

BRAND PROTECTION STRATEGIES

**Heading off the threat to brands with
variable data marking and coding technologies**

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As the new millennium unfolds, it's becoming more apparent that one of a consumer goods manufacturer's most important assets is its brand. Consumers are willing to pay a premium price for brands, and that translates to both profit and marketplace power.

But brands face many threats, and like any asset, they need to be protected. There are criminal enterprises that can steal a portion of the investment in a brand for themselves by counterfeiting or unlawfully distributing a product (called diversion), or worse, damage a brand's equity and the manufacturer by hurting consumers who purchase a product, termed product terrorism.

One of the most important methods of protection is through variable data marking and coding technologies on primary packaging. Technologies can include ink jet printers, laser coders, thermal transfer overprinters, binary array printers or a combination of technologies that provide multiple layers of protection, thus making it more difficult to counterfeit or divert products. Combining these technologies with software that creates unique, random codes that are placed directly on a package will go a long way in protecting the brand, the manufacturer and, ultimately, the consumer.

The purpose of this article is to help brand managers better evaluate the prominent choices in variable data marking and coding technologies, so they can proactively and cost-effectively battle threats to their brands.

COUNTERFEITING AND DIVERSION

The challenges and importance of ensuring product integrity today are magnified by the flood of counterfeit products and diversionary activity in the marketplace. Though manufacturers understandably may not be willing to disclose the actual financial impact of counterfeiting and diversion, it's believed to be in the billions of dollars annually. Increasingly, governing bodies have placed the responsibility to ensure product and supply chain integrity on manufacturers.

As effective as a package's structure and graphic design are in demonstrating a brand's attributes, they provide limited protection from counterfeiting, diversion and even product terrorism. The repetitive and commonplace nature of packaging and labeling make a product vulnerable to duplication and fraud, and also do not prevent unlawful distribution. As a result, manufacturers are being forced to add multiple layers of protection against these threats. These layers of protection have various goals in mind, the most important of which are verifying the authenticity of a product and tracing its pedigree from authorized start to end.

Fortunately, there are cost-effective approaches for manufacturers to achieve these goals. Once a product's primary and secondary protection measures are in place, variable data marking and coding technologies can play a key role in providing those added layers of protection that help to ensure the authenticity of a brand and reduce potential product liabilities.

MANAGING PRODUCTS AT ITEM LEVEL

Before 2000, companies that manufactured variable data marking and coding equipment essentially provided the ability to manage product by lots or batches. This meant that if the manufacturer needed to recall a product, that recall would affect an entire batch ... even if the entire batch wasn't compromised. That led to significant costs to perform the recall, not to mention the damage sustained by the brand and the manufacturer due to negative publicity.

But today, marking and coding technologies offer the ability to manage the product at the item level. This means individual items can be tracked from the plant to the distribution center to the store. Thus, for example, if there is a concern that a product may have been tampered with, a manufacturer doesn't have to recall an entire batch, but instead could inform specific stores directly about the recalled product. In this way, the problematic product can be targeted and removed from the supply chain, reducing cost and negative publicity, while also possibly saving the life of a consumer.

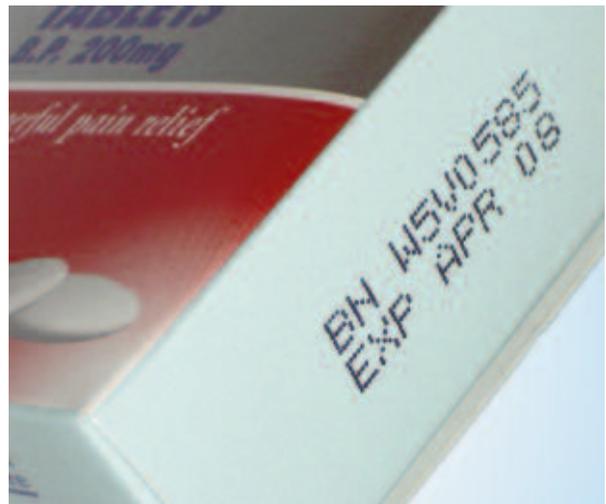
Conversely, through random checks of the supply chain and retail locations, product manufacturers can quickly identify counterfeits or items that have been obtained through diversionary means. Examining the different types of overt and covert codes on a package and the data contained within them can quickly determine whether the products on a distributor or retailer shelf are authentic and belong there.

TECHNOLOGICAL ADVANCES

Recent technological advances in variable data printing have made managing the product at the item level a reality. But brand managers need to have a comprehensive understanding of the technologies at their disposal to facilitate that level of product management. Following is basic background on several methods of variable data marking and coding, the substrates for which they are most appropriate, and other advantages for product manufacturers.

Small character ink jet (SCIJ). Perhaps the best known method of non-contact marking and coding is SCIJ, and it is also the most versatile, as it can be used on most consumer packaging substrates, from paper stocks to plastics to foil. SCIJ has become one of the most versatile and durable coding options for product manufacturers. SCIJ printers create lot codes, expiration dates, bar codes and graphics on packaging using a variety of inks, including inks that can be seen with the human eye and those that can't (i.e., UV and infrared inks).

For example, consumer packaging requires readable, high-quality codes to ensure accuracy in the tracking and tracing of those products. SCIJ delivers these types of codes by applying a stream of ink drops to the package via a printhead, allowing multiple lines of codes to be applied in a variety of fonts and alignments. SCIJ users also can enjoy reduced downtime thanks to new software that monitors and controls ink viscosity and automatic flush systems that eliminate daily printhead cleaning.



Small character ink jet (SCIJ) printers are extremely versatile and can be used on everything from paper stocks to plastics and foil.

Laser coding. Industrial laser marking started in the early 1970s, and since then has developed into a well-established technology. It can be used for marking numerical codes, 2D-matrix and bar codes, logos and symbols onto a wide range of substrates, including coated paper stocks, glass, plastic and metals. Key markets for laser coding include food, pharmaceutical, electronics, plastics and automotive.

Lasers do not require inks, stamps or ribbons to generate a code. In modern sealed-off CO₂ laser coders, such as the Videojet® 3320 or Videojet 3120 from Videojet Technologies, the infrared laser light is generated via radio frequency discharge in a carbon dioxide gas mixture. The CO₂ laser systems code thermally by changing the surface color (e.g., PVC packages), melting, foaming (e.g., PET bottles) or removing the material surface (e.g., printed labels, cardboards, cans, tubes). The advantages of laser coding are numerous – speed, versatility, code permanence, non-contact operation, clean and dry process, maintenance-free operation over thousands of hours, extremely low operating costs and adaptability to a fully automated line.

Thermal transfer overprinting (TTO). The TTO method features a thermal transfer printhead and ribbon that make contact with a flexible substrate, such as synthetic films and labels. Miniature print elements under a glass coating heat small areas of the ribbon and transfer ink to the target substrate. Print elements are program-controlled to create real-time images, including clean, high-resolution bar codes, text and graphics. TTO systems can address applications in both continuous (moving) and intermittent (stop-print-start) environments.

Typical applications for TTO are within the snack, bakery, meat and frozen food industries, where flexible packaging is common. There are also special applications, such as in the coffee and confectionery industries, where generic packaging is used across a wide product range and all product branding and specifications are added using TTO. This saves companies substantial cost through reduced ribbon waste and inventory.

Binary array. This technology is a form of non-contact continuous ink jet printing that uses 100 or 200 nozzles to generate more than 15 million droplets of ink per second, creating a “curtain” of ink. The printed image is controlled electronically by on/off (or binary) charge of pressurized droplets of ink, which allows for ink reuse. For instance, Videojet’s BX6000™ binary array printer returns charged droplets to the system, while uncharged droplets are used for printing.

Binary array technology prints high-resolution bar codes, text and graphics up to 2 inches high on primarily paper stocks. Binary array also is cost-effective when printing variable information in high volume, reducing inventory of preprinted package variation and generating images that are of higher quality than those from other ink jet or laser technologies.



Laser systems code thermally by changing the surface color, melting, foaming or removing the material surface of a packaging substrate.

REGULATORY REQUIREMENTS AND E-PEDIGREE

Regulatory compliance is a fact of life in most consumer product manufacturing segments. Compliance with legislation has forced manufacturers to gather information about their products electronically, culminating in an electronic pedigree (or e-pedigree). Concerns about counterfeiting, diverting and bioterrorism also are driving the development of e-pedigree technology.

For example, the U.S. Public Health Security and Bioterrorism and Response Act of 2002 (better known as the Bioterrorism Act) is a law that requires food manufacturers to keep records regarding the previous source of food ingredients and their next destination after leaving a facility. The idea is simple – in the event of potential product tampering, the government can quickly ascertain from where a product and its ingredients came. Another example is the U.S. Food and Drug Administration's Rule 21 CFR Part 11, which establishes equivalency between electronic records and traditional paper records. The reasoning is similar to the Bioterrorism Act – quicker access to documents in the event of a problem.

E-pedigree and brand protection measures generally require multiple printers and printing technologies across a product's manufacturing process. As marking and coding technologies evolve, manufacturers are seeking solutions that are unique to their packaging. They are looking for truly unique codes that only they can read, using custom inks and fonts.

For example, there is a Videojet customer covertly marking each of its product cartons with a unique signature only viewable with special equipment and printed with an ink made exclusively for that customer. Note the layers of protection beyond the code itself that can be used to verify the authenticity of a carton:

- Covert ink that potential counterfeiters/diverters can't see and is only viewable with the right equipment
- Ink made exclusively for that customer, which is difficult to duplicate

In addition, the customer is using overt marking of cartons to capture data about them, through vision technology. Essentially, a camera mounted on the line captures the "license plate" of each carton and logs it into the system, which then tells the customer where each carton is headed – key information if product diversion is suspected later.

MAXIMIZING SUCCESS

In order to maximize the potential for success, brand protection solutions must be tailored to the unique needs of a product manufacturer's brands. Components of a brand protection solution can include:

- **Digital license plates.** Digital license plates validate manufacturing origin and product quality by integrating item-specific data into a unique code format such as a pseudo-random code. The carrier for these license plates can range from human readable characters to a 2D bar code. In addition, the actual mark can meet permanence standards in a covert or overt fashion.
- **Proprietary algorithms.** Proprietary algorithms, such as Videojet's IntelliCode™ code creation software, enables manufacturers to create "intelligent" codes embedded with unique item-level properties, simplifying data mining downstream.
- **Branding.** A growing trend today is creating code images with the look and feel of the brand, designed to meet its unique requirements. Techniques include unique fonts and graphics, colors and special additives for laser marking, along with a mix of overt and covert marking.

- **In-line verification and compliance.** The need to verify code accuracy and repeatability is vitally important in brand protection efforts, so a manufacturer knows (and can verify) what codes have entered the supply chain. Often this requires high-quality results printed at high production line speeds, a difficult feat for ink jet printers 10 years ago.
- **Production line controls.** Production line controls are often required to create “parent-child” relationships by tracking items into shipping cartons and shipping cartons into cases. Production line controls actually monitor each item as part of the production flow and keep accurate counts while assigning unique identifiers in the process. If required, the controls can interface with in-line vision systems to validate code accuracy or to read and print downstream.

All of these technologies also can play a major role in gathering information about customers. There has been tremendous growth in online promotions in the last decade, and consumer product manufacturers are investing heavily in this trend. Plus, online promotions can offer digital methods of authenticating product sales. The process is simple:

1. Random codes are created separately before the manufacturing process begins and are digitally printed (via SCIJ, laser or binary array printers) on the product packaging.
2. Security controllers ensure the data is managed properly (i.e., preventing code duplication).
3. The end-user consumer purchases the product and goes to the manufacturer’s promotion Web site to validate the “digital proof of purchase,” and in the process provides demographic information.
4. The manufacturer measures actual sales that resulted from its promotional investment.

IMPLICATIONS FOR THE FUTURE

As the power of brands increases, criminal enterprises will continue to create ways to steal or damage a brand’s equity. Variable data marking and coding technologies are just one part of the brand protection landscape, but a crucial one nonetheless. A brand manager who is intimately familiar with options in this area can confidently steer brands past a growing number of obstacles.

ABOUT THE AUTHOR

Jack Walsh began working for Videojet in 1993, selling industrial coding and marking equipment. In 1996, he was promoted to OEM Sales, developing original equipment manufacturers into value-added resellers. In 2004, he spearheaded a new business unit called Videojet Brand Protection Solutions. Walsh facilitates value-selling training for new sales recruits, and is a Certified Facilitator. He has an undergraduate degree in economics from Illinois College and an MBA from Kennesaw University in Kennesaw, Ga.

VIDEOJET BRAND PROTECTION SOLUTIONS

Videojet Brand Protection Solutions, a turnkey suite of brand protection products offered by Videojet Technologies Inc., is the next generation in digital printing. It provides unique and random messaging capabilities coupled with database tools that enable business owners to uniquely identify the pedigree of products at the item level for the purpose of protecting brands from counterfeiting, diversion and product terrorism.

Videojet Brand Protection Solutions complements Videojet's digital, on-pack printing systems and in-line vision, which provides product and package matching (i.e., each stage of the packaging process is married and recorded, such as bottle-to-case). Videojet Brand Protection Solutions products include:

- **Control Pro BPS.** Control Pro BPS provides state-of-the-art data transmission, capture and management capacity. It can manage up to 16 Videojet imaging heads, including small character ink jet (SCIJ) and laser. The system can stand alone or be integrated into a network for enhanced data capturing applications, and has a host of features:
 - **Ease of use.** The Control Pro BPS has only four steps – loading, selecting, starting and stopping a print job.
 - **Proprietary software.** Proprietary software prevents code duplication, so a message can be transmitted only once. Plus, the controller prevents jobs from being reloaded – once a file is used, it can never be duplicated.
 - **Multi-level password protection.** Only authorized personnel can access the appropriate screens.
 - **Capture/create item-level data.** All pertinent item-level data, such as SKUs, time and date information can be collected into one coherent database. The information is then tabulated into customizable reports that are accessible live via an FTP site. The result is a central point for product authentication and traceability.
- **The Authenticator.** The Authenticator, which requires a host workstation, allows code construct files to be securely accessed via the Internet. The standard model requires codes to be loaded via CD-ROM, which are created off-site and shipped via courier to the plant floor, where they must be managed with a high level of security before and after loading. With the Authenticator, files are downloaded, tracked, and assigned to jobs and production lines automatically, which eliminates the extra steps associated with manual code distribution.

Workstation specifications include Dell™ OptiPlex 170 or equivalent; Microsoft® Windows® XP operating system, with Service Pack 1 or later; Intel® Pentium® III processor, 1 GHz or better; and 10 GB hard drive, 256K or better.



Ultraviolet (UV) inks can be an integral part of a brand protection strategy. They are used with small character ink jet (SCIJ) printers.

THE WEAPONS IN YOUR BRAND PROTECTION ARSENAL
 Defending your brand equity is easier with variable data marking
 and coding solutions from Videojet Technologies Inc.

TECHNOLOGY	PRIMARY SUBSTRATES	VIDEOJET SOLUTION
Small character ink jet (SCIJ)	Most consumer packaging, including paper stocks, chipboard, flexible and rigid plastic, foil and metal and glass containers. Also a great choice for plastic and metal parts, wood and other building supplies.	
Laser	Coated paper stocks, glass, plastic and metals.	
Thermal transfer overprinting (TTO)	Flexible substrates, such as synthetic films and labels.	
Binary array	Primarily paper stocks.	

For more information about Videojet Brand Protection Solutions, call 800-843-3610 or visit www.videojet.com.