

Digital Decoration of Food Products

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Food manufacturers are constantly searching for new innovations in response to consumer demand and competitive pressures. Myriad new food products emerge daily as manufacturers fight for market share in mature markets and limited shelf-space within powerful retail organizations.

Few products make it but the choices available to consumers are considerable and have expanded at astonishing rates over the last decade. If you need proof just check out the aisles for cereal next time you visit your local supermarket.

The search for differentiation and that tiny bit of competitive advantage, which could yield a substantial swing in market share, is constant.

Imagine the possibilities for corporate branding, product authentication and visual



verification, and promotional tie-ins with sporting, movie, holiday and other events. How about contests or perhaps a novel way to learn your ABC's? What if the system could accept digital designs or artwork in standard file formats such as TIFF, JPEG, EPS and others, making the system as easy to setup and use as a printer on a network? And, what if it could

be done quickly, economically and without meaningful impact to set-up time and waste? Well it can – with digital decoration.

Digital decoration allows non-impact, direct, variable imaging and decoration directly on to a product's surface at full-production speed without any intermediate steps. Pre-stored images, text and logos can be imaged and repeated time and again or varied surface-to-surface.

In 2004 Spectra launched the Merlin FG, the world's first high-speed production system suitable for digital decoration and marking of food products such as cookies, crackers, potato chips, candy, baked goods, marshmallows and so forth. The list is endless.

The Merlin FG is a modular system designed to meet specific production requirements for resolution, color and throughput. The base configuration supports a print width of 2.8 inches for single lane printing and runs up to 500 feet per minute easily accommodating the host production line without hampering its overall effectiveness. The system is designed for 4-color printing, but monochrome configurations are available as well. The system can be expanded to accommodate multiple lane decoration, wider print widths, or both – greatly enhancing the system's overall productivity.

The NEMA 4X rated Merlin FG utilizes Spectra's world leading proprietary piezoelectric drop-on-demand ink jet technology. The unit is fully FDA compliant and dispenses edible and FDA approved colorants in a CMYK printing process. The colorants dry by absorption or evaporation to create durable and robust images on the food products. The system meets the demanding needs of the food industry and performs with extremely high reliability

even in the harshest of environments. Images can be created and modified with standard graphic-design software and then imported into Merlin's system software, which does the color separation and rasterization before sending the data to the printing device. Although, the Merlin is a self-contained unit with all computer functions built-in it can easily be networked and operated on a remote basis. The controller is very powerful and although the standard configuration supports one CMYK printhead cluster, it can be expanded to support up to 32 printhead clusters for multi-lane applications. Fully configured, the Merlin FG has astonishing productivity, capable of well over 65,000 cookies per minute all decorated with different images.

Many large-scale food companies in their attempts to create a unique visual appeal of their products use colors and shapes and they rely on dies to stamp a unique decorative pattern onto the products. However, dies are wasteful and inflexible and changing the dies is very time-consuming. This results in costly down time for the production line. By comparison, ink jet decoration allows the users to decorate the products with custom designs while avoiding waste and lengthy setups. More importantly, ink jet technology can be used to cost-effectively decorate any number of items, from a single cookie to millions.

A number of leading edge food manufacture's have already started adopting this innovative new technology and many more are evaluating its potential for their particular products and markets. The applications are endless: re-enforcing a leading brandname – making it more visible to the consumer, matching the products to a particular channel or geographic region, promotions, cross advertising for other products, games, trivia questions, events, merchandizing and many more. The list is limited only by the imagination.

In addition to the benefits of a versatile digital system that can enable rapid changes to graphic content, ink jet is a method that is relatively non-invasive to the current food manufacturing production lines. The printhead clusters can be placed over existing sections of a production line without the need for additional line sections, re-designing current lines or slowing the production process. In fact existing production lines can be configured to produce digitally enhanced product and retain

the capability to continue to produce the original product. Further as ink jet is a "non-contact" method of printing, images, designs, colorants, and flavors etc. can be applied to product at various stages of the production process. This enables imaging to occur at the most appropri-



ate stage in manufacturing, for example when the food product is still warm, delicate, wet, liquid, or uncooked etc. This has major advantage over traditional impact printing that would be impossible in most cases. Further, it enables utilization of exiting, cooling, and drying processes that allow the colorants to fix to the food product prior to packaging.

Ink jet has established itself as a very cost-effective printing process but over the last few years it has also emerged as an extremely versatile and very capable production process technology. The Merlin FG is a perfect example of this trend – making high-speed digital decoration of food products technically feasible and commercially viable. This trend is likely to continue and even accelerate with more and more applications following in the same footsteps. However, few are likely to bring the same kind of enjoyment and consumer enthusiasm as the digitally decorated cookies. Enjoy!

About Spectra

Spectra is a leading developer and manufacturer of piezoelectric ink jet printheads and related components used in a wide variety of industrial and commercial imaging applications including, coding and marking, decorative, display graphics, and graphic arts. Located in Lebanon, New Hampshire, Spectra has developed multiple generations of drop-on-demand printheads used in high performance non-impact imaging and precision deposition equipment.

Spectra Technology Integration (STI) is a business unit of Spectra, Inc. STI was established to provide specific systems and solutions for applications whose requirements are not addressed by commercially available products.

For more information, go to www.spectra-inc.com.