The Future of Package Printing (Part II)

This article is Part II of a two-part series. For Part I, click here [1].

Modern packaging goes far beyond its primary objective of protecting the contents within it. The fact is, it serves as a critical communication platform. Think of the ingredient and nutritional information it lists and how it displays expiration dates and tracking codes to ensure freshness and product safety. It also projects the personality of a brand to help build connections with consumers. Brand owners can discover the latest packaging innovations at PACK EXPO Las Vegas 2013 [2] from September 23–25 at the Las Vegas Convention Center.

Coding & Marking

While package graphics are meant to catch the consumer's eye, the coding and tracking data printed on primary, secondary and even tertiary packaging ensures product quality and safety.

Information about batch runs, production lines, manufacturing date and sell by date is essential to ensure the quality and safety of packaged products, particularly food, beverages and pharmaceuticals. Inkjet, laser and thermal transfer printing have become the preferred technologies for applying codes and marks, and all three continue to improve.

Most notably, the software behind coding and marking is becoming more sophisticated. System operation is easier, thanks to new, simple menu-driven interfaces with message preview for error-free code creation. Improved message memory capacity and automatic date creation minimizes the need for editing.

Fully integrated code assurance solutions link on-product coding to a centralized

message database. This helps ensure that consistent, accurate messages are applied to products and packaging. It also allows for unique serialization labeling, an integral part of track-and-trace systems.

At PACK EXPO International 2012, a number of suppliers showcased improved ease-of-use and error-free user interfaces. Next-generation inkjet printers have been designed for optimized code quality, reliability and running costs, and newer inks are free of heavy metals and halogens, and formulated for faster drying with low odor.

Another major development in coding and marking is the launch of newly redesigned continuous inkjet printers that provide unique portability, fast set-up and ease-of-use programming. A key aspect of these new printers, which are meant for use on the production floor, is the completely enclosed service module that can be changed in minutes using on-screen prompts. There are no wires or pipes to disconnect and reconnect, and no need to expose other critical printer components during servicing.

This means scheduled maintenance is easily completed without the need for trained technicians or costly service calls. Other self-maintenance features include on-screen trouble shooting, which can solve the majority of operating issues without the need to consult manuals or engineers.

Suppliers also continue to improve their printhead nozzles, which save ink and deliver increased production uptime. Self-cleaning printhead and automatic power down functionality give mess-free, trouble-free starts and stops. Individual-color ink cartridges make fluid replenishment easier and safer on the production floor. In fact, suppliers have designed the printer system to allow ink cartridge changes while the printer is operating, reducing downtime. Larger-volume cartridges also provide extended runtime between changes. All of these advancements mean the printer is online for longer periods of time with fewer interruptions and less waste.

But it’s not just the inkjet system that has improved. The ink itself has also seen significant improvements. One supplier at PACK EXPO International 2012 launched a total bottle coding solution designed to function in a range of environments, especially those that are wet or humid, as condensation forming on cold-fill bottles presents a challenge for coders. This continuous inkjet printer uses a specially-developed sticky ink for permanent coding and a unique air knife drying system that ensures that the print area on the bottle is dried immediately prior to printing. This controlled process ensures that printing always occurs on the dried area for consistent code quality, even between production changeovers and daily line adjustments.

Compared to the hot stamp or roller coders traditionally used, digital thermal transfer printers offer superior print quality and lower running costs. They rely on single-color ribbons (usually black), and recent advancements decrease the use of ribbon per printing transfer and eliminate downtime associated with ribbon breaks. Ribbon changes are also required less often and can be accomplished more quickly and easily is thanks to larger-than-standard ribbons. Next-generation thermal

transfer printers allow reliable printing in cold environments and excellent code adhesion, even after freezing.

Laser printing systems, which function by removing or etching material away from a substrate versus the application or transfer ink, have experienced many of the same improvements in user interface. Suppliers also continue to make advancements in laser wavelength capabilities, allowing for higher contrasts on certain substrates.

Outermost Package Printing

Though contact coders and inkjet printers are often used in secondary and tertiary packaging applications, print and apply labels are at a unique advantage, as they are better suited to accommodate manufacturer's emerging technologies for tracking and traceability. Many can now include radio-frequency identification (RFID) tags and they have improved printing resolution for quick-response (QR) codes.

In many of these systems, it is not the printing, per se, that is experiencing the upgrade; rather it is the printer's overall operation and speed. For example, a new print-and-apply system has been designed with an intuitive user interface that simplifies maintenance, adds flexibility and dramatically reduces downtime, improving the overall user experience. This print engine is ideal for box and pallet labeling in many industries including food and beverage, manufacturing and others.

A new RFID printer/encoder can print and encode small ultra-high frequency (UHF) RFID smart labels for applications such as asset management, as well as larger labels for traditional supply chain labeling. Optimized for high-volume RFID operations, the printer/encoder delivers superior flexibility and unique features that helps lower cost per label and is fast and easy for the user.

Another innovation comes in the form of an all-electric corner-wrap label printer-applicator, a unit that saves energy by eliminating the use of compressed air. The unit prints labels in a next-out mode, automatically removes them from their liner and retains them by vacuum on an integrated swing arm-mounted pad. Unlike most conventional label printer-applicators, this system creates the vacuum with electrically operated fans instead of external compressed air, for reduced energy consumption.

As product manufacturers identify new ways for printing technology to improve marketing, distribution and traceability, suppliers will respond with upgrades and new offerings. Brand owners, contract manufacturers and package printers can count on PACK EXPO Las Vegas 2013 to be a resource for such technologies. Attendees interested in package printing solutions can also explore different material and container innovations in The Brand Zone and learn about trends at the Conference at PACK EXPO.

PMMI *[3] is a trade association of more than 600 member companies that manufacture packaging, processing and related converting machinery in the United*

States, Canada or Mexico; machinery components and packaging containers and materials. PMMI's vision is to be the leading global resource for the packaging and processing supply chain, and its mission is to improve and promote members' abilities to meet the needs of their customers. PMMI organizes the PACK EXPO *[4] trade shows: PACK EXPO International, PACK EXPO Las Vegas and EXPO PACK México, connecting participants in the packaging and processing supply chain with their customers around the world. Coming Up: EXPO PACK Guadalajara, Feb. 27–March 1, 2013, in Guadalajara, Mexico; EXPO PACK México, June 18-21, 2013 in Mexico City, Mexico; PACK EXPO Las Vegas at the Las Vegas Convention Center, September 23-25, 2013. Learn more about PMMI and the PACK EXPO trade shows at* PMMI.org *[3] and* Packexpo.com *[4].*

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