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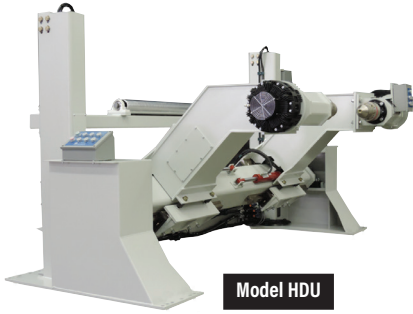
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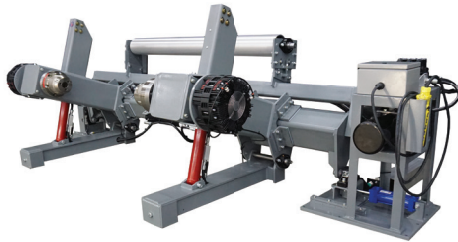
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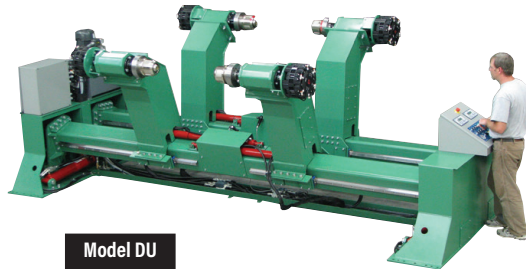
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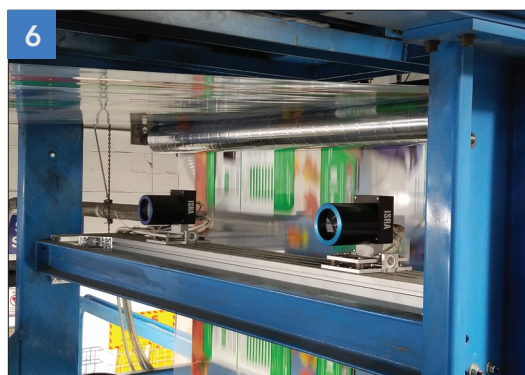
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The Silent Salesperson



Angel Morris
Editor

As the saying goes, you never get a second chance to make a first impression. *PFFC* readers have a heightened awareness of the truth in that statement, with the knowledge that packaging plays a huge role in whether or not consumers give a product a second look. In this issue, we discuss the incredible importance of packaging design toward buyer opinion regarding every product on the market, from cosmetics to cat food and everything in between. Of course, the quality of the product is what builds brand loyalty; but it's packaging that convinces a shopper to even give it a try.

I'm an infamously frugal (read: cheap) shopper. If there's a discounted floor model or open-box bargain to be had, I'll take it. Store brands and generic knockoffs don't offend me. The clearance section is my home away from home. But even my bargain-minded self is going to look twice at the pretty package over the ugly one. Dents and dings on canned goods or appliances may not bother me, but I still want to know the quality is there. And for your average shopper, good looking, well-designed packaging speaks to what you can expect to find inside. Today more than ever, we also want packaging to be sustainable.

Our cover story addresses putting out defect-free packaging efficiently with an eye toward the environment. Experts contemplate the role precision anilox plays in the printing process, not only extending the life of rolls, but also in reducing costly printing faults, scrap materials and downtime. Leveraging inventory and making label printing technology work for converters is discussed in this issue, too. And some misconceptions about the sustainability of flexible packaging are addressed this month, with a forecast toward positive change.

Ultimately, paper, film and foil converters, like consumers, want the biggest bang for their buck. Pleasing clients while putting out products that keep them coming back for more benefits the converting industry just as it benefits industry clients — who are also trying to please their own customers and keep them coming back for more.

A product's packaging is where first impressions are made. Shoppers will likely never meet those who play a role in creating that impression, but they take a little piece of their work with every item they purchase. Here's to creating a successful silent salesperson.

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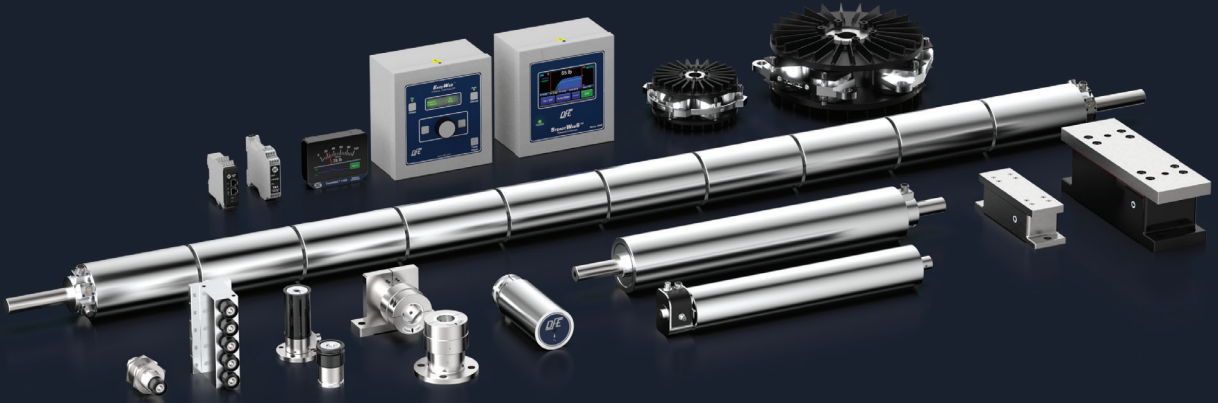
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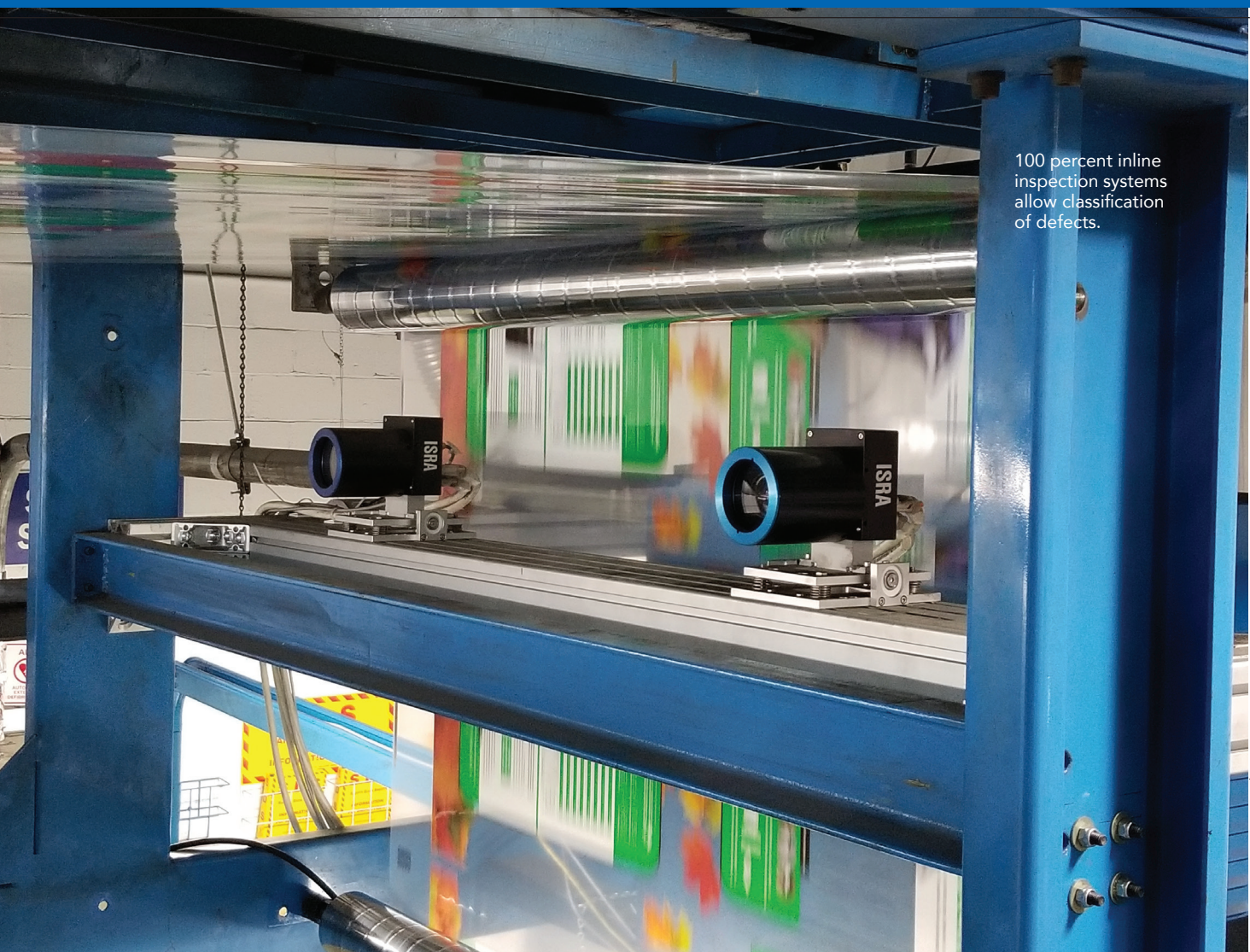
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100 percent inline inspection systems allow classification of defects.

Achieve higher returns thanks to defect classification

By Luciano Menk, ISRA VISION, Sales Director Surface & Print Inspection

At the point of sale, the packaging is the best way to persuade end consumers to purchase a specific brand. The design determines the brand message and the positioning of the product. Particularly amongst first-time purchasers, the packaging often influences the purchasing decision and communicates the value and quality of the goods.

Consumers are approached by the “silent salesperson” – the packaging – on various levels through complex and carefully considered design concepts. It should inspire confidence, be unmistakable and communicate the quality of the goods and, in doing so, convey high quality and value.

Packaging of cosmetics or

body care products is subject to the highest standards. The same applies in the food sector, where an appetizing and attractive appearance is often the main incentive to purchase a product. Good packaging suggests a good product. In addition, what is important for people is also important for pets: Quality requirements for pet food

packaging have become far more stringent.

This brings with it a wide array of requirements when printing packaging, as generally valid quality criteria such as:

- achieving the exact specified colors reliably, repeatedly and constantly, even during follow-up jobs;
- printing easily legible texts with sharp and clear edges, even when small font sizes are used;
- registration accuracy; and
- correct contents.

These are supplemented with the brand owners' individual requirements to meet end customers' quality expectations for every single product. In addition, there are

growing demands when it comes to the sustainability of production. Here, a particular focus is placed on conserving the environment and using energy and resources sparingly. For production to be sustainable, defect rates and waste need to be reduced to a minimum.

However, ensuring a completely defect-free production that is also as fast as possible is a difficult task. The challenge, therefore, lies in classifying print defects: When is a defect so serious that the printed material is no longer salable?

For every application, there are distinct criteria that determine whether a print job is salable or needs to be printed again. Here, the size, color and type of defects are just as crucial as their position

in the print image. For example, ink splashes near the logo would obviously be a "no go," while the same defect in a location at the bottom of the packaging or in a fold might be tolerable.

State-of-the-art inspection technology gives you the crucial advantage: 100 percent inline inspection systems allow defects to be classified. The "defect classifier" functions of print or surface inspection systems also allow the precise classification of different defects by size, color or even type – such as streaks, splashes, registration errors and color deviations – in accordance with customer requirements.

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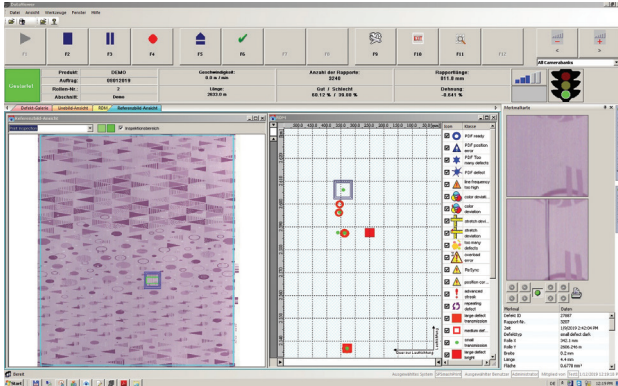
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precise information on the defects to be detected and limit values are entered into a job-specific requirements profile in the defect classifier. Based on this, the defects that exceed the tolerances are displayed to the operator, enabling them to intervene in the printing process to prevent waste.

Moreover, automated actions can be assigned to the defect types, such as inserting a tab, discharging the waste material or making other digitally controllable markings. Unimportant defects are nonetheless recorded and can be found in the inspection report with precise details of their position. The

Defect Classifier functions allow different defects to be classified exactly according to customer specifications.

customer-specific requirements profile can also be used for follow-up jobs. This means that the same level of quality specified for this application can also be reliably reproduced in the future. ■

ABOUT THE AUTHOR

Luciano Menk is the principal North American Sales and Key Account Director for the Advanced Materials and Print markets at ISRA VISION's U.S. headquarter in Atlanta, GA. With more than 15 years of experience in surface inspection solutions for the manufacturing and converting industries, he has served ISRA VISION in different roles for more than 10 years.

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Precision Anilox are the Foundation of the Printing Process

By **Joe Settanni**, Vice President of Sales, Apex International/North America

In printing, the anilox is a method used to provide a measured amount of ink to a flexographic printing plate. An anilox can be a solid cylinder or sleeve and is coated with an industrial ceramic. The surface is then laser engraved creating millions of very fine dimples known as *cells*.

These cylinders are normally engraved to a specific LPI (*lines per inch*) and a volume capacity, referred to as BCM (*billion cubic microns*). Alternatively, they can be engraved to various other geometries, including open cell structures.

No matter the LPI and BCM configuration of the anilox, it is

fair to say these precise printing instruments are the foundation of the printing process. As such, proper handling of your anilox will ensure longevity of the roll itself and can ultimately play a part in reducing costly printing faults, scrap materials and downtime.

A consistently produced anilox, holding very tight volume tolerances, can certainly contribute to faster make-readies and, perhaps more importantly, consistent results. As the industry trend of production run lengths continue to get shorter and shorter, and as graphics continue to become more challenging for the converter, hav-

ing these fine printing instruments manufactured consistently is only the beginning. Ultimately, the care one takes with these instruments determines how long those consistent results will continue.

If we start by understanding just how fine these engravings are and how the smallest area of damage can affect the performance of the roll (and ultimately the print result itself), we can perhaps understand how important handling is.

For example, the image shows an engraving of 600 LPI and has a cell opening of approximately 36 microns. Compare this to a single

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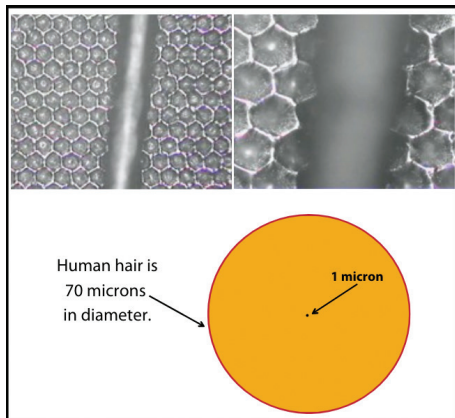
And finally — the most telling questions of all:

Does whoever you talk to on the phone (real live people do actually answer here) — or correspond with by email — have a knowledge and understanding of dyne testing based on 20 to over 35 years in the industry? Do they have cogent and effective answers to your inquiries? Do they follow up to make sure their suggestions resulted in solutions for you?

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Graphic comparing human hair to cell 2.



Anilox damage from something brushing up against it.

human hair laid across it at 70 microns. As we zoom in, we can see how much of an area of this anilox is affected. Notice the rows of cells impacted by this *blemish*. Can we imagine what this will look like on

the printed result?

Knowing how sensitive the anilox is and having seen an anilox under magnification, it is easier to understand how many cells can be affected in a seemingly small area

of damage. With that in mind, it is extremely important to minimize *impact damage* to an anilox.

Although industrial ceramic is indeed very hard, it can be damaged easily by impact. Common

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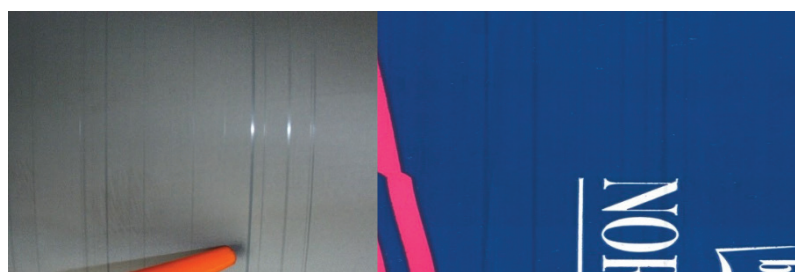
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Impact damage on the anilox will show on the print.



Scoring on the anilox will show on the print.

causes of damage on an anilox occur while loading, storing or cleaning the anilox roll by scraping it against other equipment, jewelry (rings), belt buckles, buttons, cleanup supplies, etc.

Whenever possible, we want to keep such items away from anilox handling or storage in order to avoid this type of contact. This is an example of something as simple as brushing up against another piece of equipment or possibly a belt buckle.

The more obvious impact damage is simply dropping something, say a wrench, onto the surface of the roll. Again, although appearing to be a very small area of the roll impacted, you can see what will result in each repeat of the final print.

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As with any precision device, maintenance and cleaning also play an important part in longevity and performance of the anilox. It is important to understand, regardless of the ink system (water-based, UV or solvent), to never let ink dry on the surface of the anilox itself.

There are many deep cleaning systems on the market today, however, for daily cleaning a stainless-steel brush and non-corrosive cleaner are still the best recommended practice. Often, rolls that are not clean, or possibly plugged, can perform as if they are worn. This will certainly cause print variances and printers will find themselves chasing desired results. This adds to costly downtime and use of materials such as ink and substrate.

Perhaps the biggest enemy to ceramic anilox rolls is scoring. Scoring is a term that is widely used to describe a line around the anilox, which can be deeply grooved or lightly polished, and will often show in the print.

Although there are many factors that play into scoring, it is often not directly related to the anilox itself. It is caused by foreign objects (metal shavings from doctor blades, dry ink build-up, etc.) becoming lodged behind the doctor blade. Eventually, this will cause grooves in the ceramic.

It is recommended that converters systematically review all related systems (doctor blades, blade alignment, chamber alignment, end seals, etc.) to ensure that proper housekeeping, maintenance and operator training procedures are implemented and followed regularly. Keeping detailed records of anilox changes, blade changes, ink changes, activities within specific print stations and maintenance/training records will not only help identify potential problem areas, but will hopefully allow converters to repair the root cause.

Proper care of your anilox inventory can not only play a big part in achieving highest potential print results, but also help converters do so consistently. These are just a few examples of how proper care of your anilox can add to the longevity of these fine precision instruments which are so vital to our print process. ■

ABOUT THE AUTHOR

Joe Settanni has more than 25 years experience in package printing and a reputation of providing industry leading solutions. Apex International is an award-winning global manufacturer of anilox rolls, sleeves, glue sets, metering products and print maintenance solutions.

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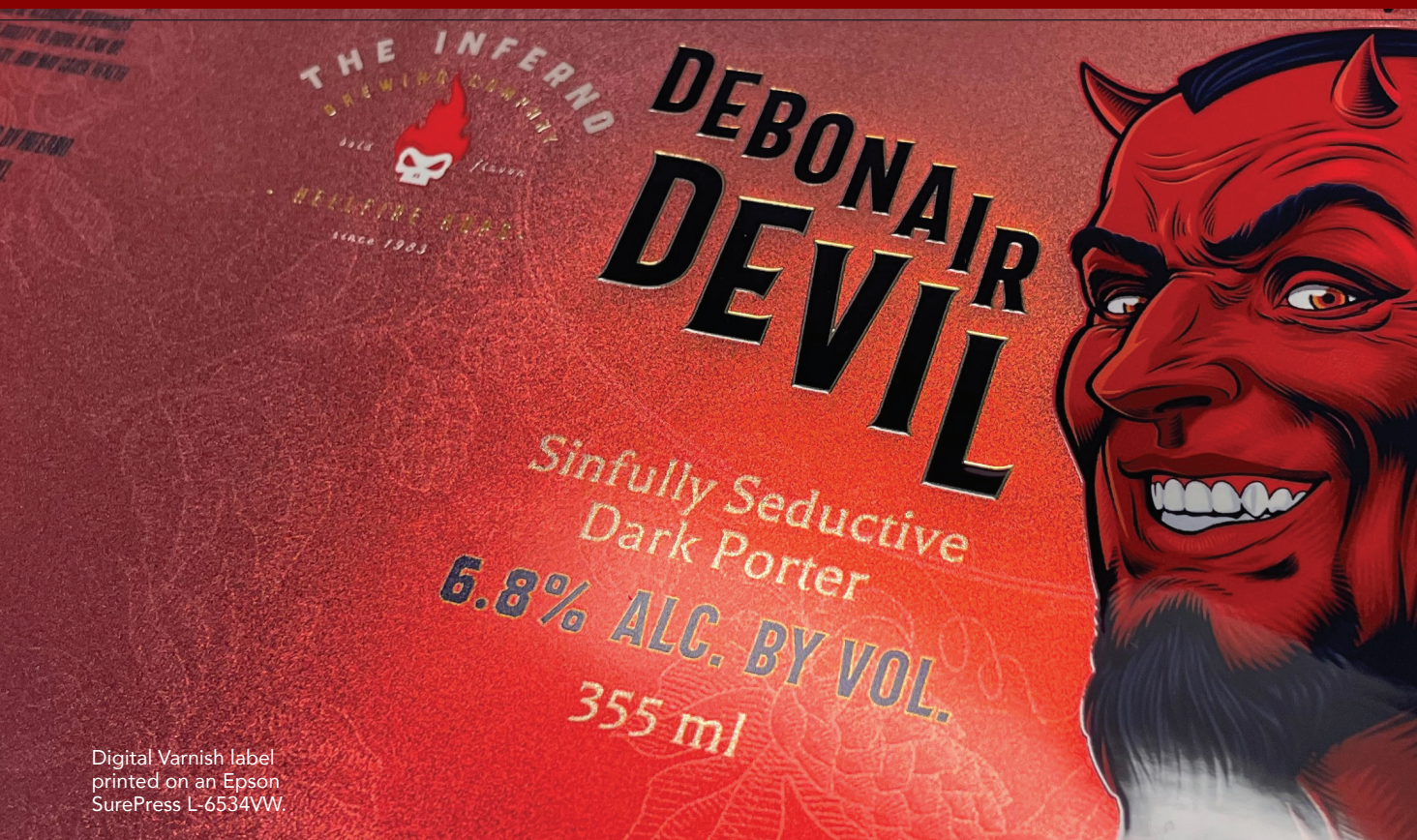
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Maximizing Revenue with Label Materials on Hand

How to leverage inventory and make your label printing technology work for you

By **Michael Nyman**, Senior Product Specialist, SurePress, Epson America, Inc.

Converters have always focused on creating high-value labels as efficiently as possible. That has become an even greater focus recently as label and packaging converters have experienced the upset of global supply chain disruptions.

Labels are critical. Products are not able to ship without labels. With some converter suppliers, shops have dealt with delivery delays for critical label construction components – substrate, coatings, liners, laminates and ink.

With converters and print service providers (PSPs) having issues getting substrates and ink, now more than ever, it's important to be able to use materials on hand and get the greatest value from the resources available. Rather than worrying about volume, attention can be paid to getting the most revenue per amount of raw material.

It is an opportune time to consider how the technology you have can best help deliver for customers, regardless of supply

chain issues. Following are several tips and considerations to keep in mind for those converters looking to streamline workflow and be more efficient with their ink and substrate usage.

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printing process, there is potential for waste – pre-press proofs, press calibration, color management, registration adjustment and web tension adjustments. Traditionally, with legacy technology, many of these processes must be attended to all at once by pre-press and press operators.

Evaluating workflow with a keen eye can help uncover opportunities to reduce waste. For example, when it comes to press calibration, a press or printing device must be brought to a stable state before calibration or other process control for color management can be implemented. A great tip here is to use the right technology. Unlike many technologies which use substantial amounts of heat, processes like inkjet need minimal time and interaction before reaching a stable state.

Eliminating the need for lengthy test prints and judgments of color can help reduce wasted time and materials. To minimize the time spent managing color, a digital press must be engineered to print predictably. Judging color by eye is a notoriously poor way to manage color and will always result in diminishing efficiencies and opinionated arguments on the production floor. Inkjet presses can provide a reliable, predictable and consis-

tent print from the first copy of a job to the last, due to the inherent stability of piezo-inkjet technology.

An embellishment process can increase the value of a label and provide a “premium” feel to an otherwise normal label. A digital embellishment process can increase the value of a label without the required time and resources that are needed for a similar analog embellishment process.

An in-line digital varnish can be used to create spot varnish effects, tactile printing or simulated metallic foils. Rather than creating and mounting multiple plates and preparing multiple ink stations, digital varnish can be controlled via software, eliminating plate costs and reducing make-ready and clean-up times drastically. The digital application of these “premium” features results in higher values per label and enables embellishment to be offered for short-run sizes, without significantly increasing the burden on the production operators.

Automation

Converters can reduce operator and shop burden by using modern label presses that leverage robotics to provide automation capabilities. Automation can help save time and reduce waste, and digital label presses should use robotics to provide precise control of mechanical and electronic components to ensure consistent and reliable operation.

From calibrating more quickly and allowing for greater stability, automation can equate to less waste and increased available operator time, allowing shops to focus on efficiency and productivity and maximizing revenue per label. With simple and automated label press maintenance, required operator intervention is minimal. With these advancements helping to ease the burden of a press operator, fewer operator errors occur and fewer real-time decisions need to be made on the production floor.

With easy setup and useful presets, an automated digital label press can also reduce downtime and drastical-

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ly simplify maintenance. Features like automated inkjet nozzle cleaning/verification and automated printhead flushing and wiping can free operators to perform other tasks without the risk of a large repair bill or delays in production. Consistent print quality and automatic color-to-color registration adjustments can reduce the variables and the chances that a job will need to be re-printed again.

Smart digital machines leverage sensor arrays which can allow for "clean" failure modes. Sensors

can watch for debris or uneven tension in the web, pause the job and notify the operator via email or an audible alert. Rather than incur major downtime or damage to the machine, these capabilities can enable quick and easy recovery from errors and can reduce the potential for a major web break and the associated production delays.

Ultimately, a print shop can ease its human resources burden and optimize revenue if its label printing solutions are reliable and offer thoughtful and creative engineering solutions. Label presses should, ideally, increase the capabilities of their operators by helping to tackle monotonous processes.

Proven Partnerships

While this time of supply chain instability can be disheartening, it makes it all that much more important to be partnered with a manufacturer that has control of its own supply chain. While having a reliable press is paramount, replacement parts like printheads, pumps, filters and electronic components are key to minimizing downtime and keeping customers happy, and they are more likely to

be available from a company that manufacturers their own supplies.

Partnering with a manufacturer that has a strong service reputation and organization that is available to you when you need it can make or break profitability. From color to technology experts, find a press manufacturer that is there to support you at every moment – one with a clear roadmap that will not be gone tomorrow.

Now is an opportune time to take a second look at the existing workflow to help ensure you are able to make the most of the technology at your disposal and take full advantage of the ink and substrates in your supply. Considering waste produced at every step of the printing process, automation capabilities and support from OEM partners are good starting points to determine efficiency improvements to best offset current market disruptions. ■

ABOUT THE AUTHOR

Michael Nyman is a Product Application Specialist for the SurePress digital label press division at Epson America and a Certified G7 Expert.

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THE IMPORTANCE OF MONOMATERIAL POLYPROPYLENE LAMINATES IN FLEXIBLE PACKAGING

By **Steve Langstaff**, Business Development Manager Packaging & Sustainability, Innovia Films

There are now polypropylene options available to make high barrier, fully recyclable packaging to replace complex structures.

Last year's COP26 summit reminded us of the importance of reducing the human effects on the environment with specific emphasis on the need to reduce our carbon footprint. It is well recognized that food production is a major contributor to global warming and resource-efficient packaging plays a vital role in reducing the carbon impact by reducing waste and extending shelf life.

Although the carbon footprint of the packaging is important, it is usually comparatively small when compared to the product it is wrapping. This is one of the big advantages of flexible packaging, which due to its light weight, is far more resource efficient than cans, bottles, tubs or trays. However, in most countries

flexible packaging is not collected and the infrastructure to recycle is restricted. This can result in non-optimal end of life such as landfill, incineration or waste to energy.

The misconception that flexible packaging cannot be recycled is leading some to poor environmental choices, often leading to increases in food waste and packaging with higher Global Warming Potential than flexible alternatives. Fortunately, things are changing.

There are regular announcements in the press regarding flexible packaging recycling investments and private initiatives to collect flexible packaging (for example, UK supermarkets). As governments start to mandate curbside collections of flexible

packaging this will accelerate the industry further.

Examination of the front-of-store collection of post-consumer flexible packaging in the UK, shows that around 70 percent of the material is either Polyethylene (PE) or Polypropylene (PP) and that 20 percent is mixed plastic and aluminium foil plastic laminates. Currently the PE fraction is down-cycled to low-grade PE film for use as garbage bags or supermarket carrier bags. The PP fraction tends to go into rigid uses, much of it outside the packaging industry. The laminate fraction in most situations goes, at best, to waste for energy.

However, technology is available to sort, wash and de-ink the PE and PP fractions to allow



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them to be “closed loop” recycled; i.e., so they can be used back into high-grade film applications.

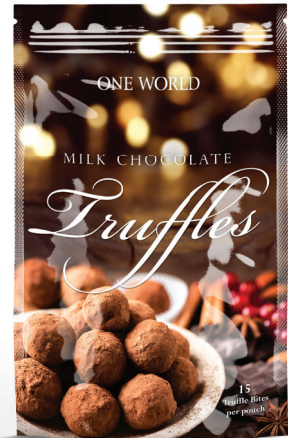
Currently no large-scale efficient technology exists to recycle the mixed plastic laminates. So, the current approach is to try and remove them and replace with all PE or all PP structures which form most of the existing waste stream. Mixed polyolefin waste (PE and PP) has a market value, but if the objective is closed loop recycling back into high-grade film, individual streams would be advantageous for film production.

For many primary packaging applications, the high stiffness and transparency of PP has advantages over PE, as PP offers the option to go thinner and to run more efficiently on packaging machines.

Both of which results in a lower carbon footprint.

Most laminates in the food packaging industry are formed using the best properties from two or more different materials to achieve the optimum pack performance. A common laminate is a biaxially oriented polyester (BOPET) laminated to a low-density polyethylene (LDPE). The BOPET used on the outside provides pack stiffness and gloss and the inner layer of LDPE offers strong seals and hermeticity.

A more sophisticated laminate is used in some pouch applications where barrier to moisture and oxygen is accomplished using an aluminium foil with a reverse printed PET on the outer face and a Cast PP used as the sealant web. Neither of these packs can be

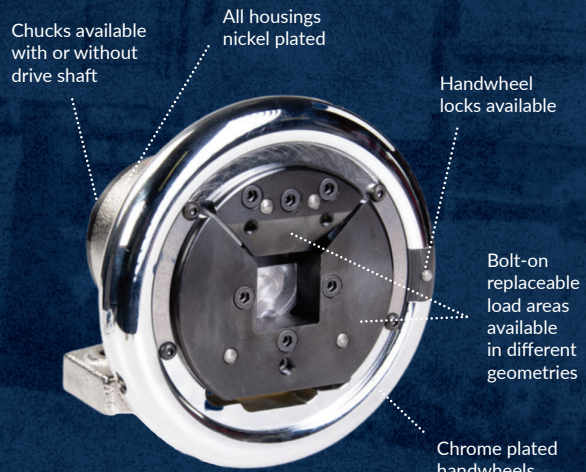


Confectionery pouch packs can now be created using all polypropylene laminates, making them more easily recyclable.

recycled back into film, but both give an excellent pack which serves to protect the contents successfully. In both cases it would be extremely difficult to get an effective pack with only one film.

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To replace these laminate types, film manufacturers are developing new films with enhanced properties specifically for pouch applications. An example of this is the production of a more thermally stable biaxially oriented polypropylene (BOPP) to replace the BOPET. These products provide lower levels of shrinkage than traditional BOPPs and in some cases offer a non-sealing top skin to prevent jaw stick during packing.

A top web made from BOPP will never have the same temperature resistance as a PET film, therefore Cast PP seal webs need to be designed with a lower seal initiation temperature (SIT) to prevent serious distortion of the BOPP top web. Cast PP films are now available with SITs around

90-degrees Celsius. Options to replace the established PET/LDPE laminate mentioned above, are also now available.

The choice of barrier to replace the aluminium foil is highly dependant on the end application but several PP alternatives already exist. High barrier metallised films or AlOx and SiOx deposition layers can be used although the latter is expensive. Of growing significance is the use of BOPP/EVOH coextrusions where newer products on the market show reduced humidity sensitivity which look likely to open new ground in retort packaging. Providing the content of EVOH/METAL/SiOx/AlOx represents less than 5 percent of the overall pack structure; then full recyclability will be maintained.

Mono material laminates, as proposed above, can be used in a variety of pack formats including lidding, flow wraps, VFFS, sachets and pouches and in several market sectors including confectionery, baked goods, pet food and snacks. ■

ABOUT THE AUTHOR

Steve Langstaff, CEng (IOM3) in Plastics Engineering with more than 30 years BOPP industry experience, joined UCB (now Innovia Films) in 1990, establishing the foundation of its Pressure Sensitive Label Films business.



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AIMCAL Plans R2R USA Conference

The AIMCAL R2R (roll-to-roll) USA Conference is Sept. 25–29, 2022, at the DoubleTree by Hilton at the entrance to Universal Orlando in Orlando, FL. The

agenda will include sessions focused on Web Coating, Vacuum Web Coating, Nonwovens, Gravure Coating and Printing and Web Handling.

Leading consultants and experts from academia and original equipment manufacturers will present best practices and advances related to coating process technology, oriented films, barrier, R2R vacuum technology, system developments, battery manufacturing, printed electronics, sustainability, strategies for improving productivity, converting technology, new materials and processing developments, monitoring and measurement, coating materials for key market applications and flexible packaging and materials.



An expanded exhibition area will feature 10-by-10-foot booths. The schedule includes ample opportunities for networking.

A detailed agenda and registration materials may be found on the AIMCAL website, www.aimcal.org (click on “Conference & Events,” then “R2R USA Conference”). Prospective exhibitors should contact Tim Janes, AIMCAL member outreach director (803-948-9469, Tim@aimcal.org).

Hybrid Online Converting School Courses Take Place in August and October

Hybrid online Converting School Courses return with Web Handling Month (August 1–26) and Web Winding Month (October 3–28). Both courses are taught by Dr. David Roisum of Finishing Technologies, Inc.

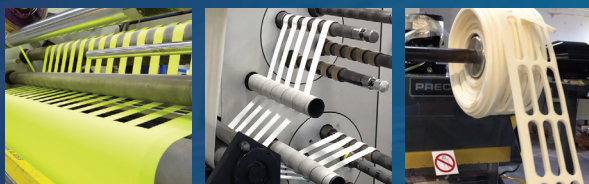
Each course features presentations that may be viewed on-demand during the week plus a live Q&A session with Dr. Roisum each Friday. On the final Friday, participants may schedule private one-on-one meetings with Dr. Roisum.



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The cost per course is \$699 for AIMCAL members and \$899 for non-members. Students who meet all course requirements receive a Certificate of Completion. To register, visit www.aimcal.org (click on "Education," then "Courses").

GAA Extends Deadline for 2022 Gravure Golden Cylinder Awards

The Gravure AIMCAL Alliance (GAA) has set June 24, 2022, as the new deadline for submission of entries in the 2022 Golden Cylinder Awards. The competition reflects the best execution of the gravure-printing process and supporting innovations and is divided into four primary categories with 135 subcategories:

- Packaging and Label (nine sub-categories);
- Product (eight sub-categories);
- Publication (10 sub-categories);
- Technical Innovation (eight sub-categories).

All entries need to represent work performed between June 1, 2021, and May 31, 2022, and must be received no later than July 1, 2022. Judges will review

each entry in mid-July, and winners will be notified during the first week of August. The awards will be presented at the AIMCAL R2R USA Conference, September 25–29, 2022, in Orlando, FL.

The application form may be downloaded at www.aimcal.org (click on "Conference & Events").

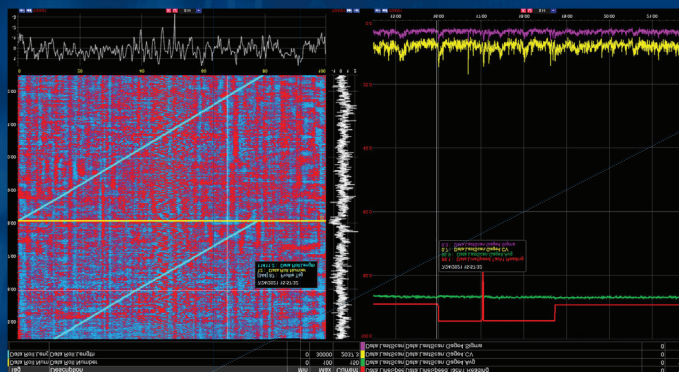
Submit Applications Now for AIMCAL Scholarship

Recipients of the AIMCAL Women in Industry Scholarship for Excellence (WISE) will be honored at the AIMCAL R2R USA Conference, September 25–29 in Orlando, FL. An application form is available on the AIMCAL website, www.aimcal.org (click on "Resources," then select "Scholarship"). The deadline for applications is August 1, 2022.

The WISE is awarded to women working in the roll-to-roll converting industry and intended to com-



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mend those who have overcome significant challenges, invested in STEM degrees, and continue to make important contributions to the industry. Recipients receive funds to pay down student debt.

More donations are needed to fund an endowment for the WISE program to ensure women working in the web-converting field will continue to receive aid. A goal of \$100,000 has been set, with a Fall 2022 deadline. Levels of support include Diamond Sponsor (\$10,000+), Gold Sponsor (\$5,000), Silver Sponsor (\$1,000), and Friends of the AIMCAL Scholarship Fund (any amount from individuals or businesses).

AIMCAL member and nonmember companies and individuals are welcome to participate. Sponsors receive recognition via the AIMCAL website, social media posts and a scholarship sponsor plaque. Current sponsors include Davis-Standard, LLC; Celpast Metallized Products; Nordmeccanica Group; Intellivation LLC; and Mahlo America, Inc.

For more information about the WISE or the AIMCAL Women's Leadership Committee, contact 803-948-9470 or aimcal@aimcal.org.

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Apply now for AIMCAL membership and all your co-workers will gain access to an extensive array of member resources for the remainder of 2022. Prices are pro-rated for new members (if your company was not a member in 2021).

Member benefits include an individual profile for each employee, an online member "Community" forum, Ask AIMCAL business leads, access to the AIMCAL TV Network (more than 225 technical presentations), access to more than 10 years of conference proceedings, committee involvement in your industry segment, technical training, marketing, networking, member pricing for events, global market research reports, inclusion in the AIMCAL SourceBook and the opportunity to present live webinars.

Learn about member benefits at www.aimcal.org (click on "Membership") or contact Tim Janes, AIMCAL member outreach director, at 803-948-9469 or tim@aimcal.org. ■

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