection products that were delivered to Whole Foods stores. With just the swipe of a smartphone over the label, consumers were able to access video content about the products. While this particular application was with paper labels, Greenwood says that many companies are testing NFC – and other technologies such as image recognition and QR codes – to figure out the best ways to utilize it, when it comes to both paper and film labels.

“You use NFC in everyday life and don’t even know it,” she says. “If you use card access to a building, you’re using NFC. What (we’ve) been focused on is that direct connection to the consumer. How do I connect to that consumer? How do I get close to that consumer directly from my packaging? It’s a way to continue messaging after you bring the product home.”

Greenwood says it’s fair to classify smart labels as still in the “elementary phase” of development, and one big reason why is due to awareness.

“I don’t know if you remember when QR codes came out, people were going ‘what are those?’” she recalls. “The awareness is going to come – just how soon?”

“I really think it’s going to take packaging to a new level.” **PS**

MARKING & CODING

MARKING PRODUCE WITH A LASER TATTOO

From Packaging Strategies News

Tattoos are in, but did you know that in Europe, fresh produce carries “ink” as well?

It’s not really ink, but items from fruit to nuts are getting tracked with a permanent laser tattoo-like label instead of paper. Since getting approval from the European Union in 2013, a company called Laser Food has been using its technology with customers in Spain, the U.K., France, Italy and Poland.

The Laser Mark is a barely visible mark applied to the outer surface of a piece of fruit or vegetable. It is applied at the packing facility by machines sold by Laser Food, based near Valencia, Spain.

According to Stephane Merit, international sales manager, the mark is etched right on the food either individually or in tray by a low-energy CO2 laser. The mark made by the light is so faint that Laser Food invented a contrast enhancer liq-

uid that is sprayed on it to make it visible. “This liquid is a foodstuff and is totally tasteless and odorless,” says Merit.

The mark contains any information the packer wants – a logo, a brand name, a PLU number, a picture or a traceability code. The original idea that gave birth to Laser Mark was the need for a permanent identifier.

“Our technology means that traceability by the piece is now possible until the fruit is in the consumer’s plate,” Merit says. “This allows greater safety both for the consumer who now can know all the information – such as guarantee of origin, variety, picked date – and for the producer who can now protect his production.”

Merit said the etched label is more functional than a paper one because it doesn’t get lost, it doesn’t contribute to waste, and it offers enhanced marketing. For instance, the retailer can use Laser Mark to put a holiday logo on its oranges.

Retailer Marks & Spencer in the U.K. is running a trial of Laser Mark on its citrus and in Spain, Carrefour is using it on watermelons. They are also being used by a melon producer in France, and a dried fruit packer and exporter in Italy who marks walnuts at the rate of 56 pieces per second.

There are no customers yet in the U.S. but there is interest, Merit says. “Little by little we are preparing our entry to the U.S. market as it among those with the greatest potential for growth.” **PS**

“Our technology means that traceability by the piece is now possible until the fruit is in the consumer’s plate.”



TOP REASON MANUFACTURERS ARE CHOOSING ALL-ELECTRIC LABELERS

Plant managers and maintenance managers alike are abandoning pneumatically driven label applicators in favor of all-electric label applicators for one BIG reason – **dirty air lines.**

Unpredictable, unfiltered air supplies disrupt the efficiency and performance of air supported tools and machinery, especially label applicators. Water, oil and particulate matter are hard on label applicators, hindering the performance and reliability of the tamp pad suction and the actuator arm – the key functionality of any automated labeling machine.

Although clogged air is the number one reason for choosing all-electric solutions, there are a number of other benefits to choosing all-electric options that pneumatic air



label applicators just can't match. Diagraph, the leading manufacturer of all-electric labelers in the marking and coding industry, carefully designed its industrial grade automated labelers to resolve the challenges inherent with pneumatic air machines and develop performance benefits only made possible through an all-electric design.

Walking away from pneumatic air and selecting a Diagraph all-electric labeling solution allows you to reach your labeling operation's full potential:

- **Precision label handling** across the entirety of the pad throughout transit.
 - Superior suction made possible by larger vacuum passages prevents the routine clogging experienced with pneumatic labelers in real-world manufacturing environments.
 - Smart auto-retract sensors combined with a digital delay setting allow for superior control of impact force and maximum label adhesion upon contact.



- **Electric SERVO motors** and **smart auto-retract sensors** combine to achieve more precise movements, automatically compensating for changes in box sizes and distances without needing adjustments.
 - Fewer interventions means more uptime.
 - No need to compromise on **line speeds**.
 - No need to compromise on **label sizes**.
 - **Portable!** No need for an air line means you can plug in and run the label applicator anywhere.
- **Saves on energy consumption** and **saves money!** All-electric labelers cost up to 50-90% less to run when compared to pneumatically driven systems.

LEADING THE WAY WITH DARING INNOVATION

With more than 120 years in the marking and coding industry, Diagraph has a rich history of providing highly durable and reliable labeling and inkjet solutions that excel in the most demanding of manufacturing environments. After investing years in designing and manufacturing pneumatic labeling machines to consistently reach peak performance, the engineering and innovation team at Diagraph was faced with a critical

decision – to stay with the safe and limited ability of pneumatic technology or set out in pursuit of a solution that will help customers breakthrough the barriers of pneumatic solutions in order to fully maximize their labeling operations.

There is a reason not many labeling system manufacturers excel at offering a truly all-electric solution: most rely on pneumatic assists to run their “electric” machines. Achieving a fully all-electric design is not easy. It requires hard work, unwavering commitment and the full embrace of risk. After years of designing, testing, rede-



signing and optimizing all-electric systems, Diagraph was the first to offer all-electric labeling solutions to handle all modes of label application including tamp, swing and tamp-blow. The result is a robust lineup of automated labeling solutions that offer benefits only found in all-electric systems that don't compromise on labels sizes or performance.

Thousands of Diagraph All-Electric Labeling Systems are utilized in manufacturing plants around the world. When you think of all-electric labeling solutions, think of Diagraph. **PS**

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The Diagraph IJ4000 is designed to consistently print high resolution images on porous surfaces in the most challenging of industrial environments. The system's enhanced printhead design delivers sharper, high resolution barcodes, logos, graphics and alphanumerics for superior legibility and 35% greater scanner recognition.

The unique centralized ink delivery system design simplifies fluid level monitoring by allowing a single Diagraph IJ4000 system to drive up to four printheads -- ideal for manufacturers required to print on all four sides of a case.

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MARKING & CODING

DNA ON PACKAGES TRACES THEIR MOVEMENTS

From Packaging Strategies News

In an era when plastic is made from trees and even air, it should be no surprise that a company developed a packaging and content security system based on plant DNA. Applied DNA Sciences (ADNAS) is successfully deploying deoxyribonucleic acid to not only fight the serious problem of product counterfeiting but to trace packages as they move around the world.

ADNAS uses its SigNature DNA to mark primary, secondary and tertiary packaging as well as products with an unbreakable code that can't be counterfeited. Swabs pick up the codes on materials and are then sent to an ADNAS lab for verification.

“We have literally hundreds of millions of codes out there because of its wide use in the packaging industry,” says spokesman Mike Messemer. “It’s never been reverse-engineered.”

ADNAS works with a number of industries, but focuses on pharmaceutical because of the widespread counterfeiting

of drugs worldwide, says Mitchell Miller, ADNAS director of communications. He says others using the systems include agrochemical, food, beverage, textiles and publishing although he declined to discuss specific customers.

The breadth of potential markets is such that remaining focused is a major challenge, says Messemer. Attaching the security codes DNA to packaging is particularly useful because it can be included in inks or varnishes at various stages of the process.

The company also is working with Pillar Technologies to find ways of integrating DNA coding into packaging closures, seals and other coatings. Nissha Printing Co. Ltd., a large printer in Japan, has implemented a food source tracking product and service using ADNAS technology. Miller said SigNature remains effective as long as the product exists.

Then there is the law enforcement aspect, something that almost always comes to mind when people think about DNA.

Messemer says authorities in the United Kingdom and Sweden use its DNA coding to protect cash transfers between financial institutions. The SigNature DNA and dies are inculcated into money strong boxes. If a box is opened inappropriately, or even in the wrong location, the box – and the die pack – explodes, spewing the codes all over the money and the criminals who stole it.

Because DNA evidence is considered conclusive in most legal jurisdictions, the ADNAS security system has resulted in 88 criminal convictions in the U.K., a 100% success rate.

SigNature DNA is broadly competitive with TruTag Tech-

nologies’ process of embedding coded silicon particles in packaging and products, said Miller. In that technology, products are scanned by proprietary hardware to obtain information programmed into the particles. Other tracking solutions rely on bar codes or QR codes printed on packaging or labels. Those, however, are less secure than any embedded solution.

Messemer says SigNature DNA had been tested for more than a year by U.S. Defense Department teams that specialize in “hacking” security systems of all kinds. “They couldn’t do it,” he says, noting ADNAS has several contracts with the military. **PS**

MARKING & CODING



THE FUTURE OF HEALTHCARE PROCESSES AND PACKAGING

New efforts in place ensure proper track & trace and authentication.

by **LIZ CUNEO**, editor in chief

Never is safety and integrity of a product more necessary than when talking about pharmaceutical products. The wrong dose, the wrong medicine or a counterfeit product can lead to expensive recalls or even have deadly outcomes. Luckily, the industry is tightening up on processes and packaging to ensure that these types of incidences occur less and less.

According to the report, “Anti-Counterfeiting Packaging Market by Technology (Authentication & Anti-Tampering, and Track & Trace), by Application (Food & Beverage, Pharmaceuticals, and Others) – Global Trends & Forecast to 2019,” by MarketsandMarkets (marketsandmarkets.com), the global anti-tampering, authentication and anti-counter-

feit packaging market is projected to grow at a Compound Annual Growth Rate (CAGR) of 14.1% between 2014 and 2019. Authentication technologies are projected to grow at the highest CAGR of 16.3%, because of the increasing awareness about counterfeit products.

Anti-counterfeit technologies (such as holograms, inks and dyes, and watermarks) are used to curtail the use of counterfeit products in the food and pharmaceutical markets among numerous other sectors. According to the report, North America was identified as the largest market supporting anti-counterfeit, anti-tampering and authentication technologies in 2014, followed by Europe.

Track & trace technologies, like RFID and bar codes, are

critical to authenticating pharmaceutical products. Barcodes are used in numerous applications globally and account for over 60% of the track & trace technologies market in 2013. RFID is projected to grow at a CAGR of more than 20%, to reach \$35.2 billion by 2019. There are more measures in place than ever before to stop counterfeit drugs from making their way to consumers.

PRESCRIPTION DRUG PACKAGING

According to GSI's website, counterfeit drugs have become an increasingly global threat over the last few decades and more and more regulatory authorities, including Argentina, Brazil, India, South Korea, Saudi Arabia and the EU, have adopted or will adopt requirements for the use of globally unique drug identifiers and serialization in order to protect the supply chain.

In the U.S. for example, the Drug Quality and Security Act (DQSA) was signed into law on November 27, 2013, to ensure that a consistent, standardized approach is taken by



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◀◀ Here is just an example of serialization-ready materials to place track & trace data onto pharmaceutical products.

the pharmaceutical industry to tackle counterfeiting, theft and diversion, and to share critical information across the supply chain. It outlines critical steps to build an electronic, interoperable system for identification and traceability of prescription drugs as they are distributed in the U.S. The new law supersedes any state's requirements. The requirements are designed to become effective over time and are split into three main phases:

- **April 2015:** paper or electronic chain of ownership. Manufacturers, wholesaler drug distributors, repackagers, and many dispensers (primarily pharmacies beginning 1 July 2015) in the drug supply chain will provide information about a drug and who handled it each time it is sold in the U.S. market
- **November 2017:** item serialization
- **November 2023:** full track & trace down to item level

This new system will enable verification of the legitimacy of the drug product identifier down to the item level, enhance detection and notification of illegitimate products in the drug supply chain and facilitate more efficient recalls – a win-win-win for packagers, pharmacists and patients alike.

The FDA's decision to require prescription drugs be traceable throughout the supply chain is spurring the development of product identifiers. Product identifiers, which are an FDA requirement, on each prescription drug package hold valuable information that tells doctors, pharmacists and end-users its chain of custody. This identifier can be in the form of a data matrix code containing key information such as standardized numerical identifier, lot number and expiration date, and must be readable to the human eye, as well as a machine. Product identifiers will be mandated on all pharmaceutical packaging starting November 27, 2017.

So what does this mean for packaging? The short answer, everything. According to Siobhan O'Bara, senior vice president of Industry Engagement for GS1 U.S., it all starts with the packaging.

“The packaging has the capability to show everything there is to know about the product and where it has been throughout the supply chain. It must clearly and consistently

display the proper information for authentication and track and track efforts to succeed,” states O'Bara.

MEDICAL DEVICE PACKAGING

It isn't just pharmaceuticals that are requiring strict labeling. September 24, 2014, marked the start of the FDA requiring all medical devices, starting with Class 3 devices, be labeled with a unique device identifier (UDI). UDIs contain imperative information about the device (version, model, etc.), as well as the production (lot batch, serial number, expiration date and date of manufacture) and must be readable to the human eye and machine readable. GS1 was named a UDI issuing agency in 2013.

O'Bara says that many drugs and devices are made outside of the U.S., further emphasizing the needs for traceability and authentication. The goal of GS1 and proper labeling is to improve the information on hand about the product and its journey through the supply chain.

The industry, through the GS1 Healthcare U.S. Initiative, is collaborating to create a global standard for the flow of information with the ultimate goal of patient safety. Product identifiers and UDIs simply put, offer that information in a globally recognized format. Machine readable data ma-

trix codes provide all of this with no room for human error such as jotting down the wrong number, the wrong date, or missing something altogether.

A set of standards is critical for tracing, as well as assisting with recalls. Without this data, it is nearly impossible to pinpoint where the product failed across the chain. It is also difficult to pinpoint which providers are using this recalled product. These global data standards will change this, saving manufacturers and packagers money along the way, while improving patient safety.

IT'S ALL ABOUT THE PACKAGE

Features within the packaging can help with anti-counterfeiting and track & trace efforts, as long as we know what to look for.

“Packaging allows for inclusion of multiple layers of anti-counterfeiting features both covert and overt. Some features are intended to allow investigators to determine whether a package is real (primarily covert features) and some can aid pharmacists, doctors and patients in determining if the

package they have is legitimate (mostly overt features). The challenge is and will continue to be teaching the public what those overt features are and how to recognize them,” says Walter Berghahn, executive director, Healthcare Compliance Packaging Council.

According to the GS1 website, healthcare is by nature a global sector, with supply chains that often cross borders. A global standardized system for traceability, from product manufacture to patient treatment, is imperative to comply with the increasing legal requirements for product traceability around the world. In cases of cross-border trading, a global trade item number (GTIN) can be used to identify that product in any country without any restrictions or errors.

With new authenticating and track & trace elements in place for the healthcare market, and new items planned for the next few years, supply chains are tightening up their processes for less error. The more knowledge the public has and more checkpoints in place for packagers and pharmacists alike, the better off all parties involved will be. The ultimate goal is a safer future and that future is now. **PS**



SHORT-RUN LABELS MADE SIMPLE

Snack manufacturer increases responsiveness and lowers costs printing labels in-house.

Glenoaks Food Inc. manufactures more than 90 brands of beef, ostrich, turkey, buffalo and venison jerky for sale throughout North America. This innovative company is now using two Colordyne Technologies 1600 Series C printers to produce sharp, crisp and accurate labels for its hundreds of SKUs.

“The problem we’ve historically had with having more than 600 SKUs is that many of them have full art digital color labels we have to run that are always unique to the customers,” says John J.W. Fallon III, president of Glenoaks Food Inc. “We have so many private label customers that we had to find an effective way to accommodate them on short and long runs.”

Fallon has been witness to the food manufacturing industry reinventing itself in recent years as brands look to

create a more personal connection with their consumers. One way to accomplish that is through personalization of their labels. Digital printing offers brand owners like Fallon the flexibility in their printing to better accommodate short runs, enabling personalized communication with its customer base.

Take for example how Glenoaks labels jerky for a chain of microbreweries. Fallon says short runs of 1,000 labels are often divided among eight specific brands for the microbreweries – all made possible thanks to digital printing.

“The brand-specific labels can’t be printed conventionally because they’d have to buy all of those plates, and that is not cost effective,” Fallon explains. “But now we can go into industries, such as microbreweries, and change flavors and other ele-

Taylor Buckthorpe, Director of Marketing at Colordyne Technologies stands with John J.W. Fallon III, President of Glenoaks Food. >>



ments on the labels quickly, and that’s made possible due to our Colordyne printers.”

Colordyne printers are designed to make print-on-demand more efficient, accurate and cost effective. Users discover that digital color printing allows them to reduce pre-printed inventories and waste. Colordyne inkjet printers, powered by Memjet, print full variable color up to 1600 x 1600 dpi, at speeds up to 12 inches per second. Memjet print heads use “Waterfall” technology, firing millions of ink droplets per second to produce labels of the highest image quality.

Previously, Glenoaks Food used a variety of platforms to print labels. But often that process covered several days, and responsiveness to their customers was not where Fallon wanted it to be. Fallon says he researched printers from many different manufacturers, but a common problem he found was that the ink did not set fast enough, affecting print quality and leading to needless waste.

The versatility of the 1600 Series C allows Fallon to print directly from platforms such as Adobe Photoshop, Adobe Illustrator, CorelDRAW and others.

“I can print labels from many programs,” he says. “I

send them directly to the printer; I keep libraries of the PDF files so that other people can just send them directly to the printer as well.”

The ability to quickly print labels is also helpful when new USDA regulations are mandated, often requiring changes to the fine print on the labels. By printing on demand, Fallon is able to edit copy for compliance, print new labels and have them ready for use the same day.

“Having this flexibility is very crucial to my business. When we have a regulation issue, or if a customer makes a special request, we need to respond,” says Fallon. “The reason why digital printing is better is because it’s faster, and I think it looks better. It definitely saves us a lot in labor and speeds up the whole process. It gives us control over what we’re doing. We’re very pleased with our Colordyne printers.” **PS**

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LABELING

SEVEN COMMON & COSTLY PALLET LABELING CHALLENGES

(And how you can avoid them)

by **STEVE DODS**, product manager, Diagraph, an ITW Company

Over the past 10 years manufacturers worldwide have scrambled to respond to the demands of retailers for more sophisticated product traceability. Pallet labeling plays a key role in meeting these requirements. Errors in pallet labeling can lead to entire pallets of goods being damaged or mislabeled.

Thankfully, the last 10 years have also seen significant technical advancements in Label Printer Applicator (LPA) technology to help manufacturers. Below are seven common pallet labeling challenges and insights on how to select technology to avoid costly mistakes.

PROBLEM #1: LABEL PRINTER APPLICATOR TIPS OVER

A well-designed LPA should never tip over. Such a design flaw puts the safety of workers at risk and can damage pal-

lets of goods. This happens when the labeling system exerts a force on the pallet from the extended actuator (arm) that is at a distance from the system’s center of mass. Often due to the reflective nature of shrink wrap, the labeler does not sense the pallet and continues to extend the actuator until the system tips over.

SOLUTION: The latest generation of electric printer applicators does not tip for two reasons. First, they can sense nearly all shrink and are programmed to be able to safely return the actuator to “home.” Second, some electric systems use as much as 80% less force than traditional pneumatic technologies. When comparing technologies, look for systems where both the impact and continuous force measurements are between 2 and 3 kilograms, or ~6 lbs.

PROBLEM #2: PRODUCT AND TECHNOLOGY DAMAGE DUE TO LARGE MASS ACTUATORS

Many traditional pneumatic label applicators feature large diameter steel guided rods. These heavy actuators require significantly more force to operate, which can result in greater damage to the system and pallet when errors occur. The heavy actuators are very slow to retract, making them more likely to get tangled in shrink wrap, more prone to wear and tear and more likely to have slower cycle rates.

SOLUTION: Some all-electric LPAs feature more nimble and light-weight actuators. These technologies can provide up to a 200% increase in retraction speeds, which in turn reduces opportunity for product damage and shrink wrap entanglement. Look for systems that can ensure 30 millisecond contact time (as compared to 100 to 200 millisecond contact time on traditional technologies).

PROBLEM #3: NO LABEL IS APPLIED

While there are several reasons why a pallet may not receive a label, the most common are 1) at a timed value of extension-

To ensure consistent precision label placement, be sure to identify a printer applicator that utilizes a servo motor instead of a more dated stepper motor. >>





the pallet is just out of reach or 2) the labeler only makes partial contact with the pallet and the label returns back with the actuator.

SOLUTION: Electric LPAs feature a sensor on the applicator pad that allows the system to “see” the exact impact point on the product and ensure contact is always made. Secondly, the way electric printer applicators work ensures much greater label transferability. Pneumatic systems transfer labels using high pressure vacuums in a few pinpoint locations on the applicator pad, resulting in ineffective label transferability, particularly on partial surface contacts. In contrast, electric LPAs feature uniform, low pressure across the entire applicator pad, ensuring up to 30% improved transferability.

PROBLEM #4: LABEL IS APPLIED IN WRONG LOCATION

Labels applied in the wrong location can create significant issues for manufacturers. Often a floor worker will have to get down off of his forklift truck to scan a barcode that was erroneously placed out of his reach. Significantly greater issues occur when labels are mistakenly placed entirely out of the reading window for various logistical checkpoints. This

can cause entire shipments worth of pallets to be returned to the manufacturer with added costs and delays.

SOLUTION: To ensure consistent precision label placement, be sure to identify a printer applicator that utilizes a servo motor instead of a more dated stepper motor. Servo motors are more “intelligent” and the feedback they communicate to the drive electronics allow for constantly adjusting speeds and rotational movement to ensure reliable precision placement.

PROBLEM #5: LABELS APPLIED OUT OF SEQUENCE

Some applications require two identical labels on adjacent panels to allow for scan and readability in multiple orientations. If one of the labels is not applied, a mismatched sequence can occur. That means that if pallet A is to receive two pallet A labels, and only one is applied, pallet B would receive an A label and a B label. That can cause expensive rework.

SOLUTION: Electric LPAs are able to ensure 1:1 label-to-product synchronicity. By incorporating a label presence sensor, the system “knows” if a label was not applied to a pallet and can immediately stop the process in case of an error.



PROBLEM #6: EXCESSIVE DOWNTIME

Traditional pneumatic systems often require frequent maintenance. On busy factory floors with one or more air compressors powering various technologies, it is common for debris to clog critical technologies. When this happens, technology operators often turn up the force being used to apply labels to achieve better results. Unfortunately, this leads to spiraling performance issues where increased pressure heightens the risk of product and system damage.

SOLUTION: The latest generation of all-electric LPAs requires as much as 20% less downtime and is available at prices comparable to traditional pneumatic technologies.

PROBLEM #7: A SOLUTION FOR TODAY AND TOMORROW

Customer research has revealed that customers expect their LPAs to last seven to 10 years with proper maintenance. A common mistake occurs when manufacturers plan to use their LPAs for many years but select technology that is not equipped to meet their evolving needs, such as print speeds, label sizes and energy efficiency.

SOLUTION:

- **Speeds:** When selecting LPA technology, it is essential to remember that the speed capabilities quoted on spec sheets are most often best possible outcomes for printing very simple and small labels (often just 1 inch by 1 inch). If your labels are larger or more complex these top speeds will likely not be achieved in your application. Quality pneumatic and electric systems should be able to achieve product rates of 120 per minute.
- **Label size:** Look for systems that can accommodate label sizes ranging from one inch square to six inches by 14 inches as evolving logistical requirements may require you to upgrade to larger labels in the years ahead.
- **Energy efficiency:** Pneumatic systems utilize plant air, which is an added cost to the process. Typical air compressors require routine and annual maintenance for operation. While it may not be possible to totally eliminate shop air for other equipment, the sizing of the system can be reduced by taking other equipment in the production line to electric. Typical savings per labeler is approximately 50% of a pneumatic system on power required alone.

Advancements in LPA technology, especially in all electric systems, over the past 10 years have greatly enhanced performance. Latest generation LPA technologies are nimble and smart, offering consistent precision placement at high speeds and on a variety of label sizes with greater energy efficiency. Most importantly, these systems are price competitive with older technologies still common in the market today. Carefully looking for these features will allow manufacturers to

avoid costly mistakes and ensure that their investment exceeds expectations today and in the years ahead. **PS**

Diagraph, an ITW Company, is a leading manufacturer and distributor of marking, coding and labeling systems and supplies, and has been in the product identification industry for over 120 years. Diagraph's products include all-electric printer applicator labeling systems, LINX continuous inkjet and laser coders, large character inkjet printing systems and thermal transfer overprinting systems.

MARKING & CODING

CHOOSING CODES, IMPROVING PRODUCTION

Coding equipment must keep up with production demands.

by **BARBARA HARFMANN**, *managing editor*, Beverage Industry

From high line speeds to condensation, beverage producers operate in a virtually non-stop production cycle that requires up-to-date coding equipment that simultaneously labels, identifies and tracks products – all while keeping pace with ever-changing industry needs.

Experts say that trends impacting SKU proliferation include creating smart, digital codes that improve traceability, easier automation to reduce human error and having flexible equipment to handle packaging substrates and shapes.

“Ever greater production demands means coding equipment has to keep up,” says Chirag Sheth, marketing manager for the Wood Dale, IL-based Videojet Technologies Inc. “Outdated coding technology often can’t achieve high quality codes on ultra-fast packaging lines, so beverage manufacturers are looking for smart, digital solutions to improve code



Fast-drying CIJ coding is the preferred choice for many beverage applications including bottles, plastic, aluminum cans and flexible pouches. *(Image courtesy of Videojet Technologies Inc.)*

quality and add code complexity for supply chain traceability.

“Manufacturers are also choosing codes that don’t detract from the product’s design,” he continues. “For instance, we’ve noticed a shift to more water bottles being marked with lasers instead of inkjet as some manufacturers prefer the ‘clean’ look of laser codes.”

Lightweight packaging and a focus on plastic substrates also is impacting coding technology, according to George Allen, business development manager for the Gurnee, IL-based Domino Amjet.

“As packaging gets lighter and thinner, it has become imperative that coding technologies are designed to not penetrate the substrate, while ensuring a proper code adheres for longevity with inks, or marks where laser is used,” Allen says.

Beverage production lines today are diverse and include glass and plastic bottles, aluminum cans, flexible pouches, caps, lids, paperboards and ultra-light PET containers. Plastic shrink-wrapping, boxes and trays typically require marking and coding solutions as well. Coding technology options of these products usually feature Continuous Inkjet (CIJ), Thermal Inkjet (TIJ) systems or Laser Marking systems, experts say.

Experts also say that the type of coding used on beverages, secondary or tertiary applications depends on the sub-

strate. Laser marking systems deliver high resolution, permanent, non-ink-based printing codes on glass and plastic bottles, cartons, lids, caps, boxes and trays, while fast-drying CIJ meets the needs of many beverage applications including bottles, plastic, aluminum cans and flexible pouches.

Videojet’s Sheth says that lasers work best when using plastics or ultra-lightweight PET containers. “To prevent burn-through on ultra-lightweight PET containers, Videojet introduced a novel modification for its laser coders. A specialized laser tube creates a beam with a wavelength of 9.3µm rather than the conventional 10.6µm, to help avoid deep engraving of the plastic surface,” he says.

“Over the past several years, laser has become more prominent in requests, but it depends on the product,” Allen says. “For example, cans and shrink wrapping are best suited for ink jet, while glass bottles favor laser coding.”

Laser coding is the ideal choice when beverage manufacturers require a permanent code, Sheth adds. “Lasers also offer clear, crisp codes with virtually no font, code or graphic restrictions,” he says.

Domino’s lasers are designed to produce high-quality codes even on the highest speed PET and labeling lines, according to Allen. “The i-Tech scan head, combined with

unique mirror beam control and optimized cooling, ensures no limitations on performance in any production environment,” he says. “Our Domino D-Series Laser technology can provide industry-leading code quality even at line speeds over 70,000 bottles per hour.”

And when it’s time to pack cartons and cases, Allen recommends the Domino C-Series outer case coding technology because of its versatility to print on most cartons and cases. “It can code up one million cases per ink bottle, while our thermal ink jet, the G-Series, delivers high-resolution small text, graphics and bar codes.”

“Videojet has a range of CIJ systems to print on bottles, cans and other beverage containers either before or after filling,” Sheth says. “We offer specially formulated inks to penetrate surface moisture and help ensure clear codes. We also use yellow and white pigmented inks to provide good contrast on bottles when the beverage is dark.”

CODING CONTROL

Both Domino and Videojet are helping customers with more automated methods of job selection, like barcode scanning, to reduce the chance of human error – many times at the touch of a button.

“Domino’s coding technology has been designed to work with all substrates, and our coding automation solutions allow for easy management of the SKU proliferation at the touch of a button,” Allen says. “We ensure compatibility and seamless integration of our equipment, and supply many of the leading global beverage manufacturers including Tetra Pak, Sidel and Kronos.”

SUPPLY CHAIN COMPLIANCE

When it comes to solutions for coding on cases and trays, Videojet’s Sheth suggests that labelers and case coding systems be integrated on the conveyer after the sealed case or tray has been discharged. “The type and amount of information printed on cases determines which coding solution is ideal,” he says.

Labeling large pallets also requires coding equipment that is flexible and easy to operate. Domino’s Allen recommends the M-Series premium pallet labeler. He says, “It offers a unique modular design with left- and right-hand options for easier integration and operation, along with the reassurance of premium code quality pallet label printing with GS1 coding capability for supply chain compliance.”

In addition to engineering equipment that keeps up with elevated line speeds, Videojet Technologies offers easy-to-

use interfaces designed to simplify the operator's choices and reduce errors.

Sheth says, "Our Code Assurance solutions can help simplify operator-to-printer interaction, and better equip operators to achieve the right code on the right product. These solutions also help manufacturers manage an increasing number of codes by using flexible, rules-based coding and network communication.

"Beverage manufacturers are looking to print lot and batch codes, and even supplier-specific information, to allow for quick identification as the product moves through the supply chain," he continues. "They are also putting more barcodes on trays and cases with tracking and production information."

ON THE HORIZON

As beverage manufacturers seek to engage customers with gaming and promotional giveaways, inkjet codes need to be printed on the underside of caps. This requires precision, Sheth

says. "The printers need to be well positioned in order to handle the information flow between the manufacturer's Enterprise Resource Planning (ERP) system and the printer," he says.

As demand grows in the beverage community, packaging equipment must continue to innovate and produce. For example, there are more requests to print onto overwrap film materials, which requires thermal transfer overprinting to handle high integrity coding, Domino's Allen says.

New packaging substrates and manufacturers' throughput requirements also will continue to drive new coding technology, according to Videojet's Sheth.

Communication will continue to be crucial, he says.

"We're constantly talking to our customers and studying the marketplace to discover packaging trends and production challenges. We're also keeping an eye on new regulations with specific requirements for code content, clarity, size and placement," concludes Sheth. "We want to be one of the technology's leaders." **PS**

PACKAGING STRATEGIES

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