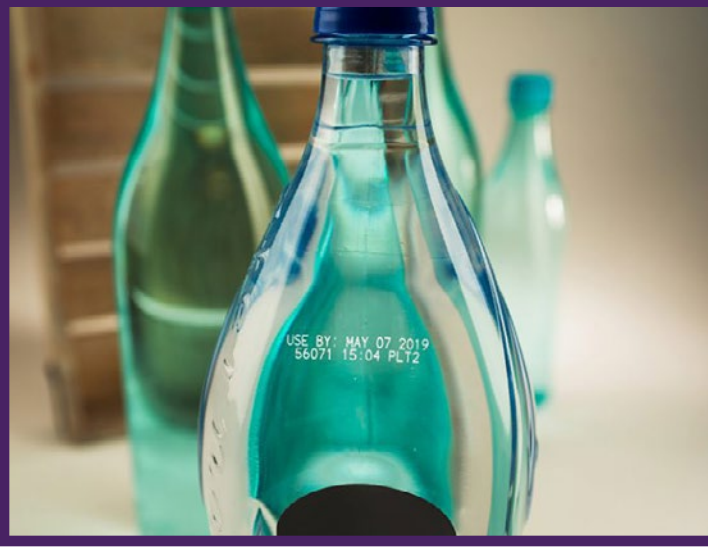
eBOOK

Packaging TECHNOLOGY TODAY

Labeling, Coding & Marking Solutions for Packaging



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Ecommerce in Times of Crisis:

Improving Safety and Efficiency with Cloud-based Labeling

By Lee Patty, Contributor

After a cloud-based labeling system is applied, labels can be centrally controlled, changed and updated; deployed via a browser; and accessed from any location.

Ecommerce, which drove over **$365 billion in 2019**, faces enormous demand. When disaster strikes, it also becomes a critical lifeline for consumers who can't access or purchase the items they need from brick-and-mortar stores. During these times, more than ever, it's vital to ensure supply chain business continuity under all conditions—and this requires the right tools to move inventory and ship products as quickly as possible to those who need them.

For label creation and management, this means stepping away from legacy systems and manual processes and adopting cloud-based solutions that optimize processes, enable efficiencies and ensure any applicable regulations are met. Most importantly, in times of crisis, engineers do not have to come onsite to deploy or configure your label-management system, and any authorized remote user with the right access can quickly alter and print labels that are centrally stored.

Once all the processes and information required to produce and maintain labels are centralized in the cloud, companies can maintain operations remotely and deliver products faster, with fewer errors and less resources.

Benefits & Drivers to Cloud-Based Label Management

After a cloud-based label-management system is applied, labels can be centrally controlled, changed and updated; deployed via a browser; and accessed from any location. This encourages improved supply chain collaboration, enhanced agility and quality, and reduced costs.

Improved collaboration from any location: Cloud-based label management enables more collaboration with business partners. Labels are easy to create, share and print through a browser interface, which encourages suppliers to use a standardized label format. Not only does this promote labeling consistency across a supply chain, it also helps prevent product counterfeiting and diversion—and enables better use of technologies, such as radio frequency identification (RFID), to automate inventory management.

Enhanced agility from a business-user friendly UX: Legacy systems can require extensive IT assistance to make new label templates or process change requests at different facilities. A more modern label-management solution can automate and digitize labeling processes, so IT staff can make label changes faster or delegate the task to empowered business users to quickly create and alter labels.

Consistent results from a central, interoperable system: Modern label-management systems can interface with a host of different label and direct-marking printers, no matter the manufacturer. This interoperability will prevent reworking of labels; discarding of mislabeled products; or large upfront costs on solutions that won't integrate with other systems. It also creates a consistent environment, especially for organizations that have locations spread across large distances.

Improved quality assurance and reduced human error: Centrally storing only one version of a template guarantees proper integration with your enterprise resource planning (ERP) or manufacturing execution system (MES). It also reduces chances for human error by introducing automation and reducing redundant tasks (like data entry) or maintaining separate templates. Additionally, product counterfeiting can be mitigated by implementing multiple levels of role-based security, so user access can be restricted in a way that only enables authorized parties to make changes to the files they need.

Clean up clutter and cut cost: Legacy labeling systems are fraught with many hidden costs. For instance, many enterprises have thousands of individual label files dispersed across numerous facilities, including redundant templates that even serve the same customer. By eliminating duplicate files, organizations cut the cost of maintaining them.

Tips for Optimal, Modern Label Management

A modern, cloud-based labeling solution provides a plethora of benefits, such as less burden and reliance on IT departments; cost savings from the digitizing of quality control; and

greater transparency across the supply chain. However, when it comes to the best labeling system, not every organization's needs fit the same mold—as every manufacturer and supplier will face their own specific challenges.

Though every organization has different needs, there are a few critical elements to look for when implementing a label-management system. Whether you need to configure and manage a system remotely to ensure business continuity or are able to work onsite, an adequate labeling solution must be able to:

Provide a central, web-based platform: A platform should be available to all your distribution centers, warehouses and major players throughout the supply chain. This streamlines operations by eliminating silos and promoting consistency.

Aim for better QA and streamlined operations: Organizations with manual, paper-based quality assurance processes have increased risk of errors; the cost of a recall due to a label error could be catastrophic. However, beyond the ROI saved from mitigating damages, the right system should not only eliminate errors and improve quality assurance, but also simultaneously save costs by improving efficiency. This is easily achieved by reducing manual processes.

Integrate with existing business systems: The world's largest brands rely on business systems, such as MES, ERP and WMS, which are constantly being updated and improved upon. The right labeling systems should easily integrate with these systems and be able to scale alongside them as updates and improvements are made. This will speed up operations and improve supply chain efficiency by preventing outdated methods of labeling, like hard-coding label templates, using paper-based QA practices and locally managing labels.

Support flexible and efficient label printing: The right system should be able to automate printing workflows, support mobile systems and be printer-agnostic. This will save on the costs of unnecessary administrative work, like changing printer settings and training operators. It will also save capital expenditures on replacing hardware and will future-proof the environment to welcome new mobile and IoT devices.

Disaster can strike at any time, but even when teams are forced to stay in their homes, businesses must continue to function. As an essential element to supply chains, the business of labeling is no different.

Improving labeling and future-proofing at the same time doesn't have to be hard. It just requires the right cloud-based, label-management system and integrating it with manufacturing, logistics and warehouse systems. If you haven't already looked into such a tool, now is the time, as the need for efficient shipping and logistics won't slow down, even if the world around us seems quiet and abandoned.

ABOUT THE AUTHOR

Lee Patty is vice president and general manager at **NiceLabel Americas**. *In this role, Lee oversees the company's sales, project delivery and operations in the Americas. Prior to NiceLabel, he co-founded Niceware International, LLC, a NiceLabel distributor, where he was responsible for marketing, healthcare product development and professional services. NiceLabel acquired Niceware in 2013, adding Lee to the global executive team.*

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Building world class labeling systems is a unique challenge, at CTM Labeling Systems — it is expected! Here in America's heartland, our Made in the USA pride sets the standard. From design and engineering through final system set-up and quality control, exceptional expertise and craftsmanship is built in at every level to create the finest labeling machines available on the market. Setting high standards is difficult, maintaining those standards is even tougher. The highest standard, that we consider our benchmark, is unsurpassed support "after the sale."

At CTM, supporting our customers before, during and after the sale is paramount. Our management team and dedicated support staffs are driven by some of the most experienced and well-respected professionals in the industry. From semi-automatic applications to the most demanding high-speed, high-accuracy labeling solutions, we understand your needs. More importantly, we understand how to convert your needs into successful production.

To maintain unparalleled quality standards, every phase of our company is housed under one roof. When raw material leaves the rack, it travels through the most automated manufacturing facility in the industry. State-of-the-art equipment incorporating precise tolerances, coupled with true craftsmen at the controls, results in an impeccable product. Our promise to you — "You won't find better quality, better service or better delivery anywhere else in the industry."

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Visit us online at **www.ctmlabelingsystems.com**. If you would like to learn more about CTM Labeling Systems, then please call Ed Schneider at 330-332-1800, extension 139.

How Packaging Providers Can Drive Efficiencies with Advances in Barcode Labeling

By Ravi Panjwani, Vice President at Brother Mobile Solutions

In today's **packaging** industry—especially as we move toward a "new normal," the demand for efficiency at all levels of production is essential. Whether it's related to packaging for perishable food, beverages, craft beer, cannabis, eCommerce, household products, pharmaceutical, medical or personal care products, printing barcodes is critical to providing seamlessness and visibility across the packing facility, **warehouse** and **loading dock**.

Barcode labeling is often considered a "low-hanging fruit" to drive operational improvement. That's because, compared with other technology investments, barcoding is relatively inexpensive; easy to implement; and can offer a quick return on investment. In addition, barcoding can help identify bottlenecks and reduce errors—and even improve communications with suppliers, logistics providers and customers.

Here are some key ways on how packaging providers can use barcoding today, along with recommendations on how an organization can choose the optimum label printers.

Adding Value: Packing Facility, Warehouse or Loading Dock

Step one in implementing barcoding is to determine the areas within the packaging operation that will create the most value for the organi-

zation. In these facilities, operations typically center around packaging machining, cartoning, case packaging, conveyors, coding and marking, palletizing, inspection and end-of-line. At many points throughout these processes, barcode labeling can easily be used to track inventory levels, supplier lot numbers, work in process, finished goods and quality inspection areas.

Barcode labeling can also add value related to areas such as compliance—in the printing of regulatory or safety warning labels. Across the facility, labeling can include the printing of asset tags for marking equipment control panels, switches or cabling. In the warehouse, key uses include printing labels for racks, shelves and bins to ensure accurate put-away locations. On the loading dock, barcode labeling can benefit areas such as printing labels on inbound goods in receiving, for put-away and inspection labels or for outbound shipping.

The Right Printer for the Right Task

Once you determine the primary areas across the packaging operation where labeling can play a role, it's critical to identify optimal label sizes and their required lifespan—or how long each label needs to remain 100% scannable. For example, printing medical or pharmaceutical labels might need to be smaller or last longer than the labels for shipping cartons of finished goods.

This information is important when selecting which of the **two types of thermal printing** technology is best for the packing application.

- **Direct thermal printers** use heat to burn text and barcodes onto thermal-sensitive paper. This printing method is widely used for generating receipts and shipping labels that are used immediately. The print technology is fast and efficient, but images are more sensitive to light, heat and abrasion—making them best suited for short-term or indoor applications. However, recent innovations in thermal media have paved the way for high-resolution, direct thermal labels that can last for extended periods before fading.
- **Thermal transfer printers** are the preferred method for labels that need to be more durable and withstand the test of time. Thermal transfer printers use ribbons and heat to melt the ink, generating high-resolution images, barcodes and text that become part of the label. The output is more durable and permanent, even when exposed to chemicals, high heat or the sun's rays. Thermal transfer printers work with standard and specialty media, available in a wide variety of paper and synthetic materials including mylar, polyester and polypropylene.

Next, estimate how many labels of each type will be needed to print on a daily, weekly or monthly basis. For departments with a high printing volume, today's advanced direct thermal and thermal transfer printers are fast, and some print up to 8in of high-resolution labels per second. That's equivalent to 40ft of labels every minute.

Performance Considerations

The printers selected should include software that provides an easy design for a wide range of barcode and text labels. They should also seamlessly integrate with and print directly from ERP, WMS or other core business software systems and should be compatible with laptops or PCs, as well as tablets and smartphones used in operations.

It is important to know the printer's standard wireless and wired connectivity options, such as Ethernet LAN, USB, Bluetooth® Wireless Technology or Wi-Fi® to best determine your printer selection. Lightweight printers with rechargeable batteries are space-savers that can move around as needed. These compact, desktop models fit easily on a desk or work bench compared to the ruggedized mobile printers that are clipped to a belt or worn with a strap by always-mobile workers. It's not unusual for companies to select a combination of mobile, desktop and handheld printer models based on their applications.

To ensure a seamless implementation, printer models should be tested for usability and be set up with intuitive controls. Also, make sure it is easy to change ribbons or load new media. This is critical, if you have high turnover or use temporary employees, so printer downtime doesn't bring productivity within the packaging operation to a halt.

Once the optimum mix of printers has been selected, it's critical to ensure they'll be up and running for the long haul. For that reason, look for models with a minimum of a two-year warranty to give you the satisfaction that these printers are built to last and backed by the manufacturer to deliver dependable performance. Today's IoT-based, mobile device-management platforms are helping to keep fleets of printers in busy facilities secure and running at peak efficiency—with less human resource.

HaaS Acquisition to Ease Budgets

As budgetary pressure is commonplace in today's ever-changing world of packaging, it's important to make sure your budget can withstand the technology that best matches your packing applications.

Fortunately, **advances in thermal printing** have narrowed the price gap between direct thermal and thermal transfer methods. Some next-generation printers now offer the best of both worlds: printers that give you the option of printing with either method, for the ultimate in versatility and cost-effectiveness.

In addition, looking for a provider that offers a Hardware-as-a-Service (HaaS) option for technology acquisition can shift acquisition costs from a capital equipment expense (CapEx) to an operating cost (OpEx)—which reduces pressure on the bottom line. With HaaS, your packaging facility can quickly deploy barcode printing across operations and take advantage of improved efficiency and performance across operations.

ABOUT THE AUTHOR:

Ravi Panjwani is the vice president at Brother Mobile Solutions

Matthews Marking Systems™

Dear Reader,

Packaging Technology Today conducted a Q&A with a leading marking & coding packaging manufacturer. Here is information on a new solution Matthews Marking is offering and hopefully you might find this information useful for your packaging operations.

What are three benefits you want readers to know about your new powerful print management platform, the VIAjet™ L-Series thermal inkjet printer?

There are three primary benefits to our L-Series thermal inkjet printer. The first is the high-speed at which it can print crisp, quality marks. The L-series prints true 600 dpi at 200 ft/min and can print at speeds up to a blistering 1,600 ft/min at 75 dpi.

The second benefit is that precision isn't sacrificed at these speeds. Quality is critical, but precise placement is too which ensures accurate product traceability and outstanding branding.

The third primary benefit to the L-Series is MPERIA, our universal controller that provides centralized control, seamless business system integration and unparalleled scalability whether adding more printers, production lines, or even plants as the business grows.

This new inkjet printer provides high print resolution at very high speeds, why is that important with this new printer?

The ability to print 600 dpi at 200 ft/min is critical in high throughput production environments for several reasons. Whether marking for track and trace, branding, or retail shelf presence, our customers want to ensure their brand integrity is maintained in the markets they compete. Markets must be served and the old adage holds true: time is money. The high native resolution of our L-Series provides unmatched marking on porous and non-porous packaging materials. Customers get 100% readable GTIN-standard 1D barcodes and 2D codes as well as high quality marking of graphics and logos. And importantly, they get this without having to slow their production line.

Can you explain a bit about the Active Bulk Ink System (ABIS)?

Our new bulk ink system reduces the cost-per-mark, waste, and saves labor on changeouts and maintenance. More primitive bulk ink systems in the industry haven't always been able to step up to the plate and deliver, but here's why this system is different. ABIS is the first bulk ink system for thermal inkjet printers that actively monitors and adapts for minor environmental changes like temperature or relative humidity. These changes can play havoc with traditional ink delivery in TIJ printers: air-bubbles in ink lines, poor fluid transfer to the printheads, and the like. The dual-supply ABIS also allows uninterrupted printing as cus-

tomers can swap ink supply units during production runs. Additionally, ABIS is connected and controlled through the MPERIA controller. This provides real-time information on system status, helpful guidance should an issue arise, and centralized control with remote access of both the L-Series and ABIS.

What do you want to CPGs to know about the Active Bulk Ink System (ABIS)? What makes it different, faster, better, more cost-efficient, etc.

ABIS delivers incredible value to our customers with medium-to-speed production lines by increasing uptime while substantially reducing their cost per mark. Inherently more efficient compared to single-use ink cartridges, ABIS keeps lines up for longer intervals. You don't have to stop the line to change the ink supply and your staff spends fewer labor hours by not having to swap out cartridges. Plus, the small installation footprint means excellent flexibility for customers facing space constraints.

You say this in the collateral "Setting a new standard in bulk ink reliability and quality", can you speak to what end users or CPGs can expect when using this new Ink System?

Customers can expect an excellent return on their investment when implementing ABIS. Cost reduction comes in the form of longer production runs with less downtime for changing cartridges and reduced ink costs driven by bulk supply. The typical downfalls of competitive bulk systems are nullified with active environmental monitoring and adaption. And ABIS handles both water-based and solvent-based inks, giving customers excellent marking on their porous and non-porous substrates.

Does this new ink system work with any print management platform or does it only work with Matthew's products?

ABIS is designed exclusively for Matthews Marking Systems' VIAjet L-Series thermal inkjet printers.

What applications did you envision this new Ink System to work on? What feedback have you received so far from those who have used it?

ABIS is perfectly suited for customers wanting to improve their marking on primary and secondary packaging. Customers frustrated with headaches from Continuous Inkjet (CIJ) systems who might have previously been wary of moving to thermal inkjet printing have an excellent option with ABIS and the L-Series. Long production runs with reduced costs and easy maintenance offer a winning trifecta. And the feedback we've received from customers has been incredibly positive. Customers appreciate how easy the system is to install, operate and maintain. They appreciate the cost savings achieved with a bulk supply and definitely like the full system visibility they get via MPERIA. Remote connectivity and monitoring has also been a plus, line operators and production management can check system functionality without being on the production floor.

Matthews Marking Systems Launches New Print & Apply Product Line

Matthews Marking Systems has just launched a new line of print and apply labeling systems to their product offering, called the MPERIA® A-Series.

The latest product line consists of 3 printer body styles: the D43, T43, and the T63:

- The D43 is the smallest system, making it easy to integrate into various production lines due to its compact footprint. It uses Direct Thermal (DT) Technology for printing which requires just one media type, simplifying use of the machine.
- The T43 uses both DT and Thermal Transfer (TTO) for printing, providing the option for short- or long-term readability for longer storage.
- Lastly, the T63 is the largest print & apply system in the line and is commonly used for pallet labeling. The T63 can print and apply labels up to 7"x9.5" in size; greater visibility on larger items like shrink-wrapped boxes on a pallet.

Print & Apply Labeler

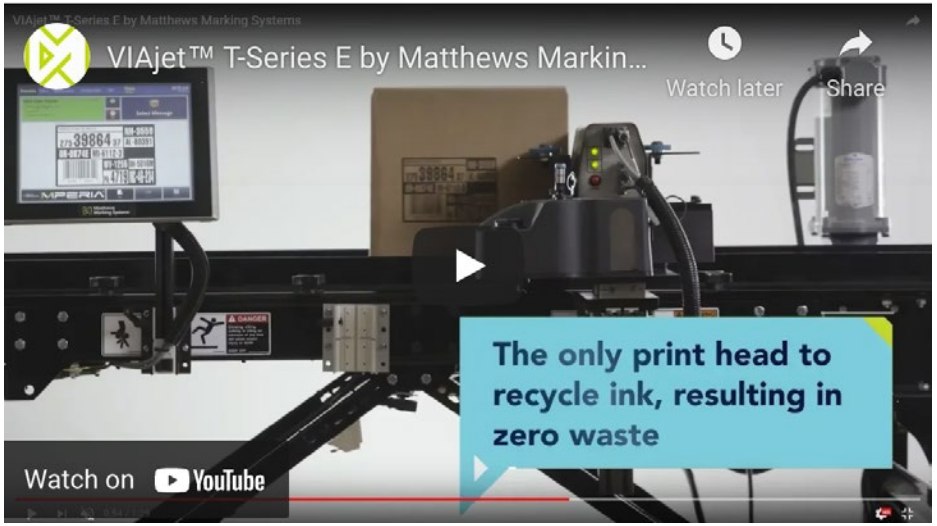
Print & Apply Labeler"The MPERIA A-Series eliminates all the complexity that surrounds traditional print and apply labeling systems," said Erik Lundberg, product manager for the A-Series. "Common tasks like changing out labels and ribbons takes less than one minute thanks to a 'one roller' design. Should the thermal printhead need to be replaced, the A-Series design allows for the head exchange to occur in less than 2 minutes with no technician or tools required."

"The A-Series is incredibly versatile by supporting nine different applicator modes," said Dean Hornsby, business development manager. "There isn't a print and apply label application that the A-Series cannot handle. The same base printer can support many adaptive applicators such as the Pneumatic Tamp, eTamp, QuickTamp, Belt, Blow, and Wipe applicator. We even have a complete Pallet Labeling turnkey system that includes label validation."

*For more information, visit **matthewsmarking.com**.*

VIAjet™ T-Series E by Matthews Marking Systems

Our high-resolution Piezo inkjet printer supports production line speeds up to 50% faster than the previous model. It is also capable of printing high-resolution messages while doubling the distance between the print head and marked surface. This cost-effective alternative to adhesive- backed paper labels and pre-printed corrugated

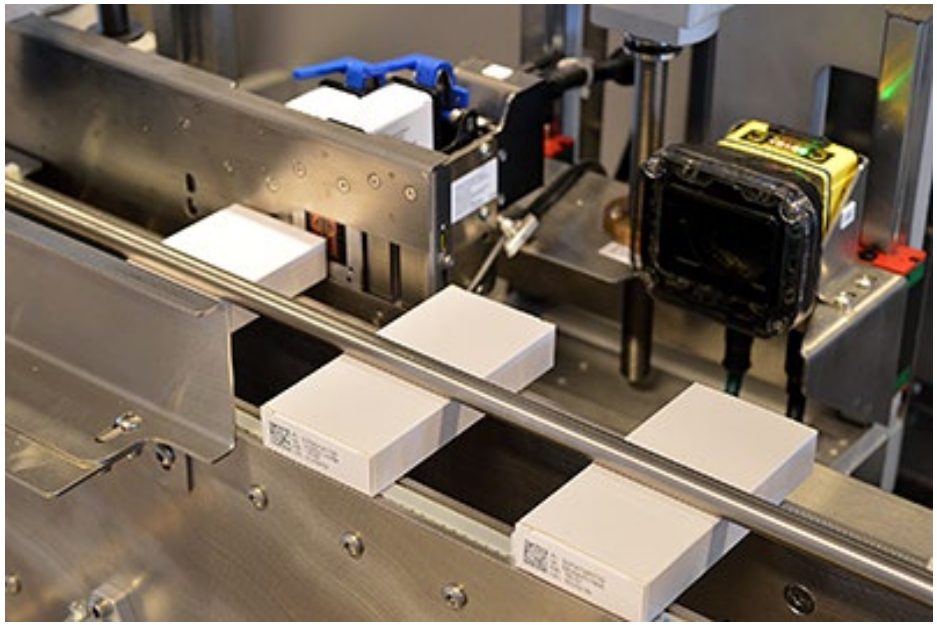


cartons delivers on-demand branding to secondary packaging lines. The T-Series E marks images, text and barcodes across blank boxes for dynamic data, serialization, custom logo placement or private labeling applications.

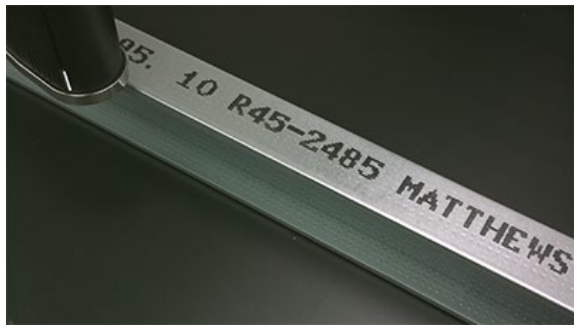
New Product Line Geared Toward OEMs : Matthews Marking Systems

Matthews Marking Systems has launched a new product line focusing on OEM customers that want to integrate marking and coding equipment into their machines. The products included in this line are an automation software controller, an enclosed Because MPERIA is the only universal controller designed to work with any print technology, OEMs can easily change the printers on the line, per their customers' needs. All products in the OEM line are more compact than standard products of the same capabilities.

The automation software controller, the MPERIA OEM Controller, is



a production line controller ideal for OEMs controlling printers while utilizing their own user interface. The MPERIA® OEM Controller is available in three individual models: Lite, Standard and Advanced; each with their own set of capabilities. All variants of the controller can be remotely managed via VNC and integrated by the end user with either XML or Command Line Protocol.



The enclosed drop-on-demand (DOD) valve jet technology driver, the V-Link OEM, controls Matthews' 8000+ valve jet printheads. The 8000+ series delivers low ink consumption with high print quality,

producing an unparalleled low cost-per-mark. The V-Link OEM is small and compact, making it easily configured into tight spaces on the production line.

The enclosed thermal inkjet (TIJ) technology driver, the L-Link, is a driver module for up to 4 of Matthews' L-Series L1 printheads. The L-1 printhead is a unique 600 DPI high-resolution cartridge-based thermal inkjet system, that has the ability to print a very high quality 12.5mm (½ inch) mark at extreme speeds of 480 m/min (1600 ft/min). These features make it the perfect match for fast, high-volume serialization applications. This small cartridge-based system provides a compact and clean solution with minimal maintenance.

For more information, visit **matthewsmarking.com**.

LS-6101 Fast-Dry, Solvent-Based Ink for Semi- and Non-Porous Materials : Matthews Marking Systems

Matthews Marking Systems, a manufacturer of marking and coding products, announced LS-6101, a fast-dry, solvent-based ink developed specifically for thermal ink jet (TIJ) print technologies in single-use cartridges.

LS-6101 provides advantages to manufacturers, including a 1-2 second dry time and excellent substrate adhesion on semi-porous materials including coated stock, ceramics and wood. LS-6101 also dries quickly on non-porous materials, such as PVC, PETE, nylon, steel and rubber. With an open time of 24-72 hours in a majority of manufacturing environments, the LS-6101boasts decreased maintenance and easier production line startup.

Utilizing a solvent-resistant bladder cartridge, the LS-6101 extends cartridge shelf life up to seven months when stored at room temperature, and up to 12 months in refrigerated storage.

"In addition to wanting to create a very user-friendly ink, operator safety was at the forefront of development. As global safety organizations continue to identify potential exposure threats to worker safety, LS-6101 was specifically formulated to limit certain organic solvents to ensure compliance with the toughest regulations," said Raymond Fortuna, technical product manager. "This development program is a prime example of how Matthews Marking strives for innovation and continued improvement in an ever-shifting regulatory environment."

The L-Series ink cartridge, which utilizes more print nozzles for a high-speed, high-resolution (up to 600 dpi) mark, meets the needs of consumer packaged goods companies looking to maintain or improve fast production speeds while enhancing mark quality. Compared to continuous ink jet (CIJ) marking, the VIAjet™ L-Series thermal ink jet print heads are a cleaner, more versatile coding method, allowing for high-resolution graphics and stitched print heads for larger marks.The VIAjet™ L-Series is controlled by the MPERIA® platform, which enables complete management of enterprise marking and coding operations.

For more information, visit **matthewsmarking.com**.

Matthews Marking Systems™

CBD Labeling and Coding

Serving as Robust Checkpoint for Other Products and Industries

By Gary Paulin and Mark Lusky

Frank Sinatra's *New York, New York* refrain "If I can make it there, I'll make it anywhere" applies aptly to label and coding challenges in the CBD/cannabis industry. Complying with ever-changing label regulations spanning multiple jurisdictions and product types can seem like a full-time job at times.

Following the types of protocols in cannabis and CBD can serve as the basis of a well-rounded best practices checklist for just about any product. What are some of those best practices?

1. Be accurate and clear. Don't make unsupportable claims. Do make ingredients and amounts easily understandable, as consumers increasingly want to know exactly what they're getting. The emerging CBD industry shows how con-

fusing and confounding it can be to consumers.

A June 2019 **article on weedmaps.com** notes: "Looking through an assortment of cannabidiol (CBD) products, you might notice certain parts of the label that jump out at you, such as a lively green hemp leaf or the word 'organic,' enticing you to give this intriguing product a try. A closer look at that label, however, might raise potential red flags about the quality or accuracy of that CBD product…it's important for consumers to understand how product labeling is regulated when it comes to CBD oil and CBD-infused products."

The article continues, "While the FDA slowly and cautiously approaches making new regulations for CBD products, the gap between regulated products and anything goes grows wider, leaving consumers at risk of buying poor-quality products."

Consumers demand transparency and quality that matches up with their expectations. Perceiving lack of either, they likely will spread the word far and wide via social media and media reports—which can turn a darling product into a dud in no time flat.

2. What's new *today* at the local, state and federal levels? Again, CBD demonstrates the importance of understanding evolving regulations everywhere. com reports: "Twelve states (and a thirteenth likely on the way in California) currently

have laws explicitly permitting hemp-derived ingredients to be added to food. However, some states and municipalities – most recently and notably New York City – prohibit the sale of CBD edibles at the retail level, requiring restaurant operators and food producers to cease sales of what had been a flourishing market."

The report continues: "In some states, restaurant operators are taking advantage of the legal void, operating on the presumption that it's ok until someone says it's not ok. And in most states, lawmakers aren't doing very much to clear up the legal situation – at least not comprehensively."

This is a wake-up call to any product manufacturer to stay aware of potential developments and changes in the regulatory environment. While such products as salsa and soap may not be nearly as complex and confusing, staying in the loop can be a great "ounce of prevention is worth a pound of cure" solution.

3. What are you, really? There is much discussion, for example, about CBD supplements versus food. An article on com sheds light: "To determine if your product needs a food or supplement label, you need to consider the directions for use as well as the intended use of the product. If your product is a capsule, soft gel or oral spray, it needs a supplement label. For oil drops, if the suggested serving size is a number of drops, the product is also a supplement. Even some food and beverage formats should be labeled as supplements—especially those where the suggested serving size is below the FDA's RACC (recommended amount customarily consumed). Bottom line: it's all about the intended use, which can be established by container size, number of servings in the container, serving size, marketing claims made about the items and the dosage of specialty ingredients."

4. Be accountable (and addressable). Bullet-proof tracking along the entire supply chain is a good idea for a variety of reasons. Among them are guarding against counterfeiting, ensuring quality control and accuracy on ingredients, and ability—where desired—to tie individual product containers to specific buyers for tracing or personalized promotion and communication.

Hemp Industry Daily reports on a movement in some states toward inserting a special code to guarantee the origin of CBD and its potency. After dozens of Utah residents got sick from synthetic CBD products, the state moved to make sure each container carries a label code proving product legality. Scanning a unique QR code or digital label ID track-and-trace identifier allows consumers to verify authenticity and/or communicate with the manufacturer about everything from satisfaction to offers.

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Choosing Between CO_2 and Laser Coding

By George Allen,
Strategic Account Manager
at Markem-Imaje

CO2 lasers are primarily used on PET bottles and paperboard materials

Codes on containers are often regarded as necessary evils but, in truth, they are significant components that provide product tracking and safety information.

Beverage coding is particularly challenging since the industrial environment has a variety of containers to code across many stock keeping units (SKUs), often with high speed lines, along with an ever tightening regulatory and compliance framework which demands traceability and fiscal marking.

At the consumer unit level, such as cans and bottles, continuous inkjet (CIJ) and laser are the main methods used for coding. Multiple factors are considered when determining what type of coding and marking equipment is best suited for a product. There is a balance that must be juggled to ensure that the chosen equipment addresses the following elements:

Markem-Imaje's SmartLase® 350 as installed on a Sanpellegrino production line

- Packaging material (paperboard, PET, HDPE, aluminum cans, glass, etc.);
- Production speeds;
- Product handling;
- Line automation (or lack thereof); and
- Line location for coding and marking equipment.

Further to the above is the battle over capital funding. How much can be spent? What is the total cost of the initial investment versus ongoing running costs?

CIJ is very popular as it can print easily and at extremely high speeds virtually anywhere onto a surface, though care must be taken to ensure the ink chosen will adhere to the packaging surface for the desired duration of the product's life

in the market. However, where conditions permit, there is a shift away from CIJ towards laser.

Although lasers are more expensive to buy compared with CIJ coders, they reduce operating expenses. Apart from occasional filter replacement, there is no maintenance and there are no ongoing consumable purchases. The installation time varies depending on the application and production line, but it is usually completed in days.

Also, laser codes tend to be crisper and their permanence aids in anti-diversion and anti-counterfeiting efforts. Indeed, this has led to laser's considerably large coding market share in high growth markets, such as China, where there are often concerns about whether a product is genuine.

In this article we explore which laser best suits a given production requirement.

CO_2 lasers

CO_2 lasers are primarily used on PET bottles and paperboard materials. The wavelength is always tailored to meet the application. The wavelength for a laser coding onto a PET bottle at 1,000 bottles per minute is different from that used on a 12-pack of soda in a paperboard carton running at 200 bottles per minute.

There are a variety of other factors that must be tested and reviewed before deciding on a CO_2 laser application. How deep is the penetration of the laser onto a PET container? Where on a PET container should the laser code be placed (shoulder, top, etc.)? Does the material allow any contrast after the laser code is complete?

Lasers are available in different wattages. The degree of power is determined by the size of the code, code content, density of the material, and other factors. A pre-test will help determine the best application for the job.

CO_2 lasers do not require complex guarding packages. Manufacturers place a polycarbonate shield around the area where the material is lased to provide protection. The beam emitted from a CO_2 laser is generally absorbed by polycarbonate after contact, which prohibits any type of serious injury.

CO_2 lasers are usually small enough to be positioned in the following areas:

- On high-speed production lines;
- Inside blow molders;
- Inside labelers; and
- Inside high-speed cartoners.

Some of the above applications require lasers to be installed in tight confines, which often means installing a beam delivery system. This beam delivery system can be designed and customized with different tube lengths to allow the beam to be delivered in hard-to-reach areas. There are generally no speed issues as today's galvos (mirrors) move at high speeds to match the laser delivery.

Fiber lasers on beverage cans

Fiber laser coders are a relatively new product in the beverage industry. The ability to concentrate a highly intense beam of energy and focus it onto a beverage can is a highly technical and coveted science. While multiple companies offer fiber laser technology, beverage companies require a solution that includes the following:

- Ability to code cans on extremely fast lines;
- Fume extraction;
- Cooling;
- Customized guarding; and
- High-speed cameras, lighting, and sensors to validate code integrity.

Very few companies offer fiber lasers suitable for the ultra-high production speeds required by beverage can coding. These speeds can be up to 2,000 cans per minute (CPM). Beverage codes on cans are generally two lines with approximately 16 to 24 characters per line. They are also typically 2-3 mm in height. A fiber laser has a small window to place its code at these high speeds. The amount of time needed is code specific but is generally in the 25-millisecond range.

Product handling is paramount to successfully coding cans with a fiber laser at these speeds. Cans that are bouncing, banging into each other, or not properly indexed can be coded, but those codes may have defects making them unreadable. A smooth, consistent flow of cans will help ensure a repeatable and high-quality code.

The capital costs for fiber are greater than CO_2 lasers, varying depending on wattage, guarding, and customization required. All fiber lasers require a guarding package that protects the operators so that no limb can be inserted, and to eliminate any possible beam escape. The guarding must be interlocked for safety with weep holes to allow water or line lube to escape, but also designed to let an operator clean the laser head or adjust the height to accommodate a can height change.

Fiber lasers are available in different watts, like CO_2 lasers. The wattage is determined by several factors: line speed, material, code size, etc. Testing is recommended to specify the correct laser.

Laser technology is a clean option in the beverage industry, with an excellent return on investment. However, understanding which laser and the components required is vital when trying to match this industry's high speeds and complex lines to the correct laser.

ABOUT THE AUTHOR

George Allen is the strategic account manager at Markem-Imaje, responsible for multiple beverage customers. He has been in the packaging industry for over 30 years and specializes in creating solutions for manufacturers with high-speed production lines that need laser technology, print and apply applications, CIJ printing, or networking solutions.

Track-and-Trace

Augmented Reality Coming to Product Labels Near You

By Gary Paulin and Mark Lusky, Contributing Writers

A new world of product protection, authentication and communication is emerging. Along with manufacturers themselves, consumers will be the big winners as they confirm product authenticity, actively engage and interact with brands, get entertained, and learn along the way. And it all happens on and via the label.

Two technologies leading the way are Digital ID Track-And-Trace (DITAT) and Augmented Reality (AR). While the technology with both is proven and out in the marketplace, product manufacturers wanting to use them will need to invest some time, money and patience to get up and running. As they do, benefits will "wow" audiences in areas ranging from anti-counterfeiting campaigns to dynamic and dramatic video and animation.

Yin and Yang of Protection & Pizzazz

DITAT and AR complement each other in many respects. DITAT utilizes unique, counterfeit-proof electronic signatures

on each label to establish and ensure product authenticity. Products can be verified at any point in the supply chain, including the consumer endpoint, using a simple smartphone app that scans a digital ID.

AR entertains, engages, educates and interacts with consumers using next-generation presentations such as the Jack Daniel's video popup featuring musical accompaniment. Viewers simply download a smartphone app via the Google Play or Apple App store, then focus their phones on the bottle label to activate the presentation. It also offers counterfeit security protection features to document authenticity. Other functionality includes connections to brand social media, and ability to update information on-the-fly.

Beyond Barcodes & QR codes

QR codes and barcodes, while helpful to product tracking and tracing, are vulnerable to tampering and do not always catch counterfeits. In contrast, DITAT creates unique e-fingerprints on each product label that are impervious to tampering. Their small label footprint also makes an attractive alternative to large, aesthetically intrusive barcodes or QR codes. Bottom line, everyone on the supply chain—including end-users—can validate authenticity and other tracking functions simply by downloading a simple app, then scanning the digital ID.

AR makes products "come alive" and opens up a variety of ways that consumers can interact, get entertained and get educated all through one connection. For example, the Jack Daniel's AR app offers viewers options to learn about "the man," "how the whiskey is crafted," and "where every drop is made." This educates, entices and entertains all at the same time.

So why isn't everyone deploying these technologies?

With counterfeiting, product quality and claims, and brand competition occupying the minds of consumers and manufacturers alike, multiple factors are making adoption an evolving versus explosive process:

1. Dollar investment. While AR can be developed for less than $5,000 or much more depending on the cost of the creative required to put it into polished presentation form, DITAT generally adds 2-5 cents per image/label—which can be substantial. Conversely, once AR is set up, smartphone users can download a free app to access it without additional per

label costs. As early adopters show the marketplace the viability and importance of both to reputation and bottom line, that dollar investment will feel increasingly justifiable. But, just like many new technologies, it's taking a while. It may take less time for manufacturers who weigh loss of profitability, consumer confidence, reputation and competitive advantage against the price tag of moving forward on these technologies.

2. Limited points of entry are available so far. Our company research and review process on both technologies began a couple years ago. It's just now that ability to offer these to clients is coming to fruition. As with many previous technologies that ultimately became integral to commercial performance, this too will be somewhat of a follow-the-leader process. Once enough use cases showing dependability are developed, the followers will follow suit.

3. Technological reliability. Given that both technologies involve complicated elements, testing and proving technological reliability in a consistent way are adoption criteria going forward. The last thing anyone wants is bugs in a technology designed to thwart counterfeiting or a presentation that can't be viewed predictably.

Bulletproof Benefits

Among the ways that everyone on the supply chain, starting with manufacturers and ending with consumers, can benefit from the use of these technologies are:

- Documenting the travels of individual items down the supply chain. For example, DITAT offers the opportunity to verify that supplements requiring refrigeration during storage and transportation actually were protected;
- Communicating offers based on buying preferences, trends and interests discerned via tracking previous purchases, and giving consumers a way to respond. Value of various offer calls-to-action then can be evaluated in light of response rates and timing;
- Inventory and recovery control. Digital IDs on each product package can help single out discrepancies in inventory. And, in the case of a recall, items can be scanned as they are returned, providing an easy one-step tracking system that reliably identifies each item versus lot/batch codes or other tracking protocols; and
- Reputation management and brand enhancement. Being able to maintain consumer confidence and loyalty through product verification, and dramatically sing the praises of a brand are powerful positives tied to these technologies.

Given needed lead time to get up and running, the time to start developing and deploying these technologies is right now.

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