

MARCH 2024



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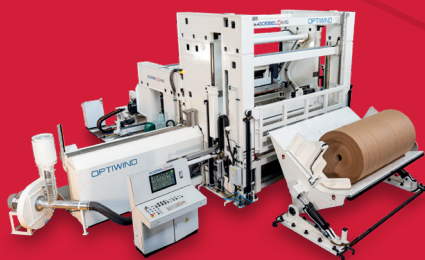
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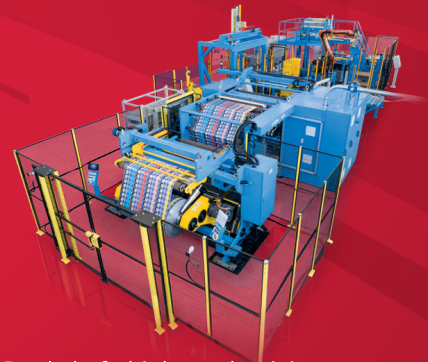
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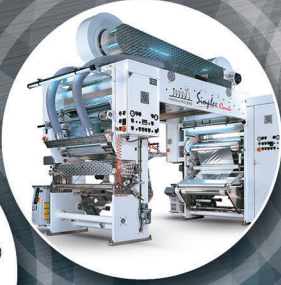
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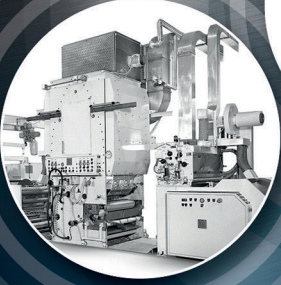
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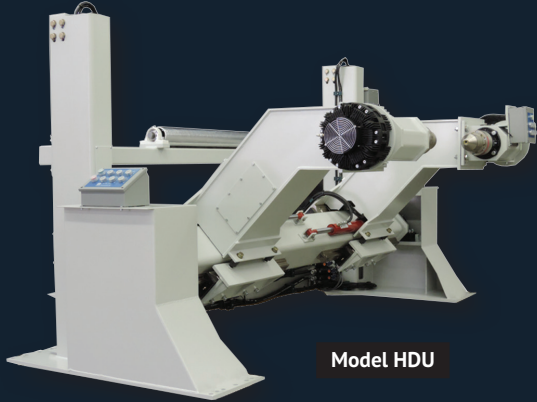
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Powell Engineering, Inc. and MTorres join forces

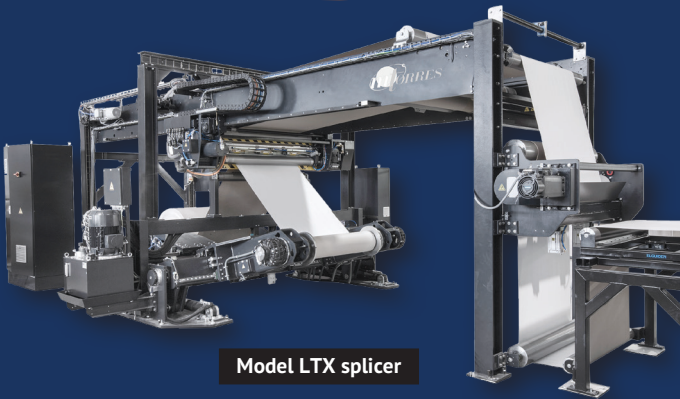
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State of the Industry



Angel Morris
Editor

With a focus on pouches and printing this month, *PFFC* is excited to share the *State of the U.S. Flexible Packaging Industry Report*. Explained by FPA's Vice President of Communications Dani Diehlmann, the report analyzes the performance of America's flexible packaging industry over the past year, providing insight to converters, suppliers, investors and analysts. Covering the entire flexible packaging industry, the report also examines other aspects, including materials and processing, performance expectations, trade outlook, critical issues facing the industry and more. Get a sneak

peek at this definitive source of data and learn how to receive a copy in its entirety.

The challenges of plastic film processing and bio-film/compostables are addressed in this issue, too, with a look at meeting environmental concerns through bio-based and other materials. We also take note of the possibilities brought about by digital printing's evolution in corrugated applications that are offering more enhanced capabilities than ever before.

Like consumers and brand owners, packaging converters are prioritizing sustainability efforts, and not just with products. From operations to goods transportation, strong supplier partnerships are key to these efforts, and this month we look at label suppliers' role in helping meet sustainability goals.

A quarter of the way through 2024 is a great time to consider the state of the industry and what that means for your company. May these topics help you hone in on your goals for the remainder of the year. And if you are an expert toward other industry-advancing topics, *PFFC* would love to share your knowledge with readers. Email us with your story ideas!

Angel Morris
Editor-in-Chief
angelm@rdgmedia.net



A RDG Media, Inc. Publication
P.O. Box 529
Estero, FL 33929
586.227.9344
www.pffc-online.com

President/Group Publisher
Randy Green
randy@rdgmedia.net

Publisher
Lori Pisano
lori@rdgmedia.net
814.384.7813

Editor
Angel Morris
angelm@rdgmedia.net

Accounting Manager
Kristin Green

Systems Administrator
Angi Hiesterman

Operations/Customer Service
Jody Kirchoff

Web Design
Josh Scanlan

Auctions
Angi Hiesterman

Digital Marketing Specialist
Liz Bailey
lizb@rdgmedia.net

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FPA: The State of the U.S. Flexible Packaging Industry

By Dani Diehlmann, Vice President Communications, FPA

The Flexible Packaging Association's (FPA) recently published annual *State of the U.S. Flexible Packaging Industry Report* provides industry converters, suppliers, investors and analysts with insight into the performance of the U.S. flexible packaging industry over the past year. This definitive source of data and information also examines several other aspects of the industry including:

- Performance (growth, revenue/volume expectations, profitability, capital spending)
- Materials and processes (printing, expected material usage)
- End-uses (end-use forecast, U.S. Census Bureau retail segments data)
- Structure and consolidation (merger and acquisition activity)

- Imports and exports (trade outlook)
- Industry vision, challenges and critical issues.

The report covers the entire flexible packaging industry, including the segment of the industry that adds significant value to flexible materials, usually by performing multiple processes. This segment of the industry was estimated to be \$34.3 billion in 2022 and does not include retail shopping bags, consumer storage bags or trash bags.

U.S. Flexible Packaging Industry Performance

The total U.S. flexible packaging industry was estimated to be \$42.9 billion in annual sales for 2022, an increase of 15.3 percent from

the recalculated \$37.2 billion in 2021. The economic analysis group, Inforum, retained by FPA, estimates that the flexible packaging industry will grow to \$44.7 billion in 2023, for a growth rate of 4.2 percent; and estimates that the flexible packaging industry will grow to \$50.6 billion by 2027, for a CAGR of 3.3 percent from 2022-2027.

Flexible packaging represents 21 percent of the total \$180.3 billion U.S. packaging industry and is the second largest packaging segment behind corrugated paper at 22 percent. Over 85 percent of survey respondents experienced higher growth in 2022 than in 2021 — with 86 percent expecting higher revenue in 2023.

In an analysis of 2022 flexible packaging shipments by NAICS groupings from the U.S. Cen-

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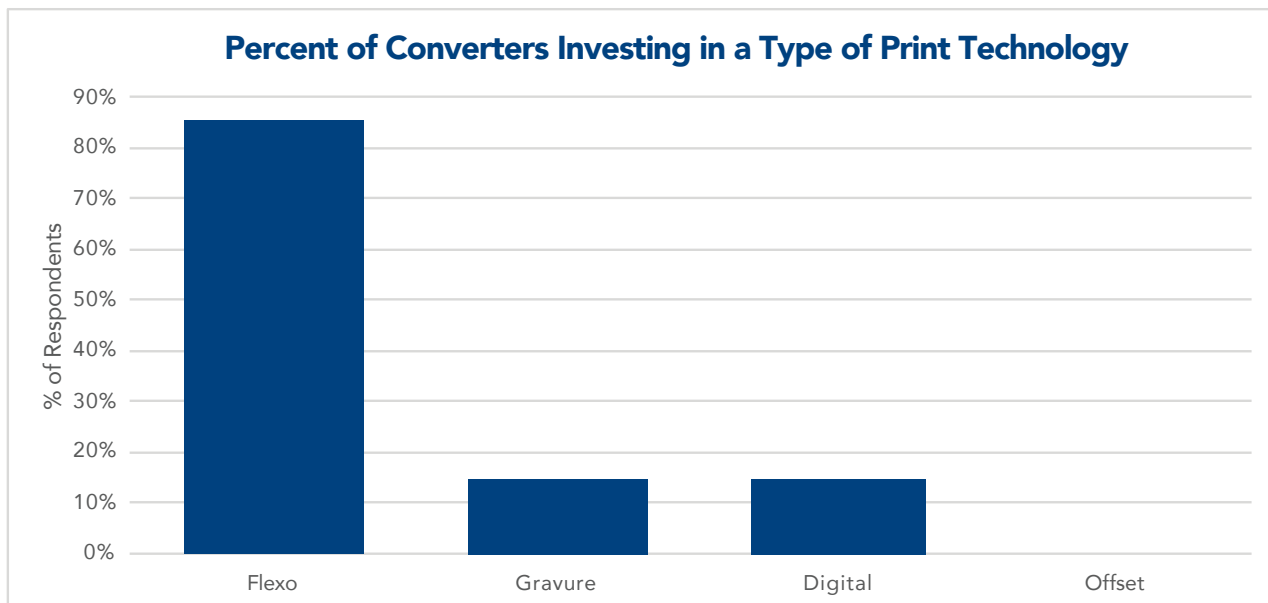
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Source: FPA 2023 State of the Industry Survey

sus Bureau, the largest category related to flexible packaging is the area of “Plastics Packaging Film and Sheet (including Laminated) Manufacturing,” which made up about \$16.1 billion in 2022. This was followed closely by “Plastics Bag and Pouch Manufacturing” which generated \$14.9 billion in value.

Materials and Processes

Flexible packaging companies utilize several materials and processes to produce flexible packaging. Films and resins accounted for the largest spend for converters with the two categories making up over two-thirds of material purchases — films are 47 percent; resins are 23 percent. Within films, polyethylene remains the dominant material, with 96 percent of converters responding to the survey saying they use PE. Polypropylene and polyester are the next most frequently used categories.

According to the report, printing, bag/pouch making,

According to the report, printing, bag/pouch making, laminating and stand-up pouch production remain the most common processes done by converters.

laminating and stand-up pouch production remain the most common processes done by converters with more than 75 percent of converters saying they perform those processes. Other processes such as coating, extrusion and labeling, among others, help converters differentiate themselves from their competitors. While not cited as a specific process, sustainability capabilities and the ability to handle and provide unique materials that include post-consumer recycled content, bio-based or paper-based substrates, will further allow converters to differentiate themselves.

In looking at flexible packaging structures sold by survey

participants, “Rollstock” remains the dominant format produced by converters with 96 percent saying they produce that format, accounting for 57 percent of dollar value and by far the largest category, as has been the case in past years. Rollstock uses include primary product filling, secondary/sleeve wrap, bundling and overwraps.

“Premade, Stand-up, Non-retort Pouches” is the next most prevalent category, produced by close to one-half of survey respondents, followed by “Premade, Lay Flat, Non-retort Pouches.” While the two premade formats are produced by many survey respondents, their actual value of total production is much smaller (6-8 percent) for each format. Most other categories were produced by fewer than 20 percent of converters showing they may be more niche products.

When looking at the type of products that are used in the rollstock category, the “Bag & Pouches, Stand-up, Non-retort” format is the leader in both partic-



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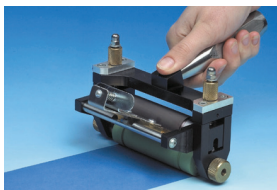
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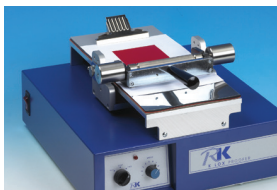
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ipation (67 percent) and the highest overall dollar value (23 percent). “Bag & Pouches, Lay Flat, Non-retort” is the only other rollstock category also produced by over half of survey respondents and with the same value at 23 percent. These were the two leading categories from last year’s survey, having just switched the top position.

On the printing side, flexography continues to be the most prevalent technology, accounting for 72 percent of all shipments, followed by 15 percent of items shipped as unprinted and 12 percent using rotogravure. Digital printing continues to make inroads, albeit

When looking at where converters are making future printing investments, 85 percent said in flexo, while 15 percent cited investments in gravure and the same, 15 percent, in digital printing.

slowly as it still accounts for under 1 percent of all shipments, but 23 percent of respondents claim to have digital printing capabilities. When looking at where converters are making future printing investments, 85 percent said in flexo, while 15 percent cited investments in gravure and the same, 15 percent, in digital printing.

Data Sources

FPA gathers the information contained in the report through several reliable industry sources, including the FPA members’ State of the U.S. Flexible Packaging Industry Survey; the FPA non-members’ Industry-Wide Converter Survey; the Annual Survey of Manufactures (ASM), published by the U.S. Census Bureau; the U.S. Department of Labor; the U.S. Department of Commerce; industry analysts and investment banking reports.

Data collected from these sources provides a more complete picture of the U.S. flexible packaging industry and helps to crosscheck information regarding industry size, structure, market segments and key packaging products. The report is available to all members and is available for purchase by non-members. ■

ABOUT THE AUTHOR

Dani Diehlmann is the Vice President of Communications for the Flexible Packaging Association and has over 20 years of experience in the flexible packaging industry.



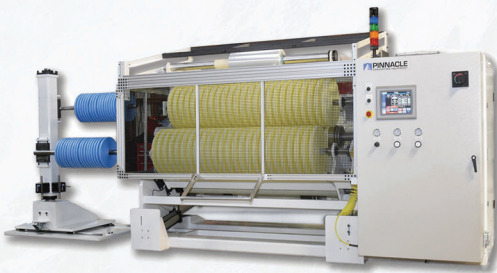
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Addressing Bio-film/Compostables and Plastic Film Processing Challenges

By Tom Kerchiss, Chairman, RK PrintCoat Instruments Ltd.

There are a number of bio-based and other materials becoming available that go some way towards meeting environmental concerns. The one that perhaps everyone will be familiar with is cellulose, the main cell wall constituent of plants.

Typically associated with paper and board, the fibers when separated and processed using small amounts of natural and synthetic binders lead to the production of cellulose film or cellophane. Cellulose can also be made into cellulose acetate. This is

manufactured by cellulose reacting with acetic anhydride.

The formulae is precipitated in water, dried and dissolved in acetone prior to being cast as a film. In its uncoated form it is highly permeable to moisture but is highly resistant to bacteria, aroma and flavor. Most cellulose-based films are coated, metallised or laminated. Coatings can be synthetic or bio based.

Biopolymers can be obtained directly from natural substances that include polysaccharides and proteins or by the polymerisa-

tion of monomers derived from a biomass. An example that most packaging technologists will be aware of is polylactic acid or PLA.

Bio-based polymers can be an alternative to materials such as petroleum-based plastic rigid and flexible filmic materials. Bio-based materials are being developed, as we all know, to be biodegradable and/or are compostable when they reach the end of their life cycle. But it is far from a straightforward process; ink manufacturers, coating suppliers and other supply chain partners are involved in any devel-



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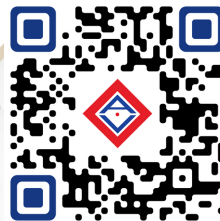
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opment program. Also, in the loop are those connected with determining whether materials will run effectively on the various types of processing machines without compromising on product viability and commercial objectives.

The production of plastic film and subsequent conversion will undoubtedly become more focused. Customer bespoke filmic production for specialist applications is likely to remain important and for the reasons now outlined.

The technical characteristics and performance properties of filmic-related materials have enabled converters to produce products that would have been impossible to create with paper-based materials. Structured filmic multi-web or combo materials have enabled converters to produce packaging with graphics that could withstand not only the temperature extremes associated with frozen foods and pasteurization, but also the wear and tear of product filling lines.

Consider for example oriented polypropylene. Films such as oriented polypropylene (OPP) films when surface treated are often suitable for conversion with water-based inks, adhesives and cold seal, as well as with heat-activated sealants and coatings.

OPP films that have the ability to be convertible on both sides can be printed primarily by flexo, gravure or conceivably by a hybrid arrangement, laminated or metallized to produce cost-effective packaging products that look good and with good barrier properties. However, and from an ink formulator's perspective, polypropylene is perhaps the film with the greatest potential for variance owing to the presence of antioxidants, stabilizers and slip compounds.

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Filmic structures including OPP present problems if an operator treats them in a cavalier fashion. Not all films are the same; all have their quirks. But this can also be said of other materials, including synthetic papers, co-joined structures such as pouches and probably the same will be said of bio-based and compostable materials when they become more widely available and acceptable.

Oriented polypropylene (OPP) is a well-known and versatile material. It is strong, dimensionally stable and is suitable for applications that require a degree of permeability. Alternatively OPP can be engineered to provide the desired barrier resistance not only for many flexible packaging purposes but also for many industrial applications.

Specialization — the product, print and conversion of ultra-thin films for non-woven applications, the construction sector, scientific and technical, electronics and countless other areas of perhaps, low volume but high value — may well be the future for many films. ■

ABOUT THE AUTHOR

Tom Kerchiss is the chairman of sample preparation system and print/coat/laminating technology specialist for RK Print-Coat Instruments Ltd. The company, which won an Innovator in Pre-Press Award for the FlexiProof 100, supplies printing ink manufacturers, both large and small, as well as printers, converters and other businesses with color communication devices for all of the major print disciplines.

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The Evolution of Digital Printing in Corrugated Applications

A New Era of Possibilities

By **Manny De Barros**, Chief Revenue Officer, Sutherland Packaging

In 2007, I got my first iPhone. It was shiny, flashy ... a bit slow, and more than a bit clunky. It was an eye-catching, conceptually amazing device that, when put into day-to-day operation, left a lot to be desired.

More than 15 years and numerous iPhone iterations later, the pocket-sized, high-powered computers we now carry are light

years ahead of their not-so-ancient predecessors. Love 'em or loathe 'em, smartphones illustrate the astonishingly rapid evolution of perhaps the most significant tech innovation of the 21st Century to date.

When it comes to printing, a direct correlation can be drawn to digital presses. When it first debuted, digital printing was a

prospective game changer that, according to critics, wasn't quite ready for prime time. Most glaringly, early digital printing was too sluggish and its inadequate color matching compared unfavorably to traditional flexographic presses.

Yet, amidst these drawbacks, promising advantages emerged. The potential for automated setup held the possibility of significantly

Q&A with Enercon's Sales Director Mike McConnell

Enercon is celebrating its 50th year in business, what has made the company so successful?

That question is best answered in the words of our customers. We routinely hear that the equipment we supply is exactly what the customer needs. And this is because we know surface treating applications, and we know what it takes to make reliable equipment for challenging environments.

It's no secret that we're the number one surface treating supplier in the USA, we've earned that spot and are very proud of it. In fact, I can't tell you how many times we've replaced treating equipment that has been shipped in from Europe. Our customers simply have higher expectations when it comes to performance and support. And that's exactly where our focus lies.

Tell us about new products Enercon has been working on?

Enercon just released our new removable cartridge design with quick disconnect electrodes. The design is innovative because it reduces downtime associated with electrode replacement and maintenance, while retaining all the features & benefits of our current electrode assembly design. We're



Enercon's new removable cartridge with quick disconnect electrodes.



also about to release a new product for blown film lines which will make operations more efficient.

What changes are you seeing in demand for corona treaters?

We're seeing a heightened desire for maximizing operator safety. More converters are taking advantage of Enercon designs in this area. We have numerous types of mechanical and electronic guarding, interlock, and safety features which can be matched to each customer's operational requirements.

How do plasma, flame & ozone surface treating technologies compare to corona?

As the only manufacturer of all these technologies Enercon is well equipped to determine which technology is best for our customer's applications. An extrusion coating line is a great example where a flame treater, corona treater and ozone generator are all used to support the converting process. And Plasma is an excellent choice when other technologies are unable to achieve the desired results.

What are emerging applications for surface treating technologies?

We're doing a lot of work in the battery industry treating anode, cathode, and battery separator material to improve adhesion. In other areas our technologies are used in the production of new films that are pushing the envelope on sustainability & recyclability. In fact, our lab is the proving ground for many of these new developments for both film substrates and equipment innovation.

Can you provide an update on Enercon's new corporate headquarters?

Absolutely, our teams will soon be moving into the new facility, and we are all tremendously excited. The new facility features new laboratories, dedicated space for research & development, customer training and more. In addition, with the added space our capacity and efficiencies will increase. This is a great investment for both Enercon employees and customers. ■

reducing downtime and introduced the prospect of producing runs with versioned or even customized per-item prints – for example, mosaic printing. Simply put, digital was more flexible than flexo but needed to gain ground in other critical areas.

Today, although there's always room for improvement, significant progress has been made that, for corrugated printers, digital presses offer far more enhanced capabilities than they once did. This is evident in the numbers. According to reports, the global digital printing market is estimated at USD \$26.3 billion in 2022¹ and is projected to approach or even surpass USD \$51.5 billion by 2032. These projections suggest rapid, steady annual upticks, with forecasts

suggesting a CAGR (Compound Annual Growth Rate) of 7 percent now through 2032.

Some context: My company, Sutherland Packaging of Andover, NJ, recently invested in an HP Pagewide C550 Digital Press, the first of its kind in the U.S. The newest generation of HP's single-pass digital press showcases the strides made in digital printing technology. It features razor-sharp, offset-quality printing in more than 16,000 vibrant colors at speeds comparable to conventional presses. Plus, it offers infinite marketing flexibility via litho-replacement print quality, dramatically enhanced speed to market and the elimination of expensive printing plates.

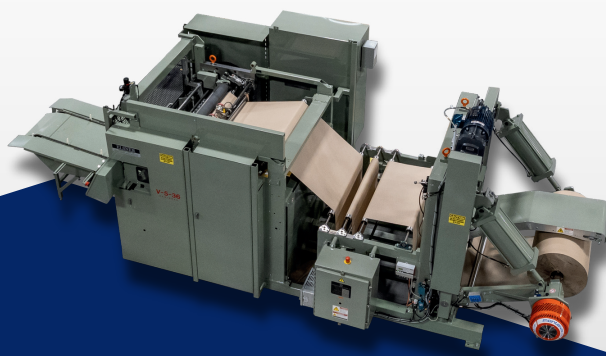
Like any digital press, the big-

gest benefit is versatility and drastically reduced make-ready times, the latter trait leading to fast turnaround. But unlike its not-so-distant ancestors, its graphics are strikingly similar to litho while averaging speeds of 2,400 sheets per hour. Print quality is enhanced with the HP C550's "litho replacement" registration and ultra-fine detail down to 4 point font, made possible by an impressive one million printing nozzles per pass.

This is just one example of technological advancements that, for digital printing, has raised the ceiling for profitable production. We're now finding that we can produce over 10,000 items before it starts to make more economic sense to use traditional flexo equipment. That's a big jump from



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yesteryear – and an ample amount of capacity given we’re generally making large-format items like snack towers, case wraps and pallet skirts.

Color matching has also undergone a remarkable transformation since the early days of digital infancy. Most notably is the advent of Expanded Gamut Printing for digital presses. Incorporating up to seven colors, the exacting process adds orange, violet and green to the original CMYK (cyan, magenta, yellow, and key/black) color set. The additional hues allow printers to match upwards of 97 percent of Pantone colors to the naked eye.

That’s a high mark – especially when grading on recent history’s sloped curve with regards to digital color matching. It’s also important given the noted challenges of direct-to-corrugated printing, such as blurriness and banding. Corrugated printing is challenging enough without compounding longstanding obstacles with additional deficiencies.

And of course, digital’s original benefits are still as valuable as ever. Minimal make-ready means you can run only what is needed, greatly reducing excess

inventory waiting in warehouses. Quick adaptations to seasonal graphics, brand messaging changes or impromptu special promotions are easily executed, leading to a drastic reduction in the time from concept to start of the print run.

But I would argue that nowhere are the benefits of digital printing more profound – and profitable – than in the surge of e-commerce onto the corrugated packaging scene.

As companies look for ways to deliver “brand in a box” experiences, a powerful tool aimed at turning first-time buyers into loyal customers, versioning and customization are being relied upon to tailor products to purchasers like never before. There are two reasons for this. First is the nature of e-commerce itself – i.e., a sale from someone’s home as opposed to a brick-and-mortar store. Second is the personal data online retailers are privy to, which often lead to metrics-driven “You might also like ...” upsells.

These dynamics necessitate printing capabilities that can capitalize on this newfound hyper-profiling. Fortunately, digital printing has made significant strides in fulfilling its promises for 21st-Century packaging, marketing and brand stewardship. ■

1 <https://www.precedenceresearch.com/digital-printing-market>

ABOUT THE AUTHOR

Manny De Barros is Chief Revenue Officer for Sutherland Packaging, a leader in corrugated point-of-purchase (POP) displays and packaging for retail locations and club stores. The company’s specialties include custom packaging, structural and graphic design, full-color direct-print point-of-purchase displays, precision litho printing, fulfillment and on-box marketing. For more information, visit www.sutherlandpackaging.com.

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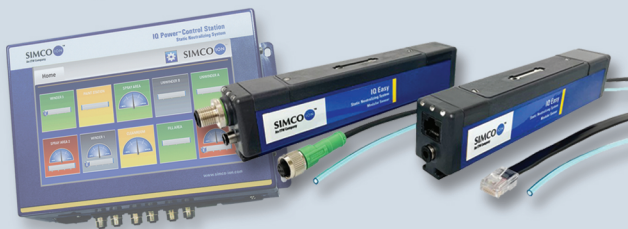
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Labels can be made from pulp-based paper, synthetic materials such as vinyl, polyester, polypropylene or other plastics, or special synthetics. Photos courtesy of PPG

Pressure on Paper Packaging Converters

How Label Suppliers are Key to Meeting Sustainability Goals

By Amy Donato, PPG Global Platform Director, TESLIN®

The data doesn't lie. The World Bank predicts that without drastic actions, global waste will increase to 3.4 billion metric tons by 2050¹ — an increase of 70 percent from today. And while we think about paper packaging and labels as a sustainable option because they are recyclable or biodegradable, they use a lot of energy and water to produce.

Consumers, brand owners and packaging converters are prioritizing the need to be more sustainable, not only with products but also in their operations, practices, supplier relationships and transportation of goods.

Why? Consumers are demanding sustainable products and sustainable product packaging. According to a Bain report, in Europe, 71 percent

of consumers claim they want to buy sustainable products. In the US, 71 percent of consumers claim they want to buy products with as little packaging as possible. Similarly, a recent global McKinsey report found that consumers value sustainably sourced and manufactured products which has led to 2.7 times faster growth for sustainable products vs. traditional goods, despite price premiums over their conventional counterparts.²

Brands, suppliers and converters are taking action. McKinsey reports that 75 percent of global companies have made sustainable-packaging commitments.³ And a recent survey by the National Association of Manufacturers found that a primary sustainability focus of manufacturers

is energy efficiency and reduction.⁴

While the number of companies in the paper and packaging industry committed to science-based targets has rapidly increased from five companies in 2019 to 164 in 2022, more than 30 percent of those companies are behind on their near-term scope 1 and scope 2 targets. And even more are behind on their scope 3 targets,⁵ which are the indirect upstream and downstream emissions that occur in a company's value chain.

There is room to advance such goals.

Paper packaging converters are all in different stages of their sustainability journeys, with some just beginning and others honing their efforts. So how can they ensure they're doing everything they can



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to reach their sustainability goals and those of the brand owners they serve?

The answer lies in strong supplier partnerships. Packaging suppliers can help manufacturers meet their sustainability goals by reducing plastic and raw materials, using bio-based content and light-weighting, without yielding on durability and production productivity.

Let's look at label suppliers, as one example. Labels can be made from pulp-based paper, synthetic materials such as vinyl, polyester, polypropylene or other plastics, or films/special synthetics. Not only must you consider the facestock of the label itself, but also the inks and coatings utilized, the adhesive, and in the case of self-adhesive labels, the liner material as well. There are a

myriad combinations and options to use based on the container the label has to adhere to, such as plastic, glass, paper, wood, metal, and the environmental conditions, from indoor/outdoor usage to moisture and ranging temperatures. Consistently, labels must be versatile, extremely printable and ensure the image of brand comes across clearly despite these varying factors. That's not an easy combination to solve.

Suppliers Who Help to Solve Problems

Converters are seeking substrates that solve unique problems for their customers. For example, converter sourcing departments regularly partner with labelstock suppliers who supply facestocks that work well with

specific print processes – fixed and variable printing methods – including inkjet, laser and thermal transfer. Ultimately, this reduces complexity for the converter, which generally uses multiple print technologies. Unfortunately, not all substrates run well or can be printed on different technologies. Luckily, there are unique synthetic paper labels that fulfill these requirements while simultaneously reducing plastic usage by up to 50 percent. This leads to the usage of fewer raw materials and a reduction of waste in landfills.

Labels that Don't Compromise the Brand

In addition, brands remain focused on the look, feel and integrity of the brand itself. How the packaging and

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label appear on the shelf at retailers, as well as e-commerce, matters to both the brand owners and the consumers. Brand owners are craving packaging and labels that both enhance the brand and help meet their sustainability goals. This translates to ensuring a proper label that is highly printable with accurate colors, as well as one that supports sustainability goals.

Labelstock Suppliers Who Also Prioritize Sustainability

Companies and citizens have a responsibility to take action to reduce negative impacts on the environment.

Find a labelstock supplier that also prioritizes sustainability. One who is willing to help track process-

es, data and fill out your scorecards (and the scorecards of your customers). A supplier partner must work to overcome challenges and solve problems with you and your customers.

Consumers hold more leverage than ever before. They're demanding, not requesting, more sustainable products and packaging without compromising the quality they've come to know and expect. Brand owners, converters and suppliers must work together across the value chain to solve these unique demands, while continuing to innovate and increase profit margins.

Is your labelstock supplier helping you solve these unique challenges? ■

- 1 <https://openknowledge.worldbank.org/entities/publication/d3f9d45e-115f-559b-b14f-28552410e90a>
- 2 <https://www.mckinsey.com/industries/industri->

als-and-electronics/our-insights/sustainability-in-packaging-five-key-levers-for-significant-impact

- 3 <https://www.mckinsey.com/industries/industrials-and-electronics/our-insights/sustainability-in-packaging-five-key-levers-for-significant-impact>
- 4 <https://www.nam.org/sustainability-is-a-top-manufacturer-priority-survey-shows-19992/?stream=business-operations>
- 5 <https://www.bain.com/insights/putting-sustainability-to-work-paper-and-packaging-report-2023/>

ABOUT THE AUTHOR

Amy Donato is PPG's Global Platform Director for TESLIN® substrate — a synthetic facestock for printed labels. She has nearly two decades of experience in marketing and sales for consumer and B2B industries. She earned a B.S.B.A in marketing from the University of Pittsburgh and an M.B.A. from West Virginia University.

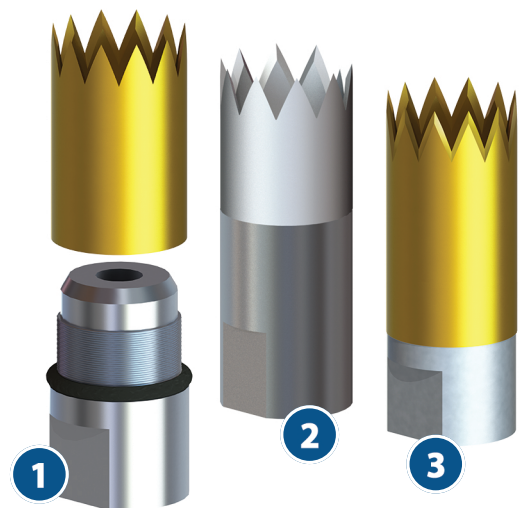
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Folding Carton packages produced on the Highcon by Cartonnage du Chateau. Photos courtesy of Highcon Systems Ltd.

Exploring the Advantages of Digital Die Cutting for Converters

By **Simon Lewis**, VP Marketing and Strategy, Highcon Systems Ltd.

Due to the challenging landscape of 2023 — marked by soaring interest rates, supply chain disruptions and global economic uncertainty — various industries, including packaging, are faced with difficult challenges. The packaging industry, having witnessed a decline in demand last year and expected to face ongoing challenges in 2024, suffers from ongoing shortage of skilled labor, supply chain disruptions and evolving demands for product innovation and sustainability.

To address these persistent challenges and foster growth in 2024, folding carton and corrugated packaging converters should consider strategies beyond conventional technology. One promising solution is digital die cutting, a transformative technology that offers an

alternative to traditional die cutting with a fully digital workflow.

Leveraging Digital Die Cutting Technology

Manufacturers are increasingly turning to digital die cutting to improve agility, efficiency, turnaround times and sustainability. This technology provides high flexibility in batch sizes and delivery times, enabling cost-effective production of short runs, without minimum order quantities (MOQs). As a tooling-free solution, it eliminates the waiting time and cost associated with conventional dies, contributing to a more agile and sustainable approach.

Unlike traditional dies, digital die cutting doesn't require wood, metal or rubber, minimizing mate-

rial costs and time. The absence of the need for transport and storage further enhances efficiency and sustainability. Additionally, the laser cutting process can handle even the finest or most complex patterns, opening up new design possibilities not achievable through conventional means.

Navigating the Complexities of 2024

As the packaging industry confronts economic complexities, embracing digital die cutting emerges as a strategic move for 2024. Insights from folding carton and corrugated converters in the packaging and display industry, shed light on how digital die cutting is helping them navigate current industry trends.

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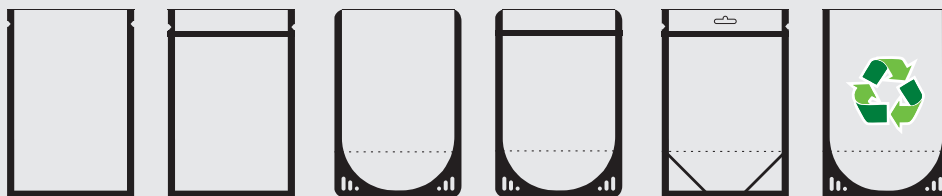
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In response to ongoing economic uncertainty, companies and brands are strategically reducing their inventory levels of packaging, driven by the anticipation of swift and efficient procurement through the ordering of smaller batches with expedited delivery. The BoxMaker in the United States is using digital die cutting systems to meet this increasing demand.

“We’re seeing now, some of

our largest customers finally willing to pay more per unit, to have a lower MOQ, less inventory and less obsolescence. We’ve been selling this concept for a long time because of digital production but we’re now seeing Fortune 100 customers suddenly coming and saying, ‘You know that thing that you’ve been talking to us about for a couple of years? We want to do it tomorrow. Not a month or a year from now, but tomorrow,” said Richard Brown, president and co-owner, The Box-Maker. “If these large corporations

are starting to take that approach, it’s going to trickle down.”

Sustainability

Reducing carbon emissions, waste and the quantity of material used are imperative in modern business today, demanded by consumers and brands alike. Linney in the UK saved 92 tons of wood, metal and rubber by using digital die cutting and creasing solutions, reducing carbon emissions and waste in the first 18 months after installation. The environmental impact is substantial, equivalent to 35 flights from London to New York and preserving two and a half football fields of rainforest.

Continued SKU Proliferation and Product Development

Virtual Packaging in Texas uses digital die cutting to support customers in packaging development and pilot volumes, anticipating increased product development across industries. “Whether you’re retrofitting your packaging, or you’re coming out with new packages or new lines and new packaging in general, we’ve seen an uptick in the

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last six months. I think it's here to stay," said Jordan Patterson, vice president, Virtual Packaging.

Differentiation to Stand Out

Heuchemer Packaging in Germany uses digital die cutting for consumer engagement and increased sales.

"This is reflected in a higher price point, as customers recognize the value in packaging tailored to their needs. Even with a simple brown material, our use of laser cutting introduces attractive ele-

ments, adding distinctive twists to the exterior," said Sophie Heuchemer, co-owner and director of R&D, Heuchemer Verpackung.

Labor Shortages

Digital die cutting is designed to be simple and intuitive, address labor shortages by enabling inexperienced operators to quickly learn, ramp-up and deliver superior performance. Shortly after Thimm Všetaty completed its ramp up digital die cutting process, Plant Manager Kamil Masek said the equipment is running three shifts, adding that the system is used for short runs, special products and even jobs that would normally be produced on analog.

However, due to tooling taking time, they are produced on the digital die cutting system.

As digital die cutting reshapes the packaging industry, the experiences of industry veterans highlights the adaptability and advantages of this technology for years to come. ■

ABOUT THE AUTHOR

Simon Lewis has devoted most of his career driving analog-to-digital transformations – digital proofing, computer-to-plate, direct-to-press, digital printing and digital die cutting. Before joining Highcon, he spent 14 years at HP Indigo, where he held pivotal roles, including leadership of Strategic Marketing, and served on the executive management board.

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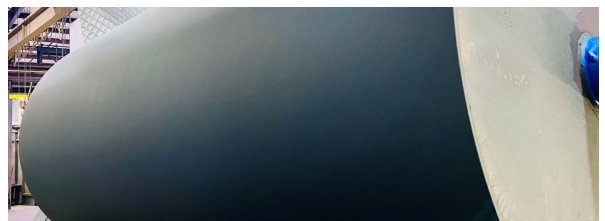
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Research Reveals Biggest Testing and Inspection Challenges Faced by Food and Beverage Packaging Professionals

By **Steve Davis**, Product Line Director, Industrial Physics

Research into the attitudes of manufacturing decision-makers has uncovered that food and beverage packaging professionals think there are significant barriers for innovation. The research revealed a strong appetite within the sector for innovation, with 96 percent of food and beverage packaging professionals believing it is important to explore new developments in packaging.

In particular, professionals within the industry are looking to address increasing demands for greater sustainability and consumer preferences by exploring new packaging mediums.

However, the research also highlighted that food and beverage

packaging manufacturers are facing significant challenges when it comes to testing and inspecting these new innovative materials.

In fact, 42 percent said that a lack of suitable testing standards was the biggest barrier for packaging innovation. It is important to address these challenges in order to continue to innovate and avoid getting left behind in the rapidly evolving sector.

Testing and Inspection Challenges

Professionals in the food and beverage packaging industry expressed varying concerns over testing and

inspecting new types of packaging. These included the high cost of expertise required (63 percent), limited available testing facilities (50 percent), lack of in-house expertise (41 percent) and current testing methods not being applicable to new materials (35 percent).

Food and beverage packaging is subject to much stricter standards and regulations than many other types of packaging, due to the requirements of consumer health and safety. This is why it is more difficult to move away from unsustainable materials such as single-use plastic. There are growing pressures for food and beverage packaging professionals to overcome testing



and inspection barriers for new sustainable materials.

Difficulties arise due to a lack of available knowledge about new materials and how they react under testing conditions. New materials sometimes behave in a complex way meaning that current testing methods may not be applicable to them, or they may be harder to test and require certain expertise.

For instance, recycled materials may have previously undergone multiple manufacturing processes and so the way they behave can be difficult to anticipate. This makes the characterization of materials and the standardization process particularly challenging for manufacturers. Food and beverage packaging manufacturers

Advice to food and beverage packaging professionals is to continue to innovate, share new discoveries and attend industry events to meet other experts and gain valuable insights.

may need additional equipment to test these materials, which can be costly.

Moreover, recycled materials can accumulate hazardous chemicals, some of which are difficult to identify. This poses significant risks for food and beverage packaging and it means that packaging requires rigorous tests to ensure it is fit for consumers.

Tackling Testing and Inspection Challenges

Packaging innovation is important to reduce the impact of single-use materials on the environment. Without innovation, businesses will face getting left behind in the sector. Despite testing and inspection seemingly presenting significant barriers, there are ways that professionals can continue to explore new types of packaging.

In order to establish appropriate testing methods, there needs to be more collaboration between packaging professionals and industry bodies. Standards and guidelines need to be kept up to date so that they're applicable to new materials.

New sets of data need to be

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built up and shared between professionals so that knowledge is more widely available within the industry. Advice to food and beverage packaging professionals is to continue to innovate, share new discoveries and attend industry events to meet other experts and gain valuable insights.

It is also important for food and beverage packaging manufacturers to invest in the necessary equipment to test new materials. This investment will be highly beneficial for businesses in the long run and can allow them to remain competitive, save time and increase in-house expertise.

The Next Five Years

The research revealed that 33

percent of professionals believe that the biggest developments in the next five years for packaging innovation lie in testing processes and equipment.

Within this timeframe, there are important changes to be made by all involved in the food and beverage packaging sector. It is hoped that there will be more knowledge and data about new materials available for professionals so that sustainable packaging can be widely used without as many testing and inspecting barriers.

We should see changes to testing standards and guidelines processes so that they are updated more frequently and in line with changes within the industry. Food and beverage packaging manufacturers should also aim to establish appropriate

testing methods within their businesses and focus their efforts within the next few years on securing sufficient in-house expertise. ■

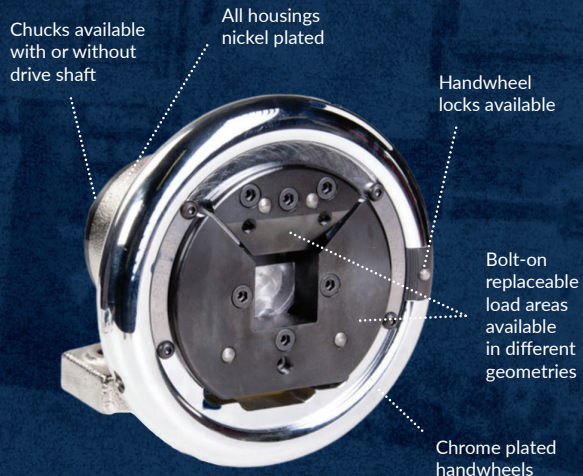
1 https://industrialphysics.com/campaign/packaging-innovations-2023/?utm_medium=publication&utm_source=pressrelease&utm_campaign=thoughtleadership23

ABOUT THE AUTHOR

With more than two decades of engineering experience, Steve Davis, Global Product Line Director at Industrial Physics, is an expert in the design and development of metal packaging testing systems. He utilizes his specialist skills to lead a team of experts at Industrial Physics and ensure its equipment is able to protect the integrity of its customers' metal packaging.

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IMS TECHNOLOGIES Slitting and Winding solutions

Who is IMS TECHNOLOGIES?

IMS TECHNOLOGIES is an international group born from the union of specialized, diversified companies operating in different sectors such as Converting, Packaging and other industries. Over the years, it expanded its portfolio, completed strategic acquisitions and embarked on a path of internationalization. The IMS TECHNOLOGIES name dates back to 2017, when the IMS Deltamatic company was acquired by the Coeclerici Group – a global leader in commodity supplies for the steel and chemical industries – and is aimed at emphasizing the important technical and technological know-how of the company.

The group operates three production facilities in Northern Italy, two in the province of Bergamo – in Calcinato and Seriate – and one in Casale Monferrato, in the province of Alessandria. In 2024, with a first expansion of Calcinato plant, the total production floor turned into 24,000 square meters dedicated to the production and assembly of high-tech machines.

The company consolidates its **global presence** with commercial and technical assistance offices in Germany, the U.S., China, and soon in India, highlighting IMS TECHNOLOGIES' commitment to providing timely support to customers worldwide.

The Group currently specializes in the production of machinery for slitting materials roll to roll, covering a wide range of applications from paper to aluminum, pressed tobacco to aseptic materials, and from wide-range plastic film to coils of flexible ma-



IMS TECHNOLOGIES Hedquarter in Calcinato (BG) – Italy

terial for household use. Thanks to an extensive portfolio, it can serve both the primary and the converting markets.

What is the competitive advantage that IMS TECHNOLOGIES offers its customers?

The production of machinery for extremely diverse applications requires specific technological expertise, and IMS TECHNOLOGIES excels in precisely this. The company boasts advanced skills in processing heterogeneous materials, allowing it to provide both standard and customized solutions to meet a wide range of needs.

Another key element of IMS TECHNOLOGIES' success lies in its ability to form teams composed of experts with diverse backgrounds and experiences. It is exactly this diversity that con-

tributes to generating innovative perspectives and new approaches in finding solutions for specific challenges and customer needs.

In this way, the company can present a unique and original offering to the market.

Who is the target customer of IMS TECHNOLOGIES?

IMS TECHNOLOGIES caters to a wide range of customers, including large multinational corporations – e.g. film producers or paper mills – seeking a partner capable of managing complex projects on an international scale. The client portfolio of IMS TECHNOLOGIES also encompasses converters with standard needs, showcasing the company's flexibility in meeting a variety of requirements. The ability to develop machines and solutions that can interpret a wide range

of requests is undoubtedly one of the distinguishing elements of the company.

What developments does IMS TECHNOLOGIES intend to pursue to intercept the future of the converting market?

For 2024, IMS TECHNOLOGIES has identified India as a crucial first step in its expansion plan, having already established a solid presence through local agents and planning to further intensify it. The initial focus will be on the paper mills sector and the development of the paper business, leveraging the deep experience and accumulated know-how over the years.

Nevertheless, a key element of the strategy is the continuous attention to the film sector, both for primary producers and converters. This sector has already brought significant satisfaction in past years, and IMS TECHNOLOGIES aims to consolidate and expand its presence in this segment.

Another strategic aspect is the development of slitting and rewinding solutions for the non-woven industry, recognizing the importance and opportunities that this rapidly growing sector offers.

Diversification remains a priority, reflecting the company's long-term vision and its commitment to adapting to market dynamics.

To ensure the success of these initiatives, IMS TECHNOLOGIES will continue to rely on its global network of sales managers and expand its agent network. This proactive approach underscores the company's ongoing efforts to

Diversification remains a priority, reflecting the company's long-term vision and its commitment to adapting to market dynamics.

consolidate its global presence and capitalizing on emerging opportunities in various industry sectors.

At last, but not least, IMS TECHNOLOGIES is committed to creating cutting-edge, integrated solutions by actively collaborating with client partners to develop modular standard tools adaptable to specific needs. The focus is on analyzing machine performance through the MAIA industrial platform, based on the cloud. This platform enables users to collect, visualize, and analyze data on machines, providing valuable information for predictive maintenance.

By offering data for predictive maintenance, IMS TECHNOLOGIES contributes to providing a clear overview of production performance, with increasingly precise details on cost management. This approach reflects the Group's dedication to meeting the evolving needs and challenges of clients in the converting industry through integrated solutions and advanced technologies.

IMS TECHNOLOGIES AT A GLANCE

The IMS TECHNOLOGIES Group is an international standard-setter in the engineering

and manufacturing of high-tech customized machinery in multiple sectors, including converting, packaging, and other industries.

IMS TECHNOLOGIES, with its long history reaching back to 1851, leverages extensive know-how and expertise to develop cutting-edge solutions adhering to the highest standards of productivity, quality, and precision. These innovations are then brought to market through the group's internationally renowned brands.

The group's flagship brands, GOEBEL IMS and LAEM IMS, solidify its status as an international leader in developing converting machinery. GOEBEL IMS is renowned for its comprehensive range of slitter rewinders, un- and rewinders, as well as specialized machines. These cater to manufacturers and converters working with diverse materials such as paper and board, film, alufoil, and nonwoven. Meanwhile, LAEM IMS specializes in slitting and winding machinery tailored for the converting and flexible packaging industries. Noteworthy offerings include dual-shaft and high-productivity turret machines capable of processing a variety of materials.

In essence, IMS TECHNOLOGIES Group stands at the forefront of innovation, perfectly integrating a wealth of experience, cutting-edge technology, and a commitment to delivering unparalleled solutions to its global clientele through its distinguished brands.

Marino Ferrarese
Group Sales, Marketing
& Service Director
sales@imstechnologies.com

Baldwin Technology: A Leader in UV Curing Systems for Converters

Baldwin Technology, part of the BW Converting Solutions platform, is a global leader in the design, manufacturing and service of conventional UV, LED-UV, and IR systems meant for industrial use.

LED-UV

Baldwin's AMS Spectral UV XP Series, engineered to retrofit LED-UV systems onto existing printing presses, significantly lowers energy consumption, decreases downtime, and extends the lifetime of the press versus conventional UV systems.

The XP Quatro features the proven LED-UV technology developed for printing presses, with a design adapted for the converting industry. It uses the same optics and LED chips as the standard XP product line, but doubles the UV energy by placing two independent rows within one housing while only increasing the size by 1" (25mm) in machine direction. This results in a higher total UV energy exposure (dose, J/cm²) in a compact footprint. The XP Quatro design also provides an economical solution for applications with two LED-UV wavelengths on the same production line.

Arc Lamp Systems

The use of conventional UV technology (medium pressure mercury lamps) has been used by the converting industry for over 50 years. Baldwin's QuadCure arc system utilized CFD software to minimize air impingement on reflectors and target the cooling air only for the bulb. The system utilizes water cooling in the shutters and



housing, minimizing the external housing temperature and heat transfer to the conveyor and tooling, and increases bulb life by focusing the air-cooling on the bulb.

Another unique innovation is the Cool Arc product line. This design is modular with high power capability up to 600 W/in (240 W/cm), built-in air cooling, fast acting dichroic shutters, integrated quartz plate, and toolless lamp replacement. This is ideal for laboratory/pilot lines and applications of 85mm to 400mm.

Service and Support

Baldwin manufactures bulbs for QuadCure, Cool Arc and other OEM systems at its manufacturing facilities in Easton, Pennsylvania and Slough UK. Services

including installation, start-up, training and maintenance are performed by a global team of highly trained service technicians. Multiple locations around the world have spare parts in stock to keep customers' lines up and running.

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For more information, please contact:

Craig Black, Vice President of Sales,
Americas: craig.black@baldwintech.com
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Dover Flexo Electronics – Celebrating 50 Years of Tension Control Innovation

Dover Flexo Electronics (DFE), a recognized innovator in tension control technology, is celebrating its 50th year manufacturing load cells, amplifiers, display indicators, closed-loop controllers, pneumatic brakes and idler rolls. DFE tension systems deliver improvements in material processing productivity and reliability, helping to reduce waste and operating costs. Industries such as flexible packaging, paper, film, foil and web converting are their specialty.

Investment in a new tension measurement system often begins with the installation of a *Tension Roll®* transducer or cantilevered *Narrow Web* transducer. The *Tension Roll®* and *Narrow Web* both combine a roll shell with dual tension sensors in a robust, shaft-centric design. The roller systems are ordered to spec and require no assembly — just bolt them onto the machine. *Tension Roll®* and *Narrow Web* transducers are available in a wide range of diameters and lengths with load ratings from 12 to 400 lbs (53 – 1779 N). CAD models in 60+ native formats are available for download on each product page ensuring design integration is quick and easy.

DFE also manufactures *Model C* cartridge-style tension transducers, considered to be the industry standard in high-sensitivity semiconductor strain-gage load cells. These workhorse tension sensors are available to support live-shaft and dead-shaft idler rolls with a wide variety of mounting styles and load ratings that range from 10 to 800 lbs.

The semiconductor strain-gage technology featured in all DFE load cells delivers up to 33x more signal performance than some foil gage alternatives. In combination with the refined digital signal processing techniques used in their amplifiers, indicators and controllers — DFE's tension systems are capable of delivering an incredibly wide range of sensing performance for a given load rating. This technology advantage provides added flexibility for customers who may need to repurpose their load cells for new applications or



evolving job requirements.

DFE's *TrueView™* 1100 series touch-screen tension display indicator features an easy-to-use HMI menu and integral trend graph. Other features include a bright 500 nit, impact-resistant display and a compact, aluminum enclosure machined from solid 6061-T6 alloy for excellent durability and heat dissipation.

In 2021, DFE launched the *TA500-EIP* tension amplifier featuring simultaneous EtherNet/IP™, 0-10 VDC and 4-20 mA connectivity for compatibility with current and next-generation PLC systems. In 2023, DFE announced the addition of EtherCAT® protocol support with the launch of the new *TA500-ECAT* tension amplifier.

For turn-key control retrofits, the *SteadyWeb 6™* digital tension controller delivers precise closed-loop performance with an incredible amount of flexibility and adjustment. *SteadyWeb 6™* was designed with modularity in mind, providing torque control options for electric and pneumatic brakes, clutches and motor drive systems. The intuitive touchscreen interface greatly

reduces the time and effort needed to train operators.

DFE's full line of pneumatic tension brakes are both simple to operate and reliable. The time-tested design features stress-relieved iron discs, tool-less quick-change pads and limited-travel pistons. Each brake is assembled and balanced in a methodical process that minimizes runout for ultra-smooth torque engagement. Patented *Silencer™* friction pads are extremely effective at eliminating brake squeal — providing environmental and safety benefits for operators who work in close proximity to braking systems.

All DFE products are manufactured in the USA and backed by an industry-leading 5 year tension-free warranty.



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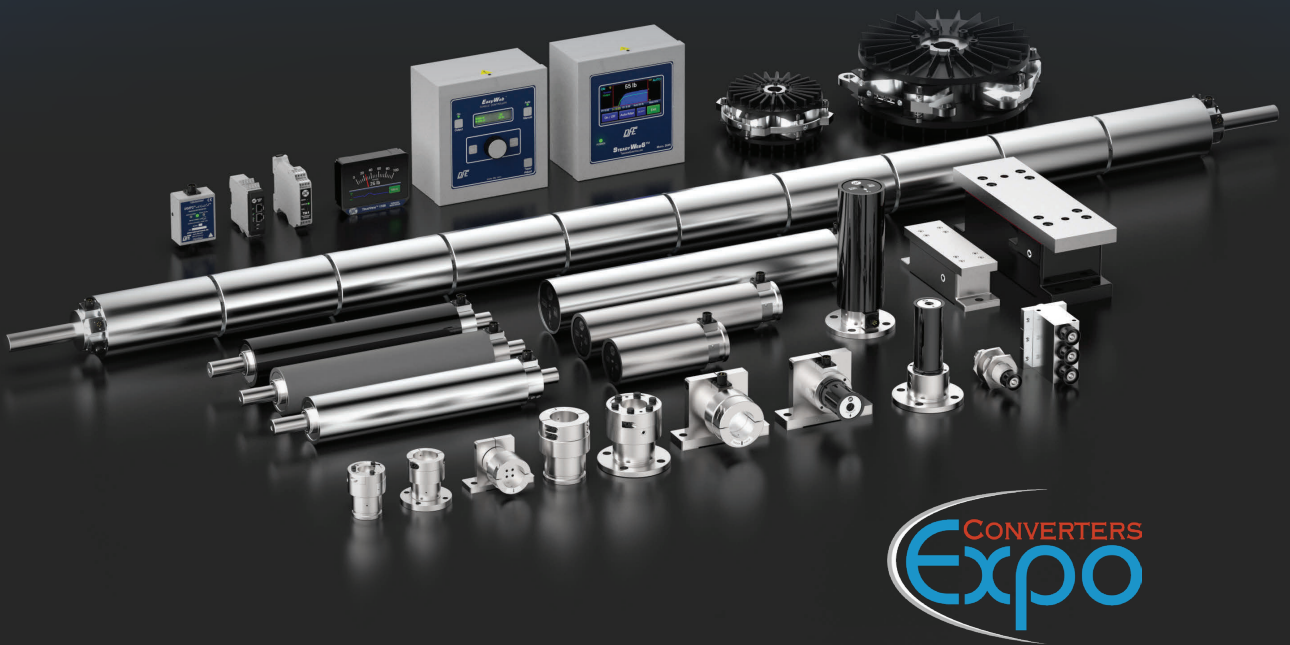
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TENSION MEASUREMENT & CONTROL SYSTEMS

A Legacy Of Tension Control Innovation & Performance

DFE is a leading provider of tension measurement and control systems with over 50 years experience serving a wide variety of industries and applications. Our load cells utilize highly-sensitive semiconductor strain gages that deliver category-leading performance and durability. DFE amplifiers and controllers deliver impressively high resolution with little to no drift. For these reasons and more, we confidently stand behind all of our products with an industry-leading 5 year warranty.



APRIL 18, 2024

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A Vision For The Future

Connected devices for smart factories are rapidly transforming control system architectures, enabling better integration of plant resources, equipment and information. DFE load cells and amplifiers with EtherNet/IP™ and EtherCAT® connectivity are a perfect fit for machinery with next-generation requirements such as remote monitoring and diagnostics.

We're eager to share our experience designing systems and components that can achieve your performance objectives. We hope you'll join us at Converters Expo 2024 to discuss your latest projects and application requirements - see you soon!



Your Creation. Our Know How

DIENES Group was founded by **Karl Rudolf Dienes** of Remscheid, Germany in 1913. His goal was to adapt cutting products and developments to meet customers' exact requirements.

Today, the DIENES Group is led by the third and fourth generation of managing directors Rudolf Supe-Dienes and his son Julian Supe-Dienes. DIENES remains the **world's leading precision supplier** in the fields of knives, knife holders and cutting systems for industrial applications.

Founded in 1954, **DIENES USA** operates from a modern 40,000 sq. ft. facility in Spencer, Massachusetts and services the United States and Canada. Our 50+ employees **design, manufacture and distribute** the full range of DIENES products, including circular knives, knife holders, and slitting systems with manual and automatic positioning systems.

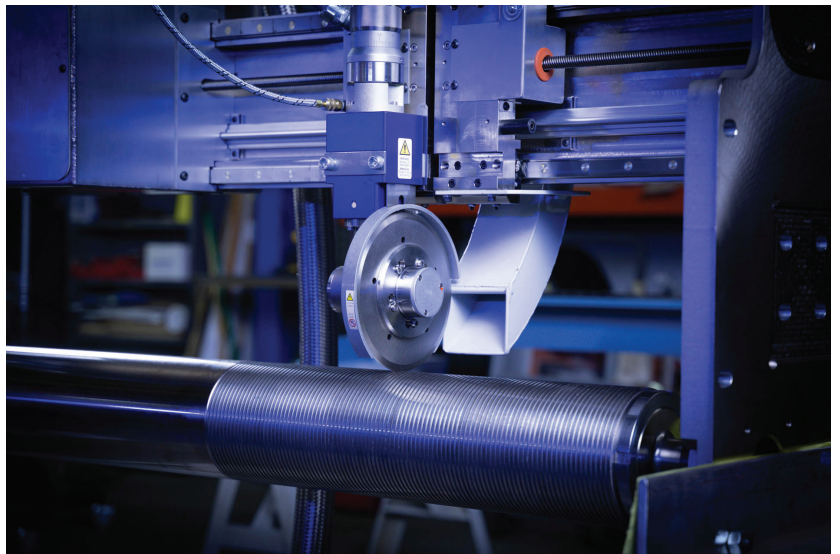
Together with our customers, we work to ensure that operating processes become better and safer. **High-quality products**, comprehensive **CAD consulting** and **reverse engineering**, professional **design**, and support for **rapid realization** of projects make DIENES a full-service partner for all knife and system technology needs.

Innovation & Quality

The DIENES team is passionate about helping you **improve cutting quality, reduce downtime and maximize operator safety**. Since the inception of our company over 100 years ago, we use the latest technology to develop the ultimate precision cutting tools that last.

With more than a **century of experience** and a strong **in-house R&D** department, DIENES is the world's leading manufacturer of industrial cutting tools. This enables us to offer our customers perfect, tailor-made solutions for unique applications. Our numerous pioneering patents have set new standards in slitting worldwide.

With over **500 experts worldwide**,



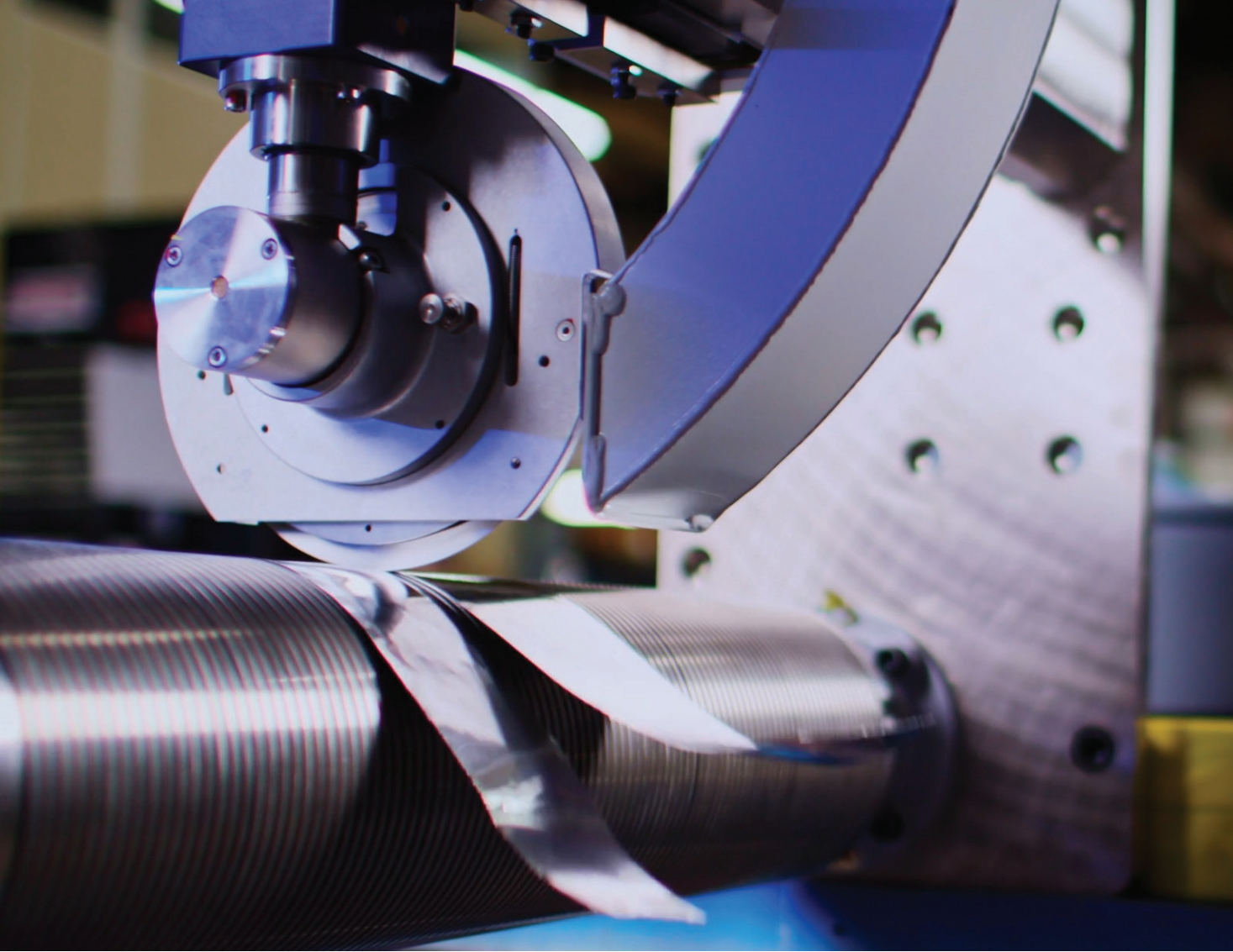
we are the partner of choice for high-performance, industrial cutting tools.

DIENES is proud to offer the highest quality tools and equipment in our industry. Day in and day out, you can count on our circular knives, knife holders and slitting machines to perform.

DIENES engineers aim to make the slitting process more **safe, durable, cost-effective, fast and narrow**—in a single word, better.



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