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ISSUE # 1 2012

TECHNOLOGY
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ANALYSIS

ISSUE # 1

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PACKAGING DESIGN

NEW TECHNOLOGY

CASE STUDIES

Understanding barrier films

What do printers need to know when it comes to choosing barrier films for printed packaging?

Putting a stop to counterfeiting

How can brands and package printers stay one step ahead in the battle against counterfeiting and product diversion?

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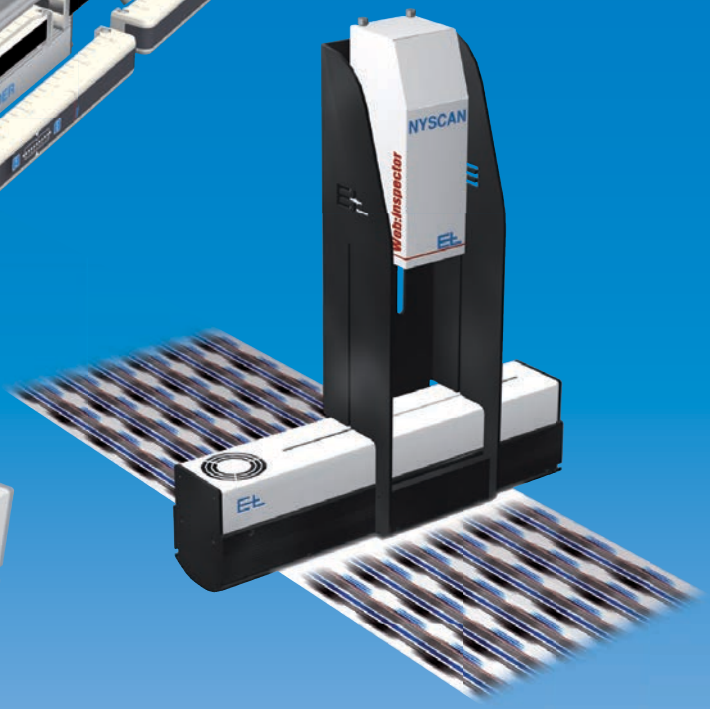
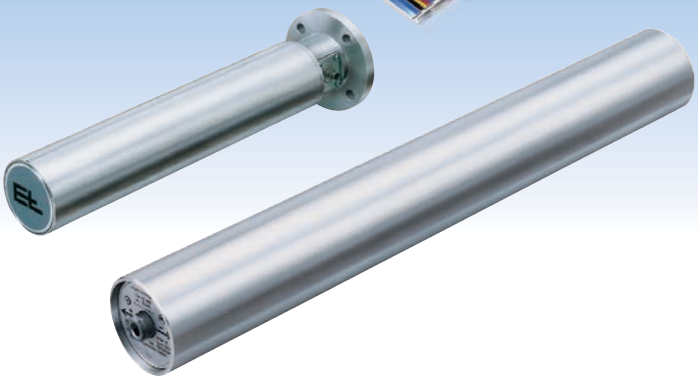
ELGUIDER
Web Guiding Systems

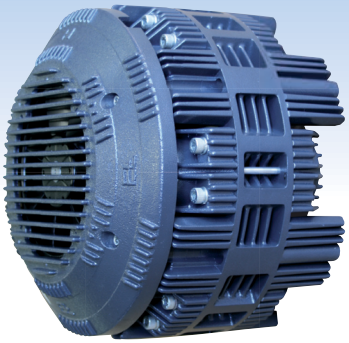
NYSCAN
Print Inspection



ELSCAN
Print Image Monitoring

ELTENS
Web Tension Measurement and Control





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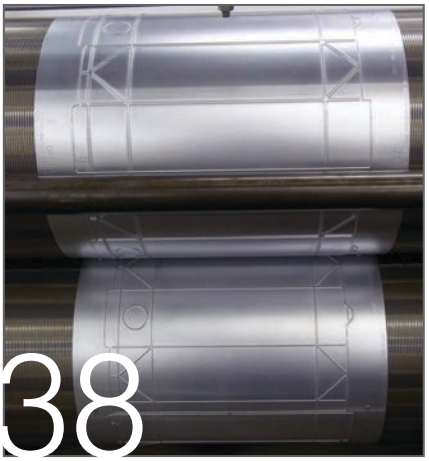
Printers

Advent Colour, Andover, Hants

PPW features

PPW intro



A vehicle for the market

After the great reception our pilot issue received, when we published it back in September 2011, I'm delighted to bring you what is effectively the first series edition of Package Print Worldwide in hard copy form in what promises to be a busy and interesting year.

This perfect-bound journal will be published three more times in 2012: the next in April as a prelude to the Drupa 2012 expo in Düsseldorf; the third in August, as a preview to Labelexpo Americas, due to be held in Chicago in September, where the innovation of a Package Print Zone, trialed in Brussels last year, will be extended; and the final issue in November, which will review the year and also act as a precursor to the Packaging Summit scheduled for Dubai in November.

Despite the ongoing economic uncertainty, there appears to be no let up in the growth of package printing, a market situation that we at PPW aim to drive and monitor as closely as possible. The trend towards shorter run lengths and increased added-value on consumer packaging continues to stretch the ingenuity of research and development departments at the technology suppliers, and there can be few other industries in the current climate that enjoy anything approaching the level of innovation that we see in package printing.

Predictions of how long the global economy will take to recover to the levels it enjoyed before the crash are numerous and varied. What is more certain is that those companies that invest in new technology, in response to changes in market conditions, will be the ones to drive the recovery and be rewarded with success and growth. To understand the market, the industry needs a medium that is close to its heartbeat. That medium is Package Print Worldwide, and it is essential reading for those involved in the industry.

On behalf of the PPW team, I wish you all a successful 2012.

Nick Coombes
Editor
editor@packprintworld.com

NEWS

CHANGING INDIAN RETAIL LANDSCAPE

INDIAN RETAIL CHANGING; MULTI-BRAND FDI 'WILL OCCUR'

The Indian retail landscape is changing and will move towards a supermarket/hypermarket model with or without foreign direct investment (FDI) according to analysts, which will present the packaging market with huge growth opportunities.

Retail FDI was initially proposed at the end of November 2011, although, at the time of going to press, had been scaled back due to political opposition over concerns about the impact on smaller, independent retailers who account for the bulk of retail sales in India.

The initial proposal approved 51 percent retail FDI in multi-brand stores and 100 percent in single-brand stores, a portion of the bill which was approved in early January. It also included stipulations regarding the areas where such retail outlets could open, investment in infrastructure and sourcing of goods from small- and medium-sized Indian enterprises.

For Benjamin Punchard and Lamine Lahouasnia, both from market research and analyst firm Euromonitor International, the Indian retail market is evolving and moving towards a supermarket/hypermarket model regardless of the Indian government's actions on retail FDI.

'The Indian retail landscape is changing at pace,' said Punchard, head of packaging research at Euromonitor, while Lahouasnia, a retailing analyst at the firm, said: 'Foreign entrants would quicken the move towards hypermarkets, but it will occur regardless.'

Lahouasnia notes many large foreign retailers, such as Walmart and Tesco, are already operating in India through wholesale arrangements, and that allowing them a direct route to the market would benefit both consumers and India's economy, especially given the requirements to invest and support local suppliers.

'They can provide expertise and investment in the back end, which is essential for the development of this format. They would have had to invest US$1 million into the Indian market, with 50 percent going into things like cold storage, shipping and supply.'

Paul Gaster, a consultant at flexible packaging industry market intelligence organization PCI Films Consulting, said: 'The Indian retail market is incredibly underdeveloped. Less than five percent of the food that reaches the table in India is pre-packaged, with around 40 percent of farmed goods going to waste as they rot by the roadside because the infrastructure is dire. There's also very little refrigeration and the distribution chain is insufficient.

'Putting a block on opening up the market to retail FDI will be an absolute disaster for India and the country's economy. With investment in infrastructure part of the offer, it will be a huge disadvantage to local farmers.'

Gaster said the likes of Tesco and Walmart will continue to work with the wholesale channel to build up their position, although added: 'There's nothing like opening their own supermarket.'

Indian supermarket chains, supported by wholesale arrangements with foreign players, are already starting to change shopping habits according to Lahouasnia and, although still small, are making in-roads to the dominant position held by the country's small, independent retail community, referred to as the unorganized retail channel, which accounts for 95 percent of sales. Lahouasnia said this channel is most at threat from retail FDI but if allowances are restricted to cities with populations of more than one million as originally tabled, would maintain a healthy presence due to the low level of car ownership, lack of refrigeration available to consumers at home and a preference to shop locally and buy small quantities.

The prevailing trend to shop locally and buy only what is needed leads Lahouasnia to state that it is more likely that retail brands like 7-Eleven, rather than Tesco or Walmart, who could revolutionize retail in India.

'Indians prefer to shop in small format stores at the moment. This will change but if 7-Eleven were to be allowed to start a retail operation it could lead the revolution as running very small stores in large cities is its domain.'

BIRTHDAY CELEBRATION

VETAPHONE CELEBRATES 60 YEARS IN PLASTICS

Danish surface adhesion specialist Vetaphone celebrated 60 years in business at the end of 2011, a period in which it claims to have innovated the market for treatment of plastics and metallic foils.

Vetaphone was registered by Danish engineer Verner Eisby on November 1, 1951 after he had been asked by a customer if he could find a solution that would make it possible to print on plastic.

The issue with writing or printing on plastic films is owed to ink not sticking since the untreated material has a structure that makes it difficult due to poor adhesion. At the time, uncontrollable and crude solutions already existed, but Eisby came up with the theory that a high-frequency charge would provide a more efficient and controllable method to treat the surface, resulting in the creation of Vetaphone Electronics and its corona treatment, as well as patent rights for the invention.

To further develop the product, Vetaphone worked with a local plastic manufacturer where they carried out tests and trials on a blown film line and printing presses, resulting in a practical use that proved its value for the plastic and packaging industry, Vetaphone said.

During the following years, Vetaphone reinvested its profits into research and development of the invention, resulting in significant improvements for the process. Even with use of extremely high powers, it was able to prevent pin holing and reversed side treatment during penetration of the plastic.

The 60-year anniversary was marked with a reception for employees, customers, suppliers and other partners of Vetaphone on November 1, 2011.

MODELS MARK MACHINERY INVESTMENT

BENSON IS "MODEL" BOBST CUSTOMER

Press manufacturer Bobst has presented UK carton converter Benson with models of its machnery after two full-size Bobst ExpertCut 106 PER machines were installed at Benson's Bardon and Gateshead plants.

The investment in its finishing capabilities follows a continued increase in demand for Benson Group's die-cut products. Benson said the Bobst ExpertCut 106 PER delivers fully blanked and piled cartons with the in-built option of full sheet delivery. The new machines, along with the upgrade of two existing die cutters, provide additional die cutting capability and together have released latent print capacity at several of the Group's plants.

Lee Appleby (pictured, centre), operations manager at Benson Group in Gateshead, said: 'The benefits of having the ExpertCut in our plant have been fantastic. It has increased our running speeds dramatically, to the point where we don't need to run our die cutters at weekends anymore.' David Midgley, operations manager at Benson Group in Bardon, said: 'The ExpertCut registers the cutting to the actual print on the board, instead of the sheet edge like many die cutters. It's perfect for jobs where we have embossing, or a critical print design, and for converting high-quality print or litho laminated board.'

Craig Moran (pictured, right), sales manager for Bobst in the UK, Ireland and Scandinavia, said: 'The comments from Lee and David reflect the high performance and great quality that the ExpertCut 106 PER delivers. It's exactly the machine that carton makers need today and with their scale models they now have a talking point to explain to their customers how they are continuously improving end product quality.'

INDIAN CONVERTER TO HOST OMET VARYFLEX OPEN HOUSE

India's Pragati Pack is to host an open house event in Hyderabad, India on April 20 to allow local package printers the chance to see Omet's VaryFlex in-line folding carton press for themselves.

The Omet VaryFlex installed at Pragati Pack is a UV flexo machine that allows the addition of rotogravure, cold foil and screen units in every position of the press. The VaryFlex's configuration allows printing, reverse printing, foiling, overprinting, metalizing, relief printing and converting to be performed in one pass.

Omet's Indian agent Weldon Celloplast will be present at the open house event, with managing director Harveer Sahni opening proceedings, while Omet international sales manager Paolo Grasso will talk to attendees about the opportunities the company's VaryFlex in-line folding carton press presents to package printers. Pragati Pack director Hemanth Paruchuri will finish the morning's presentations by speaking about the company's experience with the Omet VaryFlex so far.

The event will also feature presentations from other partners and suppliers to the package printing market in India, including EskoArtwork, DuPont and Martin Automatic.

Highcon Euclid

HIGHCON INTROS DIGITAL CARTON FINISHING

Israeli folding carton converting technology specialist Highcon is pushing its Euclid high-speed digital cutting and creasing machine as an innovative solution that will eliminate the need for conventional dies and herald the arrival of a new direct-to-pack market.

Highcon said it is a company dedicated to streamlining the converting process to meet the numerous challenges facing folding carton manufacturers and their brand owner customers.

The company was founded in November 2009 by Aviv Ratzman and Michael Zimmer, both highly experienced professionals in the digital print market, working initially with Indigo NV and latterly HP. Highcon is a private company with key investors including Landa Ventures, the investment company owned by the Indigo NV founder Benny Landa, and Israbieg, the largest die supplier in Israel, as well as other print industry players.

The result of the extensive development effort is the Highcon Euclid. This revolutionary machine uses precision laser optics and polymer technologies to transform cutting and creasing from an analogue to a digital workflow, streamlining the folding carton finishing process.

The machine will combine the patent-pending DART technology to create the digital crease lines with a unique high-speed and high-quality laser cutting solution. The result is the world's first production speed digital cutting and creasing machine, Highcon said, which does not require a die. The Euclid is designed to handle sheet sizes up to a maximum 760 x 1060mm and output from both conventional and digital presses. Stock thicknesses are up to 550gsm and a thickness of 0.6mm.

Highcon said its digital converting solution dramatically increases speed to market, eliminates costly production steps and reduces the carbon footprint of packaging production. Moreover, the implementation of this new technology will drive numerous new packaging opportunities for converters, packaging printers and brand owners.

'Over the past two decades we have witnessed key areas of the supply chain becoming digital, but packaging finishing has remained analogue,' said Ratzman, Highcon's chief executive officer.

'Converters and their customers have been unable to benefit from the speed and flexibility that digital solutions could provide to finishing. But this is about to change.'

KAMA ProCut 74 SE

Bobst Accucheck

KAMA LAUNCHES PROCUT 74 SE

To offer packaging converters high-quality, professional die cutting at an entry level price, KAMA GmbH is launching its new ProCut 74 SE.

The new ProCut, which will be available direct from KAMA and via Heidelberg, expands the manufacturer's range of automatic die cutters. The SE (Special Edition) model is designed for cost-effective and high-quality die cutting, creasing and perforating operations as well as blind embossing. It has a format of 740 x 1000mm, and can handle paper and board from 100 – 1,500 g/sqm

According to Marcus Tralau, chief executive officer of KAMA: 'Converters need to modernize their processing services with technology that will offer a rapid payback. Not everyone wants or can afford to start with a high-end machine. The new ProCut 74 SE has been tailored to meet the needs of basic applications encountered on a daily basis and offers proven KAMA technology at an attractive price.'

As a result, the new ProCut 74 SE is seen as a high-performance replacement for long-serving platen press and cylinders. Offering high register accuracy, the new KAMA cutter can process up to 4,500 sheets per hour, which is two or three times faster than cylinder cutters. Changeovers from one job to the next are quick and easy.

'With the ProCut 74 SE, customers reach the break-even point more quickly than they expect,' concluded Tralau.

BOBST LAUNCHES ACCUCHECK

Swiss manufacturer Bobst has launched Accucheck, the world's first built-in zero-fault quality control device for folding and gluing machines.

Accucheck uses Bobst's 20 years of experience in high-speed print quality control cameras and image processing to deliver 100 percent quality output.

Designed to cater for today's just-in-time production schedules and reduced time-to-market for new products and promotions, Accucheck will enable manufacturers to check the print on every single carton, in-line, during the last process before the boxes are packed and despatched to the filling lines.

NEWS

INTERNATIONAL ATTENTION

SR9-DT

TITAN DRAWS INTERNATIONAL INTEREST WITH SR9-DT

Titan Converting Equipment's new SR9-DT slitter rewinder has seen international attention since its debut at ICE Europe 2011, with orders now in the pipeline as a direct result of interest from the show.

The SR9-DT has a unique turret rewind design with automatic cutting and taping of web tails, and Roger Astell, senior manager, communication at Atlas Converting Equipment, Titan's parent company, said the SR9-DT is the fastest shafted secondary slitter rewinder available in the world for converters in the flexible packaging market, with the capacity to handle 1km each minute (1,000m/min).

Astell added that the SR9-DT can handle a number of different narrow web substrates, including foils, laminated and metalicized products, and has a dual turret design with each featuring two rewind shafts that are rotated automatically within 30 seconds once the reels are full, so making the machine, and converters, more productive. The dual turret incarnation will be followed by single turret and single shaft versions as part of the SR9 series in order to provide machinery to suit different applications, Astell said, with the new models expected sometime in the next 24 months.

RISING COST OF INK

RAW MATERIAL COSTS DRIVE INK PRICE RISE

Both Sun Chemical and Flint Group have announced increases in the cost of packaging inks in recent times, with customers now paying five to eight percent more for their consumables.

Sun Chemical increased its price for packaging inks sold around the world for all printing methods and chemistries on December 1, 2011.

It said this was due to the continued increase in the cost of raw materials and volatility in the supply chain. The average rise was approximately six percent for most products. White inks, nitrocellulose varnish and other products containing the phthalocyanine green (PG7) pigment each saw significantly higher price increases.

In addition to steep price increases for TiO2, there were very significant increases in nitrocellulose, energy cure resins, acrylics and other packaging resins, styrene, classical pigments, carbon black, vegetable oils, solvents and additives. The factors causing this volatility and inflation include feedstock shortages, commodity inflation, supply constraints and continued growth in demand from both traditional markets as well as alternative industries like adhesives, coatings and tires.

'We regret needing to take this action, but as is occurring in virtually every industry today, market conditions demand we adjust our prices,' explained Sun Chemical chief marketing officer Felipe Mellado.

Flint Group increased its solvent-based, water-based and UV ink prices for packaging in Europe on January 1. Prices increased by an average of five percent in the face of rising costs.

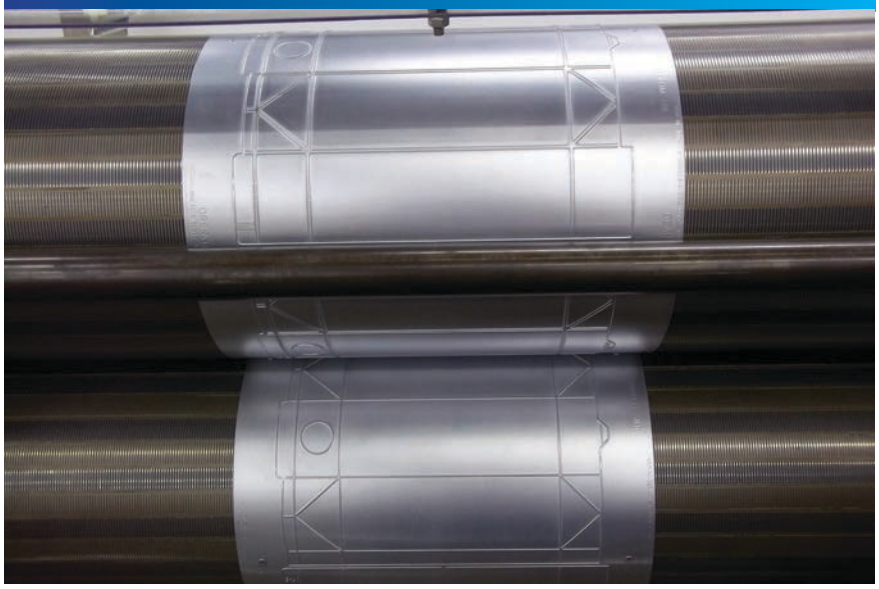
Again, the company said significant increases in raw material costs this year were to blame, as well as increased global demand for critical raw materials and a lack of replacement capacity is forcing up the costs of ink.

European price rises followed a similar move in North America, where packaging ink prices grew between five and eight percent as of November 1, 2011. Flint said some price increases fell below or above this range and varied by color, product and technology.

Mark Sutton, Flint Group's business director for film and foil in the EMEA region, said: 'The price increases for our customers will be on average five percent. Increases will, however, vary by product and some increases on specific products will be significantly higher.'

Kim Melander, Flint Group's business director for paper and board in the EMEA region, added: 'Flint Group will continue to search for raw material replacements and offer alternative products to our customers where relevant in order to minimise the impact of the increases as much as possible. Regrettably however, the extent of the raw material cost increases can not be fully absorbed by supply chain, manufacturing and formulation initiatives.'

NEW FLEXIBLE DIE INNOVATION



ROTOMETRICS OFFERS ALTERNATIVE TO CONVENTIONAL DIES FOR PACKAGING

Rotary tooling specialist RotoMetrics has introduced a new rotary pressure cutting (RPC) flexible die for liquid packaging.

The RPC flexible die for liquid packaging is optimized for polycoated two-side board and foil board for liquid packaging such as milk and juice cartons. RPC dies offer significant tooling cost savings and are offered with on-press or off-press mounting for improved workflow. RotoMetrics also offers dedicated stations with a magnetic cylinder cartridge for quick and easy job changeover.

With greater pressures being applied in the RPC process, a robust die station design is required. The modular die stations developed by RotoMetrics feature thicker side frames, larger rolls, heavy-duty pressure systems as well as mounting devices for quick die changeover.

With the new dies, RotoMetrics said it is giving converters a new option for narrow-to mid-web processing of liquid packaging cartons. RotoMetrics is pushing RPC as an alternative to crush cutting that is being run today for folding carton, drinking cup walls and new liquid packaging applications.

The development of RPC flexible die technology by RotoMetrics is in response to customer demand for more flexibility in production, reduced set-up times and cost savings in tooling. Typical segmented solid dies can take 8 -12 hours to make-ready for cutting, while RPC flexible dies can be loaded and made production-ready in 1-1.5 hours, RotoMetrics said.

RPC technology is different from traditional crush cutting, where a sharp blade crushes through the material against a solid anvil. In RPC, the dies have flat cutting edges and burst the material as they squeeze from both the top and bottom.

In addition to reduced make-ready times, converters are said to achieve significantly longer die life with RPC technology. In traditional crush cutting, wear on the sharp cutting edge is the limiting factor in die life. Without the edge wear seen in crush cutting, RPC dies run for millions of revolutions before needing to be replaced.

James Wellsbury, business development director for packaging at RotoMetrics, said: 'Customers are already running RPC dies on the full spectrum of carton applications, including the new liquid packaging formats. The combination of reduced tooling costs, faster changeover times and longer die life confirms the real-world value equation of the new technology.

For more on rotary die cutting innovation, see p38

Packaging makes all the difference. People buy things they like the look of. Benefit from this by providing your customers with real eye-catchers. Our ingenious postpress technologies enable you to transform folding cartons into packaging that makes products fly off the shelves and ultimately ensures your order books make for happy reading.
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HEIDELBERG

Understanding barrier films for flexible packaging


Rob Carter and Tarquin Crouch of Alliance Packaging help to guide narrow web converters in ensuring the films they purchase meet the requirements of the products they are designed to package

Good design is critical in persuading consumers to purchase, but the repeat purchase will only be made when the promise of the design is matched by the quality of the product inside the packaging.

The quality of the product inside the pack can only be guaranteed over the period of the shelf life by selecting a good-quality packaging film and matching the capability of the film used to the protection requirements of the product. Get that step right, and the product will reach the consumer in the condition intended by the manufacturer.

So, what general information does the printer need to understand? Shelf life is the period in which consumer acceptability is maintained. The quality of most products changes over a period of time through changes to color, texture and flavor. Shelf life is shortened by a number of factors, including: moisture, where a gain or loss can affect the texture and make a product go stale or go soft, or it can act as a catalyst to degradation in products containing fat; oxygen, which causes oxidation of products that contain fat or oil, and can assist in color changes and the onset of mould; light, another catalyst for oxidation that causes rancidity and oils and fats to break down, causing odors; aroma/odor, with aromas desirable smells and odors unwanted contaminating smells, and highly flavored foods likely to lose aroma compared to bland food that are likely to absorb odors; and the environment, where secondary packaging, warehousing, transportation, distribution, temperature and in-store situations can all affect the shelf life of a product.

Products requiring protection

The list below is not a complete list of food types, and products within these categories can vary in terms of their needs, but as a general guide:

- **Bakery –** Degraded by loss of humidity, however water retention can also cause a loss of crispiness, so perforated films are used for crusty products
- **Biscuits –** Generally degraded by humidity uptake, leading to loss of crispiness. Complex products with chocolate and cream are degraded by oxidation, odor loss or uptake
- **Chocolate confectionary –** Can be degraded by: moisture/humidity, which causes sugar bloom; odor, often coming from the inks or the use of recycled board; insects, if poorly sealed; and light/oxygen, which causes rancidity
- **Dehydrated food and beverage –** Generally, these products have a very long shelf life and therefore require a very high barrier to water, aroma and oxygen (when gas flushed)
- **Pet food –** When wet, pet food is degraded by oxygen, light and loss of aroma and/or contamination by odor
- **Sugar confectionary –** When uncrystallized, products tend to absorb water. When crystallized, they tend to lose moisture
- **Chips and snacks –** Degrade through rancidity, which necessitates a barrier to oxygen and light, and loss of crispiness, which is solved by providing a moisture barrier

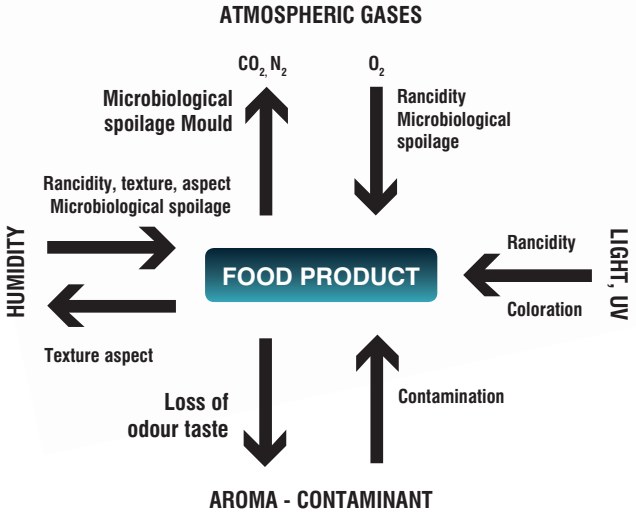
Barrier measurement

Unless there is good seal integrity there is no point in spending money on a barrier film. Whether the sealant is a coextruded heat seal layer, a coating, cold seal, CPP or PE, it must hermetically seal the inside of the pack from the outside.

As narrow web printers move into flexible packaging they must understand sealant layers and make sure they understand how the film will be sealed, and which side seals to which side, so that they can purchase the appropriate films. Most flexible packaging films are heat sealed, but not all sealant layers are compatible. Generally sealant layers will always be compatible with themselves. But, do not assume that side A will seal to side B. Ensure you understand how the film will form into the package, and where there is an A to B seal make sure the two sides will actually seal, and there is no ink or lacquer preventing this.

Moisture is shown as WVTR (water vapor transmission rate) on most data sheets and is the steady state rate at which water vapor permeates through a film at specified conditions. Most plastic films have low WVTR. Although, for instance, OPP is significantly better than BOPET, the difference to food degradation is small. The relevant measurements are normally expressed

The following diagram shows the relationship between food packaging and external influences such as atmospheric gases, humidity, light, UV and aroma. The exchange happens both to and from the pack.



in gm/m2/24hrs, and conditions of 37.8 degrees C and 90 percent relative humidity. Increase WVTR with humidity and also temperature or pressure rises.

Oxygen is shown as OTR (oxygen transmission rate) on most data sheets and is the steady state rate at which oxygen permeates through a film at specified conditions. There are very significant differences between the OTR of different films. OTR is normally expressed in cc/m2/24hrs and conditions of 23 degrees C and 0 percent relative humidity. OTR can be higher in a humid environment, and becomes faster as temperature or pressure increases.

The rate of aroma or odor transmission cannot be directly measured as it varies for different contaminants, but it can be proven. Only coatings or certain coextruded barrier films (generally those with an EVOH layer) provide odor and aroma protection. Metalized films alone do not provide an aroma or odor barrier.

Light transmission is the percentage of incident light that passes through a film. Opaque and metalized films provide a good light barrier.

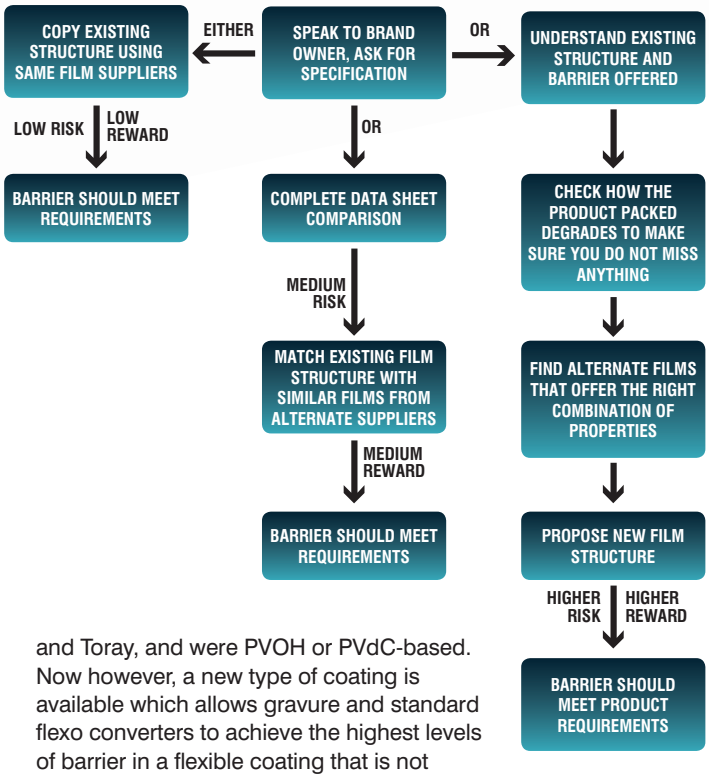
When combining two films to make a laminate, the actual barrier created will be a combination of the barrier of the two films. This is a complex issue as the converter actually needs to have the equipment to measure the above properties. Ideally, you should try to work with one film that provides the barrier, with the other being used just to protect the inks. If you do not have the equipment to measure the barrier, you should claim only the barrier performance of the web that has the best barrier for that property. However, with caution and experience, the WVTR of a laminate can sometimes be calculated, providing the WVTR of each substrate is known. This is done by using the 'reciprocal of the reciprocals' formula.

Barrier film ready reckoner

There are many variations in the properties of films from different manufacturers, but it is a useful starting point. Films with an improved barrier are generally more expensive and more difficult to obtain. So, it is important not to over-specify the barrier required, just to play safe.

As shown, a substantial barrier can be achieved through coatings or metalization. Film manufacturers have been applying these for years. However, converters do have the opportunity to apply their own barrier to film. Originally, these coatings were the same as those applied by the main suppliers of coated film, Shiner, ExxonMobil, Innovia, Treofan

Diagram: Building a barrier



and Toray, and were PVOH or PVdC-based. Now however, a new type of coating is available which allows gravure and standard flexo converters to achieve the highest levels of barrier in a flexible coating that is not subject to flex cracking. These are based on mica or silica particles that provide a difficult path for the water vapor or oxygen particles. These are currently all water-based, so are not suitable for application on UV flexo presses. This will change in time. The only word of caution is that the converter then becomes responsible for the barrier and the protection of the food in the package, and there is a risk of very high claim levels if the film underperforms.

Generally, brand owners should know the barrier properties required to protect their products. They have food scientists working for them, so if you are intending to make a speculative approach, or propose a new structure, you will need to do your research carefully, and have an idea of what you are proposing and why it will work.

Look at the structures already being used in the market place; generally they are used for good reason. If the product is successful it means that the packaging is probably fulfilling its purpose and preserving the product, allowing it to be enjoyed with the texture, flavor and aroma with which it left the factory.

As UV flexo printers move into food packaging, we can expect film manufacturers to offer new products. In the near future, you can expect to see films that provide a barrier to keep the migratory additives in the inks away from the food. This will suppress all concerns from the brand owners, and allow printers to use the full range of flexible packaging applications.

Alliance Packaging is a UK-based company with the aim of bringing the best Chinese flexible packaging products to the rest of the world. It works with selected supplier partners chosen for supply reliability, quality, product offering and relationship. For more, see *www.alliancepackaging.biz.*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New security features in printed packaging

Thaddeus Bowen, senior managing consultant, Kodak Services for Business, looks at the challenges brand owners face from counterfeiting and product diversion, and discusses how the brands and their package printers can stay one step ahead

Billions of dollars are lost every year to counterfeiting, product diversion, product tampering and patent and trademark infringement. The worldwide trade in counterfeit products alone is estimated to be worth US$1 trillion a year, with product diversion reported by Deloitte LLP to cost businesses billions of dollars in revenue each year.

Advances in technology make it easier for others to replicate packaging or alter serial numbers in order to counterfeit or divert products. In the face of such challenging issues for brand owners, staying one step ahead of the counterfeiters and diverters to protect their brand, their products and their reputation is of paramount importance.

In order to retain the lead against such fraudulent activity, brand owners will often look to third parties to assist in reducing risk by taking measures to secure their products and brand. As a packaging or label company, opportunities exist to extend the portfolio of your offering to provide your customers with a wide range of security solutions. This in turn positions you as a provider of value-added services to your customer base, and can assist in differentiating yourself from your competitors. But what solutions are available, and how can they be implemented?

The good news is that there a wide range of security options available which can be used independently, or combined to create a multi-layered solution. Security solutions typically include:

Overt – those visible on packaging or labeling that required no tools, such as holograms

Semi-Covert – field detection with simple tools such as ultra-violet fluorescing ink

Covert – field detection with taggants and specialized readers.

One industry where counterfeiting has a distinct personal impact for the end user is the pharmaceutical industry. Counterfeit pharmaceuticals can be found in every country in the world. The World Health Organization (WHO) forecasts that sales of counterfeit

drugs were expected to reach €56 billion in 2010, which would have been an increase of more than 90 percent from 2005. The problem exists for both branded and generic goods, and ranges from counterfeit off-the-shelf painkillers to prescription medicines used to treat chronic illnesses. In all cases the impacts are the same – the expected treatment could fail or the medicine could have adverse effects that ultimately could be deadly.

Production of counterfeit medicines is obviously unregulated, and therefore the content of such products is unknown. The content can range from harmful, toxic substances, to inactive and ineffective mixtures. Examples from WHO include a case in 2009 where an anti-diabetic traditional medicine, used to lower blood sugar in China, was found to contain six times the normal dose of glibenclamide. The result was two deaths and nine people hospitalized. In Tanzania, an anti-malarial drug, found in forty pharmacies, lacked sufficient active ingredient in order to be an effective treatment.

This situation obviously causes a reputation risk for the brand owners of the genuine drugs, even more so in today's multi-channel media world, where information is shared instantly on a global platform, with little time for damage control. Such situations can lead to a loss of short and long-term market share to competitors, as well as additional marketing spend required to regain the consumer's trust, which may or may not return to status quo.

At the ultra-covert level is an authentication marker designed for ultra-high security anti-counterfeiting, that is suitable for use in the pharmaceutical industry. The authentication marker can be provided in a brand owner's ink or varnish. The solution could be deployed as a security varnish concentrate that is added to the overcoat varnish normally used, or deployed within the existing inks used in the packaging and labeling process. Sophisticated handheld readers can then be used to inspect production in the office or out in the field to confirm authenticity.

Ultra covert solutions are economically deployed on products and packaging, even at high volume. They drop easily into the existing production process and are highly secure and hard to replicate. In addition to being applied as a varnish or in ink, the proprietary marker material can be used on a wide range of material types including foils, corrugated packaging, flexible packaging, labels and documents. It can even be extruded into plastics used in packaging, or threads used in labels and apparel. Additionally, customized programming and specific 'signatures' of the authentication marker for tracking purposes, allows the brand owner to regionalize and localize their brand protection strategy.

Ultra-covert solutions are not just limited to deterring the counterfeit threat; they can also help brand owners deal with the challenges of product diversion. Also known as "the grey market" or "parallel importing", product diversion can be considered a fraudulent means of inflating profits for participating distributors, while reducing brand owner revenue. Diverters capitalize on surplus inventory, lower manufacturing costs, fluctuating distribution costs, economic conditions and currency exchange rates by exporting goods without the permission of brand owners. The diverters then undercut the prices of authorized domestic distributors by selling at lower price points, while achieving similar or higher profit margins due to the lower cost of product acquisition in the originating countries.

The net effect of the grey market is two-fold. First, the local distributors are forced to compete with artificially lowered prices by the grey market activity, causing significant conflict and supply chain demand issues within the authorized sales channels. Second, product revenue streams for brand owners become unbalanced, causing inflated sales metrics in some regions, while incurring reduced revenues in other regions. In many cases, well-known retail stores may acquire grey market products through non-traditional channels, bypassing the brand owner's distribution network altogether.

Essentially, grey market activity disrupts the invisible hand of competition in a given sales region, by luring purchasers and consumers away from authorized channels, and creating artificial demand for goods imported by unauthorized means. To avoid detection, diverters will often look to remove all forms of overt serialization or tracking mechanisms from the packaging.

One ultra-covert solution, called Kodak Traceless AD and targeted at product diversion, allows invisible serialization to be added to the package, label or product as easily as changing the ink on your end-of-line inkjet printer. The serialization is not visible under any forms of natural light or ultra-violet light, and is only detectable by a handheld secure viewer. It will be as clear as day to you, invisible to anyone else. Product tracking and authentication marks can be added easily and securely in the production facility, using the Kodak proprietary clear security ink. The brand owner doesn't even need to make a design change to their packaging. By pairing visible and invisible codes on the same product, the brand owner can gain additional security that is easy to implement with their existing serialization and tracking database.

In the semi-covert space a range of security products exist including hidden image technology and ultra-violet fluorescing ink. Hidden image solutions can easily be deployed in pre-press artwork for conventional or digital printed jobs. They can include images that are only visible utilizing a credit card sized plastic lenticular lens, where the lens is placed over the artwork, rotated and the "hidden image" is revealed. The small cost of the lenses mean that these can be deployed in large quantities. In some geographies they are even supplied with products to allow the consumer to perform their own validation.

The overt range of security solutions includes holograms, thermal reactive inks and colour shifting inks – inks that reflect various wavelengths in white light differently, depending on the angle at which they are viewed, producing an effect that the human eye will observe as a change of color. Overt solutions allow end users to be involved in a level of product authentication as no tools are required, with the covert and ultra-covert solutions typically reserved for the brand owners and third parties involved in the brand protection process.

Offering this service to your customer base will allow you to strengthen your position as a partner of choice, allow you to differentiate your company from your competitors, and ultimately help your customer stay one step ahead of the counterfeiters and diverters.

Bobst UK's Craig Moran (centre) presents Benson's James Clooney (left) and David Midgley (right) with a model of the new Bobst ExpertCut machine to commemorate the installation at the Group's Bardon plant.

Investment for growth

Packaging producers of all shapes and sizes need to keep up to speed with the advances in equipment development. The need for a focused program to upgrade technology is critical in most production environments, and none more so than in the manufacture of folding cartons. Nick Coombes reports

Benson Group, one of the UK's leading privately owned carton printers, has a clear vision with regard to the constant upgrading of products at its four UK production facilities. The program has cost around £25 million over the past decade, but the investment has allowed the company to grow into business that now enjoys an annual turnover in excess of £110 million. The theory behind this level of investment is that the most productive equipment equals the highest possible levels of product throughput, and that enables the price per unit to be kept within the customers' expectations.

Recent printing press investments at the company's Bardon (Leicestershire), and Gateshead sites have included new Heidelberg and Komori SRA1 format offset machines. These state-of-the-art presses have provided the ability to put up to 18,000 printed sheets on the floor every production hour. With presses providing that level of throughput, the production bottleneck moves from the pressroom into the post-press sector of the business.

Post-press productivity

In order to process this new printed capacity through the factories, Benson has invested in new converting equipment, most recently in new Bobst ExpertCut 106 PER cutting and creasing platens at both its Gateshead and Bardon facilities. The new Bobst machines offer significant improvements in post printing productivity, and upgraded product, in a market where the conversion of high-quality printed board into the finished pack relies on the accuracy of cutting and creasing the final carton shape, which may include a window.

Commenting on the latest installation at the company's Bardon plant, Mark Kerridge, managing director of Benson Group, said: 'This is the second Bobst ExpertCut we have installed this year – the first went into our Gateshead factory. The two new units will help us to avoid bottlenecks at the die cutting and gluing stages of the production process, and allow us to maintain the highly competitive prices that we have been able to offer customers in recent times.'

The Bobst ExpertCut 106 PER features Power Register II, a lay-free dynamic register system that precisely matches the die cutting to the print on the sheet, instead of to the edge of the board. The dynamic stripping and blanking systems on the ExpertCut ensure the delivery of perfectly flat, stripped and blanked cartons ready for folding and gluing. A cam driven platen and smart feeder ensure uninterrupted production. Since installation, Benson Group has seen major improvements in throughput with 9,000 die-cut sheets per hour being achieved on a regular basis.

According to Kerridge, the belief at Benson Group is that only the best machinery combined with a highly trained workforce can produce the best cartons for the food and pharmaceutical industries.

Benson Group managing director, Mark Kerridge (left), welcomes distinguished guest, Mervyn King, governor of the Bank of England at a recent factory visit.

Andrew Pybus, general manager of the Group's Newburn and Gateshead plants rates the new Bobst ExpertCut 106 PER very highly for its speed and accurcay.

All go at Gateshead

Commenting on similar investment in the north-east, Andrew Pybus, general manager of the company's Newburn and Gateshead facilities, said: 'Installing a Bobst ExpertCut was one of a series of key investments we made this year to avoid bottlenecks in the die cutting and gluing departments.' By upgrading these facilities, Benson now has a post-press element that is the equal of its print operation.

'The new Bobst has already made a significant improvement to our throughput. Even on difficult boards, it still delivers 9,000 sheets per hour, which is better than we had anticipated. It has even removed the need for us to work weekends for the time being.'

The ExpertCut 106 is the second Bobst to be installed at Gateshead this year – earlier a Masterfold 75 A1 size folder gluer replaced older equipment at the plant.

Market leading presses

This recent post-press investment is a critical element in the Benson's investment plan following its purchase of two new printing presses. In 2009, Benson's installed a second Heidelberg Speedmaster XL 105 at its Bardon plant. A six-color machine with coating unit, it was configured to run alcohol-free, and chosen as a result of good experience with a similar Heidelberg installed earlier.

Mark Kerridge explained at the time of the installation: 'Two years ago we bought the XL 105 because we wanted to look at new technology and use it in anger. It has proved very successful, running mostly at 18,000 sheets per hour, with impressive make-ready times and raining the quality benchmark.'

The Bardon plant outputs 750 million cartons a year for the food sector, whilst the Group also maintains a strong interest in pharmaceutical carton production.

'Demand from both markets is still relatively good. People are eating at home more often, so food packaging is holding up well, and the pharmaceutical sector is also retaining good volumes,' said Kerridge, adding: 'we have noticed some change in product mix with a move from luxury to standard and economy products, but brand is still important and four process colors plus two specials is still a well used combination. What we have seen is a lot of rebranding and repositioning for greater shelf appeal, as a result of the downturn.'

Both Heidelbergs at the Bardon plant are fitted with Axis Control. 'We like its ease and speed of use, and it suits our production requirements well. We must have accurate color measurement as we work to the ISO 12647-2 standard. The press is also fitted with a coating unit, like the first, and allows us to offer UV, IR and aqueous options to our customers' said Kerridge.

Komori for Gateshead

The Komori Lithrone SX40 sheet fed press installed at Benson Group's Gateshead plant was the first of its type in Europe. With a capacity for 18,000 sheets per hour, this 40in press is equipped with six print units and a coating station capable of adding UV or water-based finishes.

In addition to the £1.9 million LSX40 installation, Benson's six existing Komoris were also upgraded with Komori's K-Station, the Komori Management System (KMS), and Print Density Control (PDC) spectrophotometers. The upgrades were designed to increase the throughput of the existing presses – all six-color with coater, and one with a double coater. The results have been remarkable – more than five million sheets more per press each year.

Commenting on the latest Komori, and the need for the enhancements to existing machinery, Kerridge said: 'Expanding the print capacity of our north-east facilities was essential to our growth plan. We looked closely at all the leading presses at Drupa 2008, and were impressed most of all by the developments in make-ready. Whilst we have added new Heidelberg equipment to our Bardon site, we felt it made sense to stay with Komori in the north-east.'

Komori UK were delighted to have secured the first European installation of its flagship Lithrone LSX 40 press with the Benson Group. The press is highly specified, and includes the new fully automatic plate mounting system, PDCS II closed loop color management, and the unique Komori KHS-AI Advanced Intelligence, self-learning pre-inking system, which brings the press to commercial production after only a few make-ready sheets.

What Kerridge has secured for the Group is Komori's fastest to make-ready, fastest running press, with an environmental conscience that includes low waste and alcohol-free production. It is also one of the Japanese manufacturer's leading users of 40in presses in the UK – a bond that looks likely to strengthen.

Looking ahead

Already a leading carton supplier to the food and pharmaceutical industries for a wide range of UK and European customers, the Benson Group will continue to grow its manufacturing business, which now totals more than 400,000 sq ft of space across four sites. The plants at Bardon, Newcastle and Gateshead all serve the food industry, while Crewe is dedicated to pharmaceutical and healthcare products. With ambitious growth plans, the Group seems certain to add considerably to its recent £25 million investment program as it seeks to develop its customer portfolio of well known companies, brands and retailers, which currently include Northern Foods, Reckitt Benkiser, Greencore and Samworth Brothers. The company is an approved supplier for all of the UK's leading retail chains, and intends to grow its exports of food and pharmaceutical packaging across Europe.

Package print processes – Which is the right one to choose?

Agusti Combis, marketing director of the Comexi Group, looks at the differing requirements and relative merits of print processes, and assesses the effects of new technology. Nick Coomes reports

From a global perspective, packaging is a multibillion market, consisting of metal and glass packaging, corrugated packaging, flexible packaging, folding cartons and labels. Current estimates put the value of printed packaging globally, excluding glass and metal, at approximately US$55 billion.

Research indicates that flexible packaging will become the market leader for growth in the years to come, mainly as a result of the population growth and changes in living standards and lifestyles of those in the emerging countries like India and China.

For this market application, CI flexo technology is considered the best suited for short-runs and light gauge material, which are shown to be the clear trend. Self-adhesive, wrap-around and shrink labels are best suited to in-line flexo technology. Additionally, flexo presses can sharply reduce the emissions of VOC, using the new flexo electron beam (EB) inks, and are far more environmentally friendly, with drastic reductions in energy consumption.

However, offset and gravure also play an important role in this sector. Offset technology focuses principally on folding cartons, paper packaging and certain types of niche labels. It is considered the finest printing technology in terms of quality, with associated low costs of printing plate manufacture. The big debate is over its printability potential for flexible packaging, produced on non-absorbent materials. There are well-documented instances in the industry, where converters and machine manufacturers have attempted to switch into flexible packaging without the essential experience in this type of print production. The results have, in most cases, been disastrous. The adoption of UV and EB inks however, have brought very good results, and are now well proven technology in the paper packaging and folding carton markets.

Gravure printing also has an excellent reputation for high-quality. Broadly speaking, it is mostly used in the flexible packaging market, but is facing severe environmental concerns regarding VOC emissions, which must be seen as one of its weakest points. Brand owners, however, like it, and currently consider it to be one of the best printing technologies when it comes to quality. In recent years, flexo printing has reduced this quality gap considerably, largely as a result of the breakthrough made in flexo press technology, flexo plates and anilox rolls.

Packaging in the future

There are a few general trends that need to be considered when looking to the future. For example, the general consensus is that flexible packaging, produced mainly from plastic-based material, and a clear reduction of the package size, are going to be the main issues in the years to come. Basically, the drivers for these

Today's shopping habits place great demands on the quality of printed packaging

are the needs of the emerging countries, which favor small size packaging, and concerns over emissions, which is one key area of advantage that flexible packaging enjoys compared with other materials.

High barriers films and eco films will gradually take the place of standard material, although films like polypropylene, polyester and polyamides will continue to feature highly in the demands of the brand owners during this period of transition. The pathway to this more eco-friendly packaging embraces not just the films, but also the inks, the converting processes and the logistics.

Inks will also have an important role to play. This is based on concerns over VOC emissions and food contamination from certain components of the ink. There is a definite trend towards curable inks in the flexible packaging market, and while UV inks are broadly used in the label and folding carton markets, there are concerns regarding food contamination caused by the photo initiators. Not surprisingly, therefore, the food industry is quite wary about their usage for even indirect contact with the food.

If UV inks have problems, one should consider EB inks, which have superior print quality. Consumption of EB curable ink is less than half that of solvent-based equivalents. This is simply because no solvents or water have to be evaporated and therefore do not need to be added during production. The savings are considerable. Additionally, the enormous energy consumption of hot air dryers, incinerators and VOC abatement systems are not part of the EB curing process

Market drivers for the print technologies

Regarding quality, it is generally acknowledged that offset printing is at the top level, however, there are serious concerns about the feasibility of using offset for printing on flexible packaging substrates. Gravure printing, however, performs far better with standard flexible packaging materials, and is also superior in quality to flexo printing.

Time to market is another key issue, and another example of where offset printing is outperforming gravure and flexo, thanks to the capability of manufacturing plates in very quick time. Flexo technology is not far behind this now, but it still needs more time to carry out the same process. Gravure cylinders in general, especially in the western markets, come last in terms of time to produce. There are instances of short delivery times in gravure-oriented countries, like China and Japan, where their huge industrial capacity allows them to carry out the process faster than in Europe or USA.

On the cost side, we include the price of the substrate, the price of ink, the cost of the image transfer (plate or cylinder), the waste cost and, of course, the investment cost as the most important parameters that affect the price per sq m. Taking all these factors into account, offset printing is considered the best from the image transfer price (plate cost) point of view. Flexo printing has a positive impact when the investment, cost of inks and waste cost are considered.

Unfortunately, gravure printing does not excel in any cost parameter compared with offset and flexo.

Eventually, the environment is going to be a major driver. Currently, it is not considered as the key factor, but this will change. Thus, from the sustainability point of view, offset printing has a good reputation and has demonstrated its commitment with UV and EB inks. EB flexo inks will also play an important role. On the contrary, UV flexo inks are leading in label printing and are widely used in the industry. Up to now, gravure printing makes the worst contribution to the environment owing to its VOC emissions with standard solvent inks.

Defining terms

If you Google the words 'productivity' and 'efficiency', you get the following results:

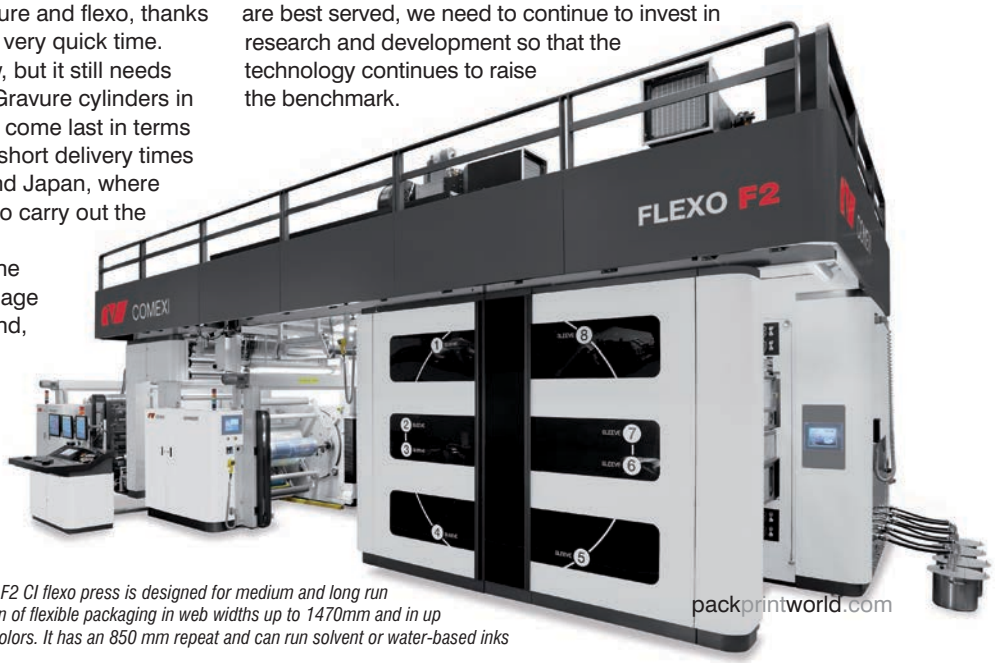
Productivity is the relationship between output from a production process and the resources used to obtain that very same output. It can also be defined as the relationship between results and the time used to obtain them; the shorter amount of time needed to obtain the expected result, the more productive the system is.

Efficiency is defined as the capability to have someone or something at your disposal in order to achieve a certain effect. Efficiency is the relationship between the results obtained (profits, goals fulfilled, products, etc.) and the resources used (man-hours, capital invested, raw materials, etc.).

If we search for the connection between the two terms, we find that efficiency in productivity is achieved by applying new concepts to get the same results in less time.

Based on this, new classes of flexo presses need to be manufactured. They should incorporate all the requirements that, as a general rule, improve efficiency and solidity (stability and reproducibility) on short, medium and long runs. In addition, with improvements made to ergonomics, they will take efficiency to its purest state. One of the hardest challenges involved with efficiency is maintaining it over a period of time, or in other words, in daily production throughout the life of the press. It has been proven that productivity decreases with time, and thus they are inversely proportional. This concept seems contradictory bearing in mind that the longer a machine has been in production, the more experience the printers and assistants have in handling it. The real situation, however, is that the longer a machine has been running, the more inefficiencies appear in changeovers, which take longer, and the average running speed decreases. This is mainly due to poor maintenance, which renders some of the supporting technology non-operational.

There is no perfect solution for producing the printed packaging of tomorrow. Like most processes, improvements tend to be evolutionary as opposed to revolutionary, but if we are to create a world of package printing in which all interests are best served, we need to continue to invest in research and development so that the technology continues to raise the benchmark.



Comexi's F2 CI flexo press is designed for medium and long run production of flexible packaging in web widths up to 1470mm and in up to eight-colors. It has an 850 mm repeat and can run solvent or water-based inks

THINK BEFORE YOU INK

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– David Webster,
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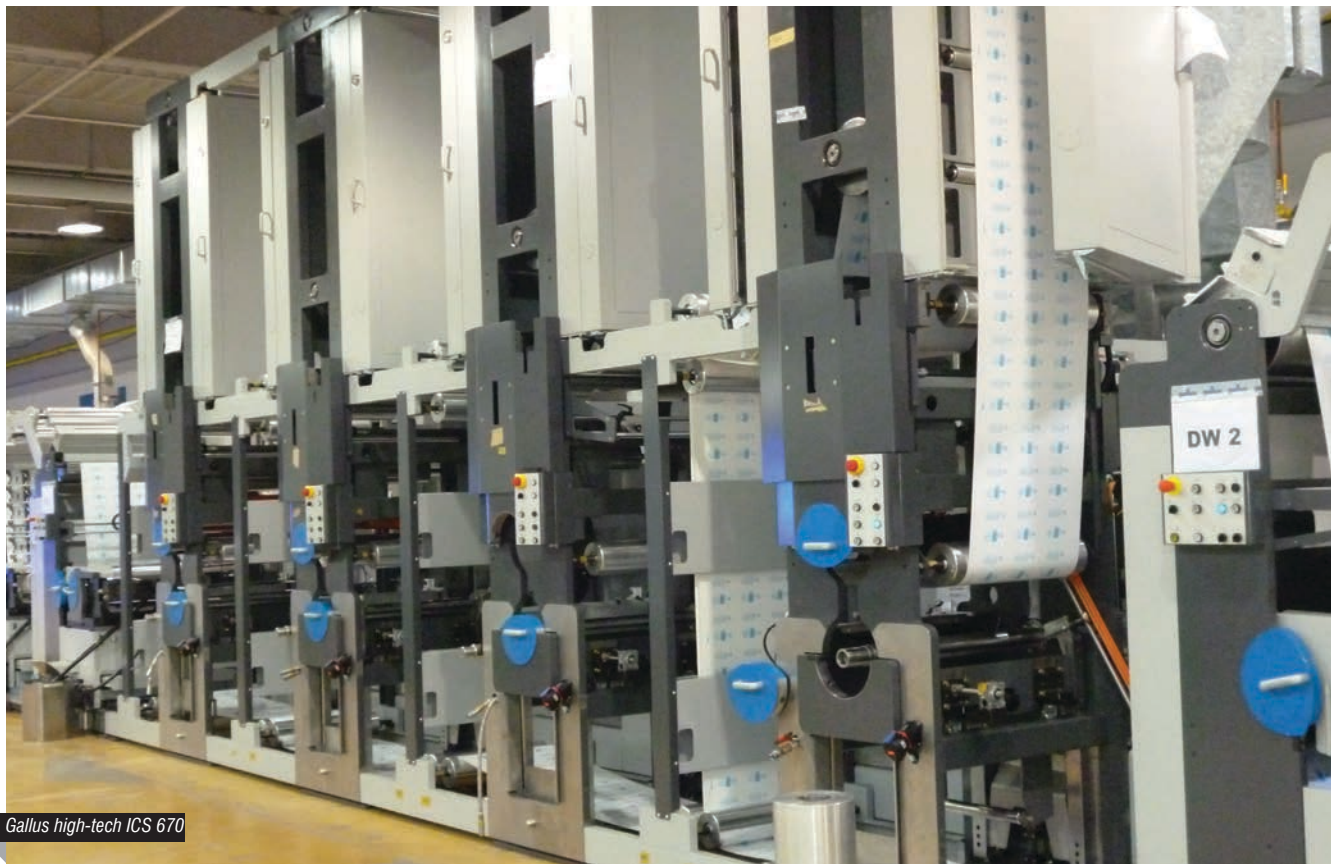

Gallus high-tech ICS 670

The ultimate efficiency in folding carton converting?

While long accepted as a commercially viable method of producing folding cartons in the US, the in-line flexo press has never found much favor in Europe, where sheet-fed offset presses and off-line converting are still the preferred method. Nick Coombes talked to Stefan Hagn, head of marketing and product management at Gallus Stanz- und Druck Maschinen GmbH about the company's high-tech ICS 670

NC: Gallus describes its new ICS 670 as 'the ultimate in efficiency and flexibility for folding carton conversion'. What was the driving force behind the development of the new line?
SH: Our research told us that carton converters worldwide were all looking for new ways to protect their profit margins, while remaining competitive for their customers. That established the target market, but we knew that to meet their requirements we needed a revolutionary approach. So, from the very beginning the aim was to make the new Gallus ICS 670 attractive to all carton markets, which has proven to be the right move as we have received orders from customers in Europe, the Middle East and Asia.

NC: What made Gallus so sure it could compete in this market?
SH: The in-line concept is not new. It is already well established in the label printing industry, where Gallus has been a world leader for many years, and in fact, has set the standard of converting for this market sector. So, it seemed an obvious move to apply our depth of knowledge and expertise with label presses to narrow and mid web carton production. We reasoned that the attraction of single pass production that converts a blank web of board to a finished folding carton in the space of a 40m footprint, at speeds up to 350m/min (1,140ft/min) with minimum handling, and without the need to stack down pallets of sheets, had to appeal to carton converters whose margins were under pressure and who were looking to offer something different.

NC: You have chosen a tough battlefield in Europe. It's the heartland of your major competitors in the traditional sheet-fed offset press and off-line converting processes that are preferred here. What makes you think you can change old habits?
SH: This concept of folding carton production has never really found favor in the more traditionally-minded European market, where, as you say, sheet-fed offset printing and off-line converting are dominant. The reason we believe we can change that is summed up by what one of our Gallus ICS 670 customers said to us recently. When asked about the new press, he commented: 'The incredible process flexibility of this press gives us opportunities for the future that we have always dreamed about.' At Gallus, we believe that to innovate new

Gallus ICS 670

products you need innovative processes. What we are offering carton converters is some lateral thinking that will widen their production capability and take them into new markets

NC: Although the ICS 670 is new, Gallus already has the CCS 510 and the INTRO series serving the carton converting market. How do you position these machines?
SH: The CCS 510 sits at the top end of the quality market for small to medium run lengths. The INTRO lines serve the commodity and high-volume sector, which leaves the middle ground for the ICS 670. Typical target markets are for highly prized beauty care and cosmetics, personal and healthcare, confectionary, tobacco, and other non-food areas such as blister cards and clear plastic boxes. The common thread running through all of them is small format size coupled with high added value content.

NC: That is quite a diverse list of product markets to serve. What is it about the ICS 670 that makes you think it can deliver the goods?
SH: Because it offers such flexibility. Configurations can include HiDef flexo, gravure, screen printing, cold foiling, hot foil stamping and embossing, as well as laminating. There is the added bonus that the Gallus FCL 670 flat bed die cutting unit can be used in-line or off-line with equal ease and accuracy. It also offers cheaper tooling than its rotary counterparts, and is familiar technology to carton converters, so they feel comfortable with it.

Hot foil embossing brings the third dimension into graphic design, which, because of its zero tolerance register, adds an additional and unique element to package printing, significantly to the high-value product differentiation so beloved of brand managers around the world. Rotary hot foil embossing on the Gallus ICS 670 is contained within one unit, and can feed up to six foils across the web. It is also fitted with a foil saving device for maximum foil utilization.

With increasing demand for graphics or text variations within the production run, our 'flying imprint' facility on the Gallus ICS 670 is a boon. It allows us to accommodate language or graphics variations on the job at full press speed, which is perfect for regional or test marketing. The additional print unit is set up while disengaged and then accelerated to running speed when required. By allowing the machine to continue at a constant speed there is no drop in quality and no start-up waste.

NC: Such production flexibility would indicate a complex machine that takes a long time to set up. How have you managed to keep make-ready requirements to manageable levels?
SH: What sets the new Gallus apart is its servo drive and high degree of automation. This gives the user the optimum level of machine control, with a host of presetting and job recall functions. Good ergonomics make it a comfortable machine for the operator to use too, which combined with short make-ready times and low waste levels, keeps Gallus at the cutting edge in ecology. The ICS 670's open architecture not only provides maximum interchangeability of process units, it also offers remote diagnostics to optimize machine performance. Everything from the performance of the hot air dryers to the automatic register is designed to improve production efficiency and maximize profit opportunity.

Sleeves make for easy handling and fast changeover

NC: So, what might be the typical specification of an ICS 670?
SH: Well, for example, the configuration of an ICS 670 serving the confectionary or tobacco packaging markets would include an in-feed section that is servo driven to ensure constant web tension, supplemented by automatic roll handling and splicing units, and a corona treater for prelaminated board or plastic substrates. On the one hand the printing section offers a number of EVA platforms: a slide-in, slide-out facility for HiDef flexo printing and screen heads, as well as laminating, cold foiling, hot foil stamping and hologram insetting. All these can be changed without breaking the web. Rotary hot foil embossing is, of necessity, a fixed unit, but its top part can be put anywhere in the press line for hot foil stamping. Reverse side printing and a variety of drying or curing systems can be fitted, according to customer requirement and brand preference. On the other hand, for applications in the tobacco industry, customers will integrate gravure units in fixed positions after the first two or three EVA platforms. Thanks to its completely modular design, the machine configuration can be easily extended to adapt to changing market demands and job requirements at any time.

NC: You mentioned the flat bed die cutting unit as an important part of the production process. What makes it so valuable?
SH: The FCL 670 is a sophisticated, heavy-duty unit but is easy to set up and operate in-line or off-line. It sheets the printed web before creasing, embossing and die cutting. After stripping, the die-cut carton blanks are separated (denested) and then delivered on a shingle conveyor or optional stacking unit. The advantage of the concept is the total flexibility to finish the job simultaneous to printing in-line with the ICS 670, or convert a pre-printed web off-line at a later, more convenient time. It is capable of 350 strokes/min, and will

allow the in-line machine system to run at 220m/min (720ft/min). To meet the 100 percent quality requirements of the packaging end users nowadays, we have equipped the FCL with a single blank rejection system that is linked to a 100 percent quality inspection system.

As its name implies, the maximum printing and processing web width is 670mm (26in) on a 690mm (27in) web. It will handle standard rolls up to 1,800mm (70in) diameter with an option of 2,100mm (82in). Minimum and maximum repeats are 330mm and 820mm respectively (13in and 32in), and the repeat length is infinitely variable, owing to the direct servo drive.

The FCL 670 will handle board from 180-600gsm with a maximum thickness of 750 micron (30 points). It is also capable of converting plastic substrates, like PET and OPP, for clear box applications, as well as paper, down to 60gsm.

If we are asking sheet-fed offset carton printers to switch to rotary flexo production, then offering a flat bed die cutting solution is one less new technique for them to learn. The fact that it can work in-line or off-line offers both flexibility and convenience, as well as cheaper tooling.

NC: In the current economic climate, I suspect it is difficult to persuade carton converters to deviate from their known and trusted methods. How do you go about convincing them of the benefits of the in-line rotary process?

SH: The Gallus ICS 670 is more than just statistics and the engineering we have discussed. It is a genuine and exciting alternative to traditional carton thinking – and it will increase profit margins for converters around the world year-on-year. The best way to prove this is for converters to visit us at our brand new Carton Converting Center in Weiden, Germany. The ICS 670 machine system on show there includes water-based and UV flexo printing, solvent and water-based gravure printing, laminating, cold foiling, hot foil stamping, hot foil micro embossing, UV silk screen printing, creasing and die cutting – all in-line.

NC: So, despite market confidence being fragile, you believe the timing is right for the ICS 670?

SH: The need for lateral thinking has never been more important than in today's competitive carton market. It is clear that those who innovate will survive the current crisis, so we, at Gallus, believe the launch of the ICS system is timed to perfection. We have proof of this too, because after a number of live demonstrations at our new Carton Converting Center, we took several orders for ICS 670 lines, and indications are that more will take up the Gallus in-line concept. If you cannot make it Weiden, please come and see us at Drupa 2012, where we will be running live demonstrations on a Gallus ICS 670.

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Drupa 2012

Drupa returns later this year and will once again take over 19 halls at Messe Düsseldorf, Germany for two weeks. David Pittman speaks to show director Manuel Mataré and some of those attending to find out what to expect

Drupa 2008 hosted a total of 1,971 exhibitors from 52 countries, with 390,000 visitors from 138 countries and 3,000 journalists from 84 countries attending. This combined to provide business concluded in excess of €10 billion, with positive feedback from across the print sector.

At the time, Drupa president Albrecht Bolza-Schünemann, said: 'Drupa 2008 has sent out a clear signal: thanks to numerous innovations and new fields of business the print media sector is as agile as ever. This is clearly reflected in the numerous deals concluded with virtually all key business regions.'

Four years on and the world is a much changed place. The global financial crisis and ongoing turmoil in Europe continue to cause concerns in established markets, while emerging markets and countries are reporting strong growth. 'The environment has changed dramatically in the last few years,' says Drupa director Manuel Mataré, from show organizer Messe Düsseldorf.

'The economic crisis two years ago and the current uncertain situation in the European currency area have caused a considerable shift in the market, which will continue in the future. The printing market in Western industrial countries is mostly stagnating at a high level. At the same time, emerging countries and the markets in Asia are reporting high growth rates.

'The reasons for these differences in growth in the different regions are obvious. While the printing market in the Western countries is largely stable at a very high level, there is an enormous backlog of demand in up-and-coming countries in virtually all economic sectors. The print industry, and Drupa in turn, can only benefit from this.'

This includes package printing, which Mataré says will have its biggest role in the history of Drupa. 'The economic boom in the developing countries – predominantly in China and India – is bringing strong growth to the packaging industry.

'This is naturally also having an effect on package printing. Be it design, the preliminary stages, printing inks, print substrates, print or further processors, the entire value-added chain deals

Images courtesy of renetillmann.com/Messe Duesseldorf

intensively with the subject of packaging. Added to this is the enormous potential that is beginning to show as a result of digital package printing. The trend for smaller volumes, caused by tighter delivery chains, individualization and regionalization, is naturally reflected in the packaging industry and is opening up major opportunities for digital package printing.'

Static growth

Drupa 2012 will be no bigger than the last event in 2008, with around 1,800 exhibitors across 19 halls. This is the first time in its history that growth has not been anticipated. Mataré says: 'In my eyes, this is actually an advantage, as Drupa remains comprehensive, contained. This is important because, like no other trade fair, it presents the complete global market range; whether global players or up-and-coming newcomers, suppliers from the emerging countries or industrial nations, they are all represented at Drupa and provide proof of the versatility and innovative strength of their industry, irrespective of whether they deal with newspapers, package printing, commercial or functional printing.'

This will be supported by special areas and events, such as the Drupa Innovation Park, Media Mundo and Drupacity, whereby the event works with shopping malls, restaurants and numerous cultural events in Düsseldorf to provide attendees with a unified experience that mixes business with pleasure.

'The Drupa specials are playing an increasingly large role. This means the special shows, theme parks and knowledge events which accommodate the growing need for information of visitors from all over the world.'

Drupacube is another important element to this year's Drupa. Drupacube was introduced in 2008 as a means to attract print buyers, taking the focus off technology and putting it onto applications.

'The development of new visitor target groups is a challenge that we tackled back in 2008,' says Mataré. 'Above all, the very heterogeneous target group of the print buyer is the main focus of the exhibitors. For this reason, we started the Drupacube back in 2008, and with it a decisive – and pioneering within the industry – shift in perspective; pure technology takes a backseat in favor of the application.

'As in the 19 exhibition halls, the spotlight of the Drupacube and its technical programme is on the printed product, with one fundamental difference; in Hall 7A everything revolves around the marketing-driven, communicative use of the print product.

'This paradigm shift offers an unbeatable advantage. Marketing or publishing house managers, production managers, account executives or creative directors can find out about the printing potential in the marketing mix in a condensed format. With this tool, very diverse target groups are intensively introduced to Drupa and to the print product as a result. We are continuing to consistently develop this strategy for Drupa 2012, intensively incorporating international cooperation partners.'

Mataré concludes: 'Various themes will shape and put their mark on Drupa 2012; multi-channel publishing, web-to-print, hybrid printing, inkjet, automation. No matter what the future mega-trend might be, Drupa 2012 will present it.'

Market expectations

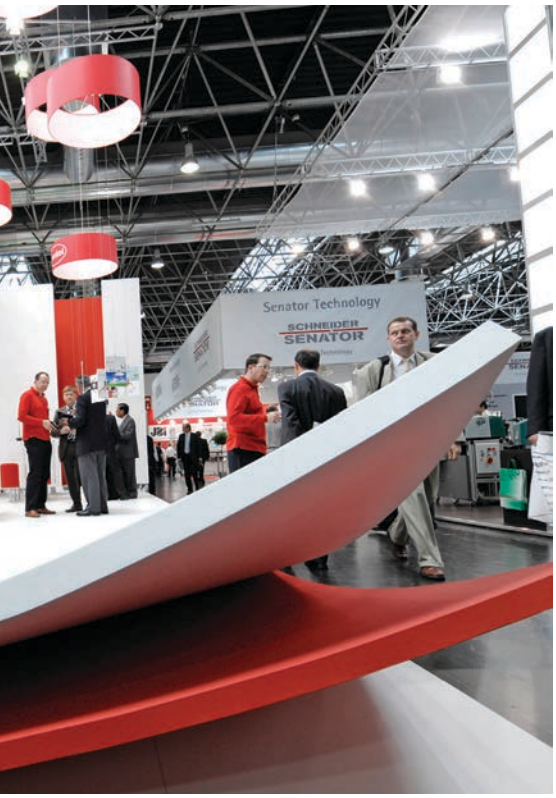
As Drupa edges ever closer, companies are finalizing details of their presence at the show.

This includes Comexi Group, which will showcase equipment benefiting four key areas. The company says: 'Comexi Group will offer complete innovative platforms with real benefits in what we consider the four milestones in the current converting process: high print quality, energy efficiency, sustainable printing and waste management. These platforms will be a turning point in how the process is made in flexible package printing today.

'Visitors will see live demonstrations of the new range of innovative and sustainable products; a global portfolio adapted to the today and tomorrow's solutions. Among them we would like to highlight our sustainable printing solutions, which involve electron beam and water-based printing inks.'

Israel's Highcon will be demonstrating the Euclid, the first high-speed digital cutting and creasing machine that is being marketed as an innovative solution to the folding carton market. Highcon says it eliminates the need for conventional dies and heralds the arrival of a new direct-to-pack market.

Aviv Ratzman, Highcon's chief executive officer, says: 'Over the past two decades we have witnessed key areas of the supply chain becoming digital, but packaging finishing has remained analogue. Converters and their customers have



been unable to benefit from the speed and flexibility that digital solutions could provide to finishing. But this is about to change.'

Chris Baker, Highcon vice president of sales and business development, adds: 'We have been developing our product with input and advice from a number of top converters around the world to ensure we meet the market needs. We are confident that this technology will change the face of packaging finishing.'

Turkey's Duran Machinery will also be representing the folding carton market at Drupa, with its Omega folder gluers designed to meet the production requirements of that industry.

The Omega range includes four series of folder gluer, incorporating modules and ancillary equipment. Each line is targeted at the performance for different production needs for delivering the correct gluer to carton makers and trade finishers. This includes the Omega Allpro, the Omega Allpro-S, the Omega Performa and the specialty gluer line Omega Magnus for corrugated packaging. In addition, Omega gluers can be incorporated with Omega Turnpro to turn the direction of the carton flow by 90 degrees for specific cartons like chocolate boxes for efficient production in a single pass, while the Omega Braille system is designed for embossing pharmaceutical boxes, synchronized with the gluer to reach the required high speeds. As the result of its successful collaboration with Gluer-Tec, Duran Machinery also manufactures Phoenix dedicated flame sealers for liquid packaging.

Pinar Kucukaras, marketing manager of Duran Machinery, says that the company has been focusing on research and development to present specialized products to the market as well as tailor made projects for specific production requirements. As a result, Drupa will see Duran Machinery exhibit two newly developed folder gluers. These will be supported by their wide international sales team that Duran Machinery says is looking forward to welcoming a global audience again at Drupa 2012.

UK print management system specialist Shuttleworth is still finalizing its stand for the show, but joint managing director Paul Deane notes: 'How we are thinking about exhibiting is interesting. Typically, our stand has stations around the space but we're talking about having tablet computers available where people can come, sit, have a coffee and look at our technology themselves, in an environment more akin to a coffee bar.'

The consensus is that Drupa will be an important date in this year's diary, as it was in 2008, with Comexi Group concluding: 'Our expectations at Drupa, considered the most important event worldwide for the printing industry, are very high as we firmly believe that current market conditions should result in significant changes in the way the industry produces packaging today.'

Shuttleworth's Deane adds: 'The industry is changing and has become about more than just print; it's about the whole supply chain now. This will be a key element of Drupa 2012.'

**A detailed exhibitor preview will feature in the April issue of Package Print Worldwide*

DRUPA STATS

DATE: May 3-16, 2012
LOCATION: Düsseldorf Trade Fair Grounds, Germany

ADMISSION PRICES:

Daily Admission	€65
Four-day Pass	€220
Students/Trainees	€25

ONLINE E-TICKET:

Daily Admission	€40
Four-days Pass	€129
Students/Trainees	€15

DRUPA 2008 STATS:

1,971 exhibitors from 53 countries

174,681 sq m net exhibition space, (including 103,912 sq m occupied by foreign exhibitors)

390,000 visitors (including 59 percent from outside Germany)

Lifting the lid on heat transfer

Filip Weymans, business development manager of labels and packaging at digital printing specialist Xeikon, says new heat transfer decoration technology is increasing quality and flexibility for plastic containers

Have you been to the supermarket to buy shampoo recently? Were you overwhelmed with the multitude of varieties to choose from: fine hair, dry hair, very dry hair, normal hair, blond hair, damaged hair, shampoo for dandruff.

Log on to the L'Oreal website and you'll find 67 haircare products for 'your every need and concern'. But this proliferation of varieties it not just limited to haircare. Walk along any aisle of your supermarket and you will find the same for many other categories. You could spend half an hour choosing between raspberry, strawberry, blueberry, blackberry or fruits of the forest jam.

Compared to a decade ago, there's been a big change taking place on store shelves around the globe. In an attempt to meet the individual needs of the consumer, fulfill their appetite and make them part with their money, brand owners have carved up their product range into a greater number of varieties. Using jargon, this translates into an ever increasing number of stock keeping units (SKUs) – each needing its own content on the label. However, while the number of SKUs has grown significantly, the market itself has grown at a slower rate of four percent – resulting in lower volumes of each unit.

Language adds another dimension to this story. While it's not such a big issue in the US, in Europe the same pot of raspberry jam, needs the label printed in a multitude of languages. Brand owners used to get around this by incorporating all the languages on the same label – given the container was big enough. But new European legislation currently in the wind may soon put a cap on the number of languages that are allowed to be printed on any label.

Another trend is to include more graphics as part of the product's decoration. To make the product more seductive and to stand out on the shelf, brand owners are looking to add more eye-catching graphics on their product. This is driving the demand for higher quality labels.

So if we look back up the supply chain, what does this all mean for the container manufacturer and their decoration processes? His customers are now starting to come to him with demands for an increasing variety of decorations, but in smaller quantities. They're also coming with content which includes full-color graphics, and they want it to be reproduced exactly – with the highest image quality.

For some plastic container manufacturers with older decoration technologies, which print directly on the container, this is proving to be a challenge. To understand why, let's take a look at the technologies.

Decoration technologies

Plastic containers are traditionally decorated using direct print processes; either screen print or offset print. Because both require plates to be made, the processes are very labor intensive, even more than narrow web printing presses; both set-up times for multicolor-designs and changeover times for each SKU take several hours. Screen printing delivers intense colors so the decoration does not fade over time.

Its downside, however, is that the print resolution is very low, so it can't deliver the desired quality demanded today. Offset can handle graphics better, but its color quality fades over time. It's worth noting that direct print is still valued for its ability to create a no-label look, since the print and the container are one.

To address these challenges, two alternative technologies have found their way into the market for certain plastic containers over the years: self-adhesive labels and in-mold labels. Self-adhesive labels offer manufacturers much higher levels of flexibility. But due to the nature of the material used, the process is more expensive. Moreover, the technology is not able to offer 360-degree decoration on the larger containers in an effective way due to applicator limits, and because labels can be removed the brand equity can be a concern to the brand owner.

In-mold on the other hand has found favor in the market because it offers high-quality decoration as the label is an integral part of the container, as well as the capability to do 360-degree decoration. And because the label cannot be removed, it also offers a certain level of security for brand owners. However, it also has its own drawbacks. The main one is that the application process is complex and the decoration has to be applied when the container is created. Thus labels need to be produced in advance and stored in the warehouse. When you combine this with the fact that the changeover time for different container shapes can take hours, in-mold is better suited to higher volume, more stable production and where lead-times are less of any issue.

An alternative solution

A new technology has just been launched onto the market which overcomes many of these shortcomings. Digital heat transfer labels (DHTL) combine digital label print technology with heat transfer application processes, ticking all the boxes when it comes to meeting today's demands of the brand owner: high-quality print, shorter and medium runs, flexibility at affordable prices.

DHTL is a new form of decoration technology

Capable of delivering true 1,200 dpi resolution, the Xeikon digital press delivers superb high definition quality and smooth vignettes for photorealistic graphics to the same level of in-mold labeling. Its dry toner technology ensures characteristics of the toner remain stable guaranteeing color strength over time.

And because it's digital, dealing with the multitude of different varieties is a piece of cake. With no plates to make, start-up time is as simple as turning on the press. On-the-fly changeovers for the different SKUs can be carried out within seconds, with a simple click of the mouse. Last minute requests and short-runs can thus be handled with ease.

But perhaps the biggest benefit of the new technology is the flexibility it offers. As mentioned earlier, in-mold labeling scores well on the quality front but the decoration has to be applied when the containers are molded. This is fine for high volume production with longer lead-times, but does not provide the flexibility to respond to the ever-changing demands of the market.

With DHTL you can just create blank containers in all their different shapes and sizes and stock them in the warehouse. Once the orders come in, you then print and apply the labels as required on a just-in-time basis. This of course also has a positive effect on working capital as you no longer need to stock containers decorated with all the difference flavors ready to be filled. This enables you to deal with unpredictability and seasonal changes and to shift gears more easily to meet market demands.

A two-step process

The digital heat transfer production process has two steps. First, the decorative design is digitally printed onto a carrier substrate. In the second step, the roll of printed transfers is fed into an applicator which applies the label onto the container using heat and/or pressure.

Industrial transfers are used primarily for the decoration of consumer goods packed in plastic

High-quality heat transfer decoration of tubes

Table: comparision of product decoration technologies

MARKET DEMANDS	DIRECT	IML	SA LABEL	DHT
Print quality	✓	✓✓✓	✓✓✓	✓✓✓
Flexibility (just-in-time delivery of a variety of SKUs)	✓	✓	✓✓✓	✓✓✓
Suitability for short-medium runs (no start up or plate costs)			✓✓✓	✓✓✓
Brand protection	✓✓✓	✓✓✓	✓	✓✓✓
360° decoration	✓✓✓	✓✓✓		✓✓✓

containers such as seamless tubes, buckets, cartridges, etc. With industrial goods, there are two transfer methods depending on the type of container and the type of material it is made of. For injection molded containers made of PP, the press first prints on a siliconized paper carrier with no additional adhesive. The web is slit according to the job and rewound on a reel. The heat transfer label is then transferred onto the container by a MOSS transfer applicator. The mandrel supporting the product allows for the applicator to apply a sufficient amount of heat during the transfer process to avoid the need for any adhesive.For blown and injection molded containers made of PP or HDPE, the transfer carrier is wax paper. During the first step, the press prints on a wax paper carrier and then an adhesive promoter, such as UV glue, is applied corresponding with the shape of the label. The web is again slit accordingly to the job and rewound on a reel. The image is then transferred onto the container using any standard transfer applicator.

Global reach

The new technology has already been put to work in a number of factories around the world. Jokey Plastics in Germany and Portugal's Digitalpack were among the first to see the opportunity that digital heat transfer offers and quickly decided to invest to complement their existing offset and in-mold lines. 'We think this technology will be the future in pail decoration systems,' said Digitalpack's Joao Vidal. 'Quality, short delivery times, competitive prices and no pre-press costs were the main reason for choosing the equipment.'

In Latin America there is a shift from metal to plastic containers in the paint pail market. With this move, brand owners are seeking higher quality decoration. What's also interesting are the marketing strategies followed by brand owners in that part of the world. Unlike the US, where marketing departments tend to start with one or two varieties of a particular product and then increase the flavors over time, in Latin America they tend to start with many flavors and reduce the number over time.

Brazil's Bomix, the market leader in industrial bucket production in Latin America, was quick to pick up on these trends and recently invested in the Xeikon digital heat transfer solution for the decoration of its products.

'We're always on the lookout for new opportunities,' said Miguel Rosario, chief executive officer of Bomix. 'We've seen a growing need in certain parts of the market for higher quality decoration. Customers are also looking for more flexibility from their suppliers to handle the increasing number of product variations, so there's a growing demand to handle shorter runs. The level of print quality of the Xeikon was far superior to anything else around, and when combined with its color strength, white opacity and the fact that is meets all the FDA food safety requirements, it was the perfect solution for us.'

With DHTL, container manufacturers can offer their clients the best of both worlds – superior image quality for greater shelf impact and flexibility to decorate containers on a just-in-time basis. It also opens up business opportunities for printers in the vicinity of the molding manufacturer to offer their services – and to start converting business away from the direct printing and in-mould market.

DHTL technology can benefit more markets

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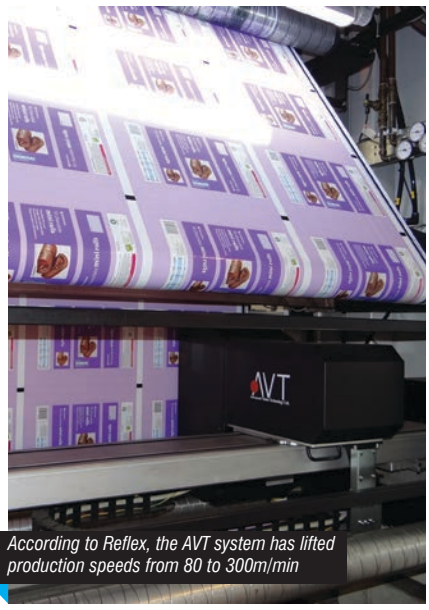
Reflex runs its SOMA CI flexo press at 300m/min with the AVT PrintVision Jupiter system installed, and holds tight register

Driving efficiency by reducing waste

How to improve the production speed of your CI flexo press was the problem facing long-time industry professional, Harvey Ball, when he took over the running of Reflex Flexible Packaging in April 2010. Nick Coombes reports

The AVT system includes pRegister and iReg, which has cut make-ready times from 20 minutes down to five



According to Reflex, the AVT system has lifted production speeds from 80 to 300m/min

Reflex Flexible Packaging is an independent company with six manufacturing sites across the UK. Formed in 2002, the company lists flexible packaging, design, artwork, plates and variable data printing amongst its services. In addition, the entire Reflex Group is BRC certified and the Newcastle site is an FSC and PEFC certified supplier.

Reflex Flexible Packaging's plant in Telford, UK manufactures high-quality food packaging on substrates from BOPP to PE, and on substrates from 12 microns upwards, but it was unable to print consistently at speed on its SOMA press, in a market where high volumes are the norm and top quality "a given".

Ball, who inherited the production technology when he moved to Telford, found a labor force that was disheartened by its apparent inability to make the machinery perform as it was designed to. The solution proved to be simple and came in the form of a print inspection system that monitored the moving web and alerted the operator to any deviation from a master image. The system chosen was the PrintVision Jupiter, manufactured by Israel's Advanced Vision Technology (AVT).

'I cannot understand why anyone would buy a modern high speed press without an inspection system – I liken it to buying a high-performance car without a steering wheel,' says Ball. 'It's uncontrollable.'

Narrowing down his choice of supplier to what he perceived the two leading contenders, Ball chose the AVT system after several convincing demonstrations of the technology at leading UK packaging converters. Acknowledging AVT as the pioneer of print inspection systems, he says: 'If it is the preferred choice of major international package printing groups, I figured it would do a great job for Reflex.'

The AVT system offers advanced print process control for automatic defect detection. It has a unique platform and innovative software that allows Reflex to "catch the problem, before it catches them". By comparing the printed image on the moving web with the approved master copy stored in its computer, the AVT system alerts the operator both visibly (orange light for slight deviation, red for major) and audibly with an alarm, when any problem occurs. The fault is highlighted on the control screen with a series of color-coded marks. These differ for: printed color variation, streaks, mis-registration, spots, or splashes and the computer then stores these marks in a printflow report so that the bad material can be removed from the web downstream

The net result is a massive saving in wasted material and the avoidance of costly reprints. By knowing exactly where in the reel the fault occurred, the laminator or slitter rewinder operator can maximise use of the good print. The system, which is fully automatic, can be set up to different tolerance levels, but otherwise requires no human input or adjustment. Significantly, at Reflex, the AVT system also includes the optional pRegister module. Part of this is iReg, which brings the press into register automatically on each new job. Using the existing camera, pRegister automatically fine tunes the press by measuring the mis-register and making adjustments so all the plates are synchronised. Key to the accuracy is a microdot that is laid down at the platemaking stage. The system automatically locates these dots, and sends signals to the CNC motors on the press, which adjust the plates until all colors are perfectly aligned.

According to AVT's corporate vice president of marketing Amir Dekel: 'The beauty of iReg is that it takes less than 60 seconds to bring the press into perfect register, even on a 10-colour machine. The system is accurate to within 15 microns, and as well as reducing make-ready times – at Reflex down from 20 minutes to five – it limits the wasted material on set up to as little as 50m. Crucially, it also offers a fast payback on investment. Because there is no need to add marks on the trim, existing plates can be used.'

Available as a part of the OEM specification, or as a retrofit, the PrintVision Jupiter system was fitted to the four-year old SOMA press at Reflex in between jobs, which avoided any loss of production. Taking less than two hours to install, and requiring no more than 30 minutes operator tuition, the system allows for the camera to be mounted at the most convenient location on the press (ground level and accessible), and once installed, allows the operator to focus attention on running the press, safe in the knowledge that if a print problem is detected, the system will respond automatically. In simple terms, the investment in AVT technology has given Reflex Flexible Packaging a degree of productivity that its workforce could only dream of before. Being able to offer consistent quality to its customers, and allowing them a reduced time to market, has also given the Reflex plant a new lease of life, with fewer reprints, and a much higher level of expectation.

'I'm confident we made the right choice with AVT. We've had few problems since installation last September, and most of those have been of our own making – irrespective, the after-sales support has been top notch. The key fact is that the AVT system has lifted our production speed from 80 to 300m/min, and reduced our waste levels. I estimate it will have paid for itself in less than 12 months; now, that is a good return on investment,' concludes Harvey Ball.

UV flexo for food packaging

Federico d'Annunzio, managing director of Nuova Gidue Srl, assesses the advantages and challenges of UV flexo inks and in-line UV flexo presses and looks at a universal solution for food packaging using solventless lamination in-line

Interaction between the packaging and label industry is becoming common, and it is supported by major industry suppliers (ink, substrates and printing machines) that are often serving both industries. The use of UV curable inks has been a widely adopted practice in the narrow web label industry for more than a decade. The first truly successful industry applications, however, started in the packaging industry (alufoil for pharma blisters, yoghurt caps, tooth paste tubes) in the early 1990s.

Advantages of UV flexo inks

UV flexo inks have changed rheology and formulations to provide full safety to consumers, enhance production speeds and consume less curing energy, in cooperation with UV lamp suppliers.

In terms of energy sustainability, UV curable photoinitiators and UV lamp efficiency have greatly advanced in the past few years, becoming faster in curing with the lowest level of energy consumption. The new generation of UV curing lamps are reducing energy consumption by 40-50 percent without reducing the press speed. For example, a 630mm-wide, eight-color UV flexo press, running at a speed of 200m/min, uses a total of 80KW/h for UV curing, meaning UV is the most eco-friendly ink process in term of energy consumption.

Environmentally, UV curable inks are odorless, solventless, do not generate VOCs and do not need solvent recovery or explosion-proof presses, storage areas and manufacturing practices. A UV flexo printing environment is clean and operator friendly. And new low-migration inks guarantee limited risks for the health of the consumer, as heavyweight, long chain polymers are unlikely to migrate and selected non-toxic ingredients are chosen.

Waste is reduced as UV inks do not dry on the plate. Long runs, starts and stops create substrate waste but UV ink is instantly ready for printing. UV inks are 100 percent solid, ink properties are not affected by evaporation and a shelf life of six months for mixed inks is common, meaning waste from stored inks is greatly reduced compared to solvent or water-based inks.

With the new UV inks come enhanced ink transfer properties as well as faster reactivity to UV curing, meaning speeds over 200m/min are achievable. Plus: new HD and flat top dot technologies in flexo plates greatly enhance UV flexo characteristics, reduced dot gain (comparable to offset), deep image contrast (comparable to gravure), 80 lines/cm screens (comparable to gravure), consistent print quality during the run (and during the year), independent from temperature conditions and operator skills (unique to UV flexo) and a predictable standardized print result in repeat jobs independent from the operator (unique to UV flexo).

Advantages of next generation in-line UV flexo presses

A new generation of presses has been launched in 2010-2011 by several in-line narrow and mid web press manufacturers. The higher cost of UV inks is compensated by deep digital automation and efficient part handling to produce high-quality short and medium run packaging, with the lowest running costs in the market. Traditional packaging converters are still not fully familiar with the efficiency and sustainability of in-line UV flexo presses. Educational articles and technical information are a recommended instrument to grow the overall awareness of UV flexo possibilities for the packaging converting industry.

The new generation of in-line UV flexo presses is taking advantage of the limited number of variables of the UV flexo process, such as no ink evaporation, which allows for digital flexo servo automated adjustments. Repeatable, predictable and digital set-up waste of less than 20m are becoming the norm among several in-line UV flexo press manufacturers.

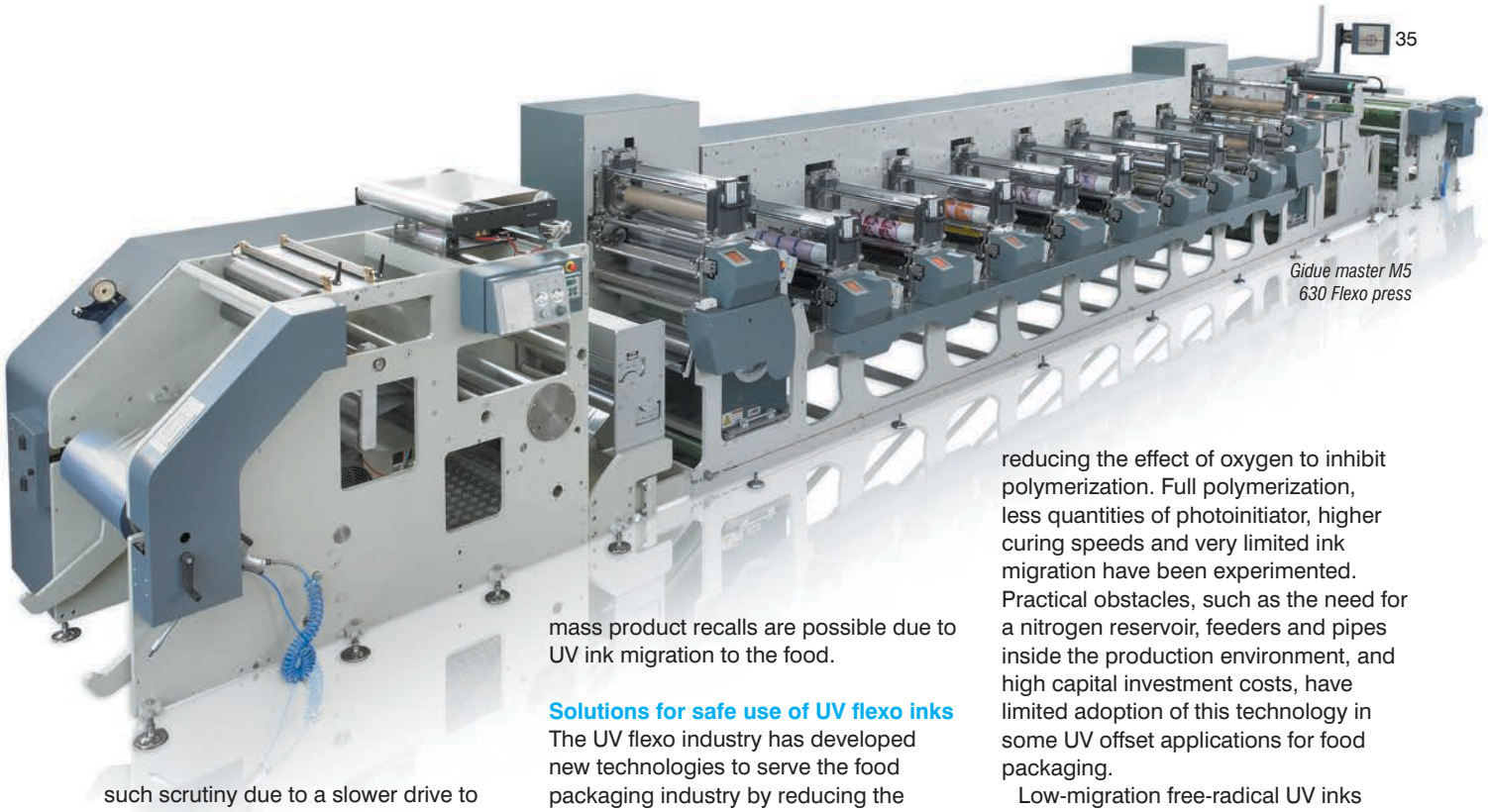
New servo technologies for short web paths on over-dimensioned chilled drums (less than 10m web path for an eight- color press) allow for accurate registration on any web printable substrate, including LDPE and the most difficult applications. Register performance and press flexibility are comparable to CI flexo presses while keeping the advantages and accessibility of in-line presses.

Digital flexo fully automated adjustments, convenient handling of parts (lightweight, easy to remove and install) and the equal height of printing units drastically reduces set-up times. A realistic overall set-up time of 10 minutes (and 20m of real substrate waste) per packaging job (including 1-2 spot colors ink change) has no equal comparison with other press configurations in the packaging industry, such as CI flexo, in-line gravure and offset.

Digital automated set-up and production adjustments, in combination with the inherent stability of UV inks, require fewer skilled and less expensive operators in the printing process, meaning the operating cost of the new generation of presses is reduced. In addition, print quality can be reproduced digitally with limited dependency on operators' skills. Highly predictable waste levels, set-up and production times, repeatable standardized digital productivity and quality are possible.

Obstacles to UV flexo in food packaging

As UV flexo inks have a high potential for technical development many formulations are new, and require safety regulation authorities to undertake stringent procedures and undertake expensive testing to reassure the consumer's health. On the other hand, established solvent and water-based ink formulations are less often under



Gidue master M5 630 Flexo press

such scrutiny due to a slower drive to innovate, at the same time reducing overall ink costs against UV inks.

Safety regulation uncertainty also prevails. EU regulation 1935/2004/EC, Swiss Ordinance and upcoming German Ordinance, EFSA procedures, GMP EU Procedures, FDA authority and additional safety tests requested by major brand owners are some of the compliances requested for food packaging. As an independent and globally recognized authority for food safety in packaging is not yet available, a relatively young industry product such as UV ink is confronted with the obstacle of unclear guidelines and authorities.

The high cost of research and development of food packaging compliant inks is another obstacle. The UV flexo ink industry is highly dynamic and constantly looking for new solutions for higher curing speeds and lower ink migration, to eliminate toxic components and reduce energy consumption, provide better adhesion and shrinkage properties, better ink transfer for high print quality results and reduced costs. Ink ingredients are constantly changing, following research and development innovation. High toxicological testing costs and long bureaucratic times of legal approval for each ink component reduce the speed of innovation, which is potentially higher than in the solvent and water-based inks industry.

Some inherent risks of UV technology also exist. The most commonly used free-radical UV inks do not cure 100 percent under UV exposure. A minimal fragment percentage of non-cured UV ink is trapped within a network of long chain polymers created by the UV polymerization. If Good Manufacturing Practices are not followed properly, as UV curing is not controlled, the risk of mass product recalls are possible due to UV ink migration to the food.

Solutions for safe use of UV flexo inks

The UV flexo industry has developed new technologies to serve the food packaging industry by reducing the quantity of photoinitiator in the ink and by increasing its ability to eliminate risks of migration of non-cured free-radicals. Several private brand safety tests have been claimed successful by major suppliers of low-migration UV flexo inks. However, uncertainty and unsafe market perception remains among the majority of brand owners and traditional packaging converters. The set-off of ink inside the printed reel migrating to the back of the reel (in contact with food) is seen as a major obstacle for 100 percent adoption of UV flexo inks for food packaging applications.

Cationic UV inks are opposite to free-radical inks as the polymerization process is 100 percent complete once started. Delays of 24 hours or more until full polymerization are possible, making the safety to set-off ink migration questionable, as ink can even migrate during its post-curing time inside the reel. Curing speeds are not as fast as free-radical inks, ink costs are higher and the process efficiency is related to the working environment (humidity in the air can reduce curing performances). A number of packaging converters have, however, had success adopting cationic UV inks in niche short-run food packaging markets, with the benefit of excellent adhesion, high print quality and reduced waste.

A major obstacle to full polymerization is oxygen. UV radiation in the lamp head breaks the oxygen molecule (air in the lamp house) in two parts which combines with the monomers and photoinitiators in the ink. This undesired effect interrupts the chain of polymerization inside the ink and leaves some light molecules free to migrate. Inerted UV dryers substitute ambient air in the lamp housing with an inert gas (usually nitrogen), greatly reducing the effect of oxygen to inhibit polymerization. Full polymerization, less quantities of photoinitiator, higher curing speeds and very limited ink migration have been experimented. Practical obstacles, such as the need for a nitrogen reservoir, feeders and pipes inside the production environment, and high capital investment costs, have limited adoption of this technology in some UV offset applications for food packaging.

Low-migration free-radical UV inks seem to be the preferred technical choice of the major UV ink suppliers. New ink formulations allow for heavy-weight, long chain polymers to be formed with extremely reduced ink migration. Results well under the 10 ppb migration levels (which comply with most of the international safety legislations on food packaging) have been reported under intense industrial use. Provided that Good Manufacturing Practices for UV curing are followed, few major brand owners are accepting, in limited food packaging markets, the use of new generation low-migration UV inks with skepticism and uncertainty on set-off ink migration still preventing wide adoption of the process.

UV flexo printing and solventless lamination in-line

By joining together the quality and efficiency of UV flexo technology with well established solventless lamination, which has been used for many years in flexible packaging production, it is possible to overcome most of the obstacles related to the use of UV flexo inks in the food packaging industry. By installing a solventless laminator in-line with a UV flexo printing press, the ink is effectively protected by a transparent film layer, which in most cases would be laminated off-line. Ink is trapped between two layers and simply cannot make contact with or migrate to any surface. This solution collects the advantages of both processes, such as reduced wastes, high printing and functional quality, for the production of high-gloss and high-quality short and medium runs of food packaging.

A majority of food packaging applications are printed on CI flexo or gravure printing machines, where the

Gidue's master SL solventless laminator

reel of packaging is printed and then taken to an off-line solventless laminating machine. The solventless laminator applies to the surface of the printed substrate (or vice-versa) a second layer of an alternative substrate to add high-gloss, scuff-tear resistance, protection from ink contamination, plus other mechanical and functional properties to the final packaging. Solventless lamination is the predominant packaging laminating technology due its good bonding properties, no VOCs, reduced set-up waste, reduced capital investment cost, single operator operation, low energy consumption and flexibility to laminate most of the available packaging substrates.

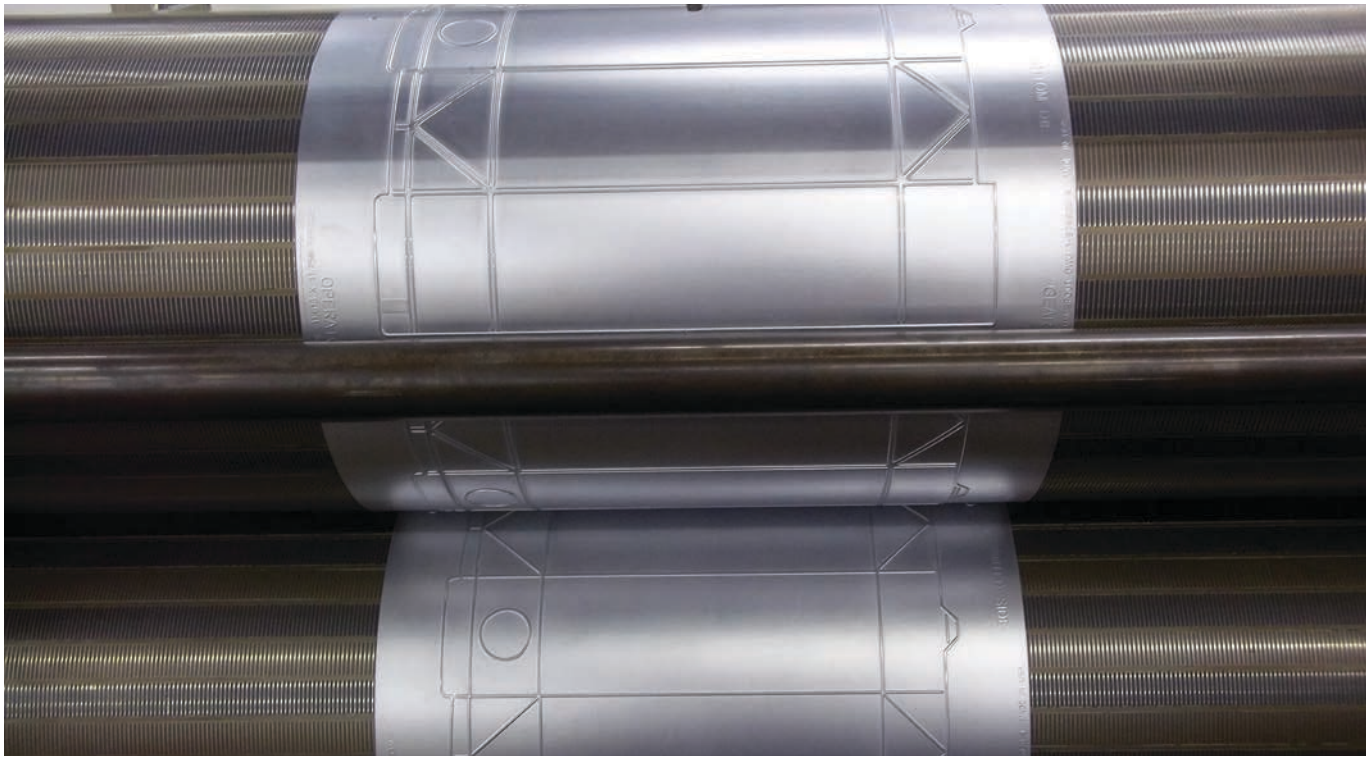
For in-line solventless laminating with a UV flexo printing press, a solventless laminator is added at the end of the press. The packaging web is printed, then a transparent film layer is laminated on top of the printed surface before rewinding the reel. The additional film layer acts as a protection layer, trapping the ink inside two layers: the printed web and the laminated web. The ink does not come into contact with the inside of the web while rewinding so no set-off ink migration is possible, and the ink cannot later come in contact with any food as it is trapped in the sandwich of the two layers. Provided that low-migration UV flexo inks are used, in order to avoid ink migration through the substrates, as well as Good Manufacturing Practices, solventless lamination in-line with a UV flexo printing press virtually eliminates the risks of UV flexo ink migration and provides a definitive solution for the use of UV flexo technology in the food packaging industry.

To keep the converting process profitable, the press manufacturer should provide highly automated digital operations both on the printing and laminating processes to allow for reduced waste, quicker set-up times and the use of less skilled operators. At the moment, only one press manufacturer, Nuova Gidue, has 'invented' and is offering a fully integrated UV flexo/ solventless laminator solution, although similar projects are under development by other press manufacturers.

UV-Flexo is a dynamic and innovation-oriented industry. The efficiency and environmental sustainability of the UV flexo process is well proven in the narrow and mid web labels and packaging industry. Along with alternative new ink solutions, in-line solventless lamination on a UV flexo printing press provides a universal safety compliant solution for food packaging.

Innovative food packaging converters can take advantage of the new digital flexo technologies developed by press manufacturers in combination with the inherent limited waste and high printing quality of UV flexo process. Profitable production of high-quality fragmented, short and medium runs of food packaging is possible. Safety risks for consumers are virtually eliminated; the entry level costs and times for food packaging converting and selling are reduced with fewer laboratory tests needed as ink is not in direct contact with any surface.

In-line solventless lamination with a UV flexo press



Rotary die cutting for the future

Steve Lee, vice president of technology at RotoMetrics, and James Wellsbury, the rotary tooling specialist's packaging business development director, discuss rotary die cutting innovations to meet new consumer goods packaging challenges

Global markets for converted carton and flexible packaging continue to drive technology development across the supply chain. Forecasts of strong demand for more convenient packaging solutions for processed food, fast-moving consumer goods (FMCG) and pharmaceutical and medical products are driving moves to new rotary converting solutions, including innovation in die cutting technology.

While overall growth rates for carton and flexible packaging in the mature markets of North America and Europe will be modest at 2.5 - 3 percent year over year through 2015, new rotary converting technology will quickly emerge with cost-effective solutions for niche applications with much more rapid market growth. Technology development is already focused on applications such as resealable packaging, flexible carton packaging for liquids and improved barrier packaging for extended shelf life.

Consumer driven demand for more convenient food packaging will lead to the use of more costly films for extended shelf life. Demographic trends towards more single person and empty nest households will also accelerate demand for smaller serving sizes and more on-the-run meal and drink packaging, The fastest growing markets for converted flexible packaging will be beverage, meat and related products, and snack foods. Today's consumer is also looking for more environmentally friendly packaging solutions as opposed to traditional rigid plastics.

Good examples of the trend in individual serving food packaging are the growing markets for sandwich and salad packaging. In the UK, for example, prepared sandwiches represent a large and growing market. In 2010, 11.5 billion sandwiches were consumed and the market forecast to grow at four percent per year. Nearly a third of that market, and the most rapidly growing segment, is the sealed sandwich to go, often packaged for vending delivery. Along with sandwiches, refrigerated salads, pasta and noodle trays are rapidly filling retail shelves and represent a significant market to migrate from plastic to carton packaging.

In the medical and pharmaceutical markets, companion trends toward unit-of-use packaging, greater product visibility and higher barrier requirements also demand new converting solutions.

Rotary technology vs flatbed converting

For many years carton packaging has been converted using flatbed die cutters with steel rule dies. This process utilizes between three and five steps to convert a folding carton. One can recognize a box that has been cut using flatbed tooling, as there will be visible ties on the edge of the box, which function to control the box during the converting process.

With higher volume demands, e.g. production runs of 500,000 to one million boxes, solid rotary male/female creasing dies offered a viable solution. The high unit volume was the driver to achieve a reasonable payback on the sometimes expensive solid tooling.

The development of magnetic cylinders and flexible cutting dies in the early to mid-1980s offered a leap in technology from reciprocating flatbed die station and steel rule dies. The quality of flexible dies has continued to improve while at the same time flexographic and UV flexo technology has advanced to rival

Dramatic improvements with rotary die stations and in-line processing

Flexible dies for liquid packaging cartons

Opportunities with rotary pressure cutting flexible dies

the print quality of offset methods. Today, rotary pressure cutting with squared blades squeezing material from the top and bottom, causing paper fibers to burst, is available for long run production of liquid packaging and other high-volume carton applications.

Rotary die stations and in-line processing with flexible dies combine to deliver dramatic improvements in converting speed, material throughput and process efficiency.

Rotary die cutting for sandwich and food packaging

The new requirements for quicker delivery of innovative barrier packaging for sandwiches and other food items play to the strength of rotary converting. Flatbed production is now replaced with one-pass, raw material to finished product manufacturing at speeds of 150m/min. Manufacturing savings are measured in reduced man hours, quicker processing times and reduction of make-ready costs. Rotary processing generates significant material savings compared with sheet-fed lithography. The ability to nest and stagger product on rolled stock allows up to 95 percent material usage, a 15-20 percent waste reduction versus traditional flatbed processing.

Rotary converting reduces a prior value chain of up to six manufacturing processes to just one. Let's take the example of sandwich packaging. Once the web/card is printed, it will travel into a first die station in reverse where the window is cut and waste removed by vacuum. The die cutting can be accomplished by either solid or flexible die technology. Both solid and flexible dies are cutting in these applications against core-hardened anvils. For longer run applications, solid dies provide the best value. New deep blade flexible dies combined with high-strength magnetic cylinders have narrowed the performance gap and can offer value when shorter runs and quicker changeover are required. Flexible dies used in this first window station also allow a converter to quickly customize packaging in response to new customer requirements.

Subsequent to the first die cutting operation, the card stock is laminated and UV cured, and travels conventionally into a second die station where the reverse crease or conventional male/female creasing is done to give the pack its folding ability. Again, both solid and flexible dies can be used for this operation. The laminated stock next travels to a third die station for the outer or final cut. Solid or flexible cutting die technology is applied to this final operation. After final cutting the finished product is shingle stacked.

Rotary converting and the related cutting die technology enable the proliferation of retail options for customized packaging of sandwiches and individual serving food portions.

Rotary pressure cutting flexible dies

RotoMetrics has introduced a further innovation in flexible die technology for carton converting applications; rotary pressure cutting (RPC). RPC is an alternative to crush cutting that is being run today for folding carton, drinking cup walls and new liquid packaging applications.

The development of RPC flexible die technology responds to customer demand for more flexibility in production, reduced set up times and cost savings in tooling. Typical segmented solid dies can take 8-12 hours to make ready for cutting, while RPC flexible dies can be loaded and made production-ready in 1-1.5 hours.

RPC technology is different from traditional crush cutting where a sharp blade crushes through the material against a solid anvil. In RPC, the dies have flat cutting edges and burst the material as they squeeze from both the top and bottom.

In addition to reduced make-ready times, converters achieve significantly longer die life with rotary pressure cut technology. In traditional crush cutting, wear on the sharp cutting edge is the limiting factor in die life. Without the edge wear seen in crush cutting, RPC dies run for millions of revolutions before needing to be replaced.

With greater pressures being applied in the RPC process, a robust die station design is also required. The modular die stations developed by RotoMetrics feature thicker side frames, larger rolls, heavy-duty pressure systems as well as mounting devices for quick die changeover.

Customers are running RPC flexible dies today on the full spectrum of carton applications, including the new liquid packaging formats. The combination of reduced tooling costs, faster changeover times and longer die life confirms the real world value equation of the new technology.

Die cutting technology will continue to provide solutions as global brand owners respond to the demands of new generations of consumers with innovative technologies (e.g. programmable LED, luminescent and temperature responsive labels) and more customized product packaging solutions.

EskoArtwork demonstrated the gravure-matching quality of HD Flexo v2

Pre-press drives quality

In-the-round sleeve imaging and direct ablation are among key pre-press developments for flexible packaging printers. Andy Thomas reports

The imaging and processing of sleeves in-the-round looks set to be one of the most significant future trends for wide web flexo converters. Andreas Segelken, CEO at leading German pre-press service provider Bremer Carl Ostermann Erben (COE), says he is seeing a major trend in this direction: 'Our customers are increasingly asking for sleeves. The higher print quality and quick job changes on flexo presses save the company money that was previously spent on machine set-up and changeover. With increasingly shorter runs, but an increasing number of orders, this can bring a distinct market advantage.'

Segelken notes that the direct imaging of sleeves 'reduces the risk of registration problems and color variations in the grid area to zero. This advantage has been crucial in allowing us to convince many of our customers who have seen greater demands on quality, and a trend towards even finer screen grids in flexo.'

DuPont's CDI round system uses either plates premounted onto the sleeve before imaging, or sleeve material that can be imaged directly. After imaging, the sleeves are processed in-the-round. The maximum sleeve length on the CDI round imaging unit is 1.45m. It can image both plates and conventional sleeves, and changeover between the two, which takes a matter of minutes, is simply a question of changing the clamping mechanism. A six-color job can be imaged in 1.5 hours.

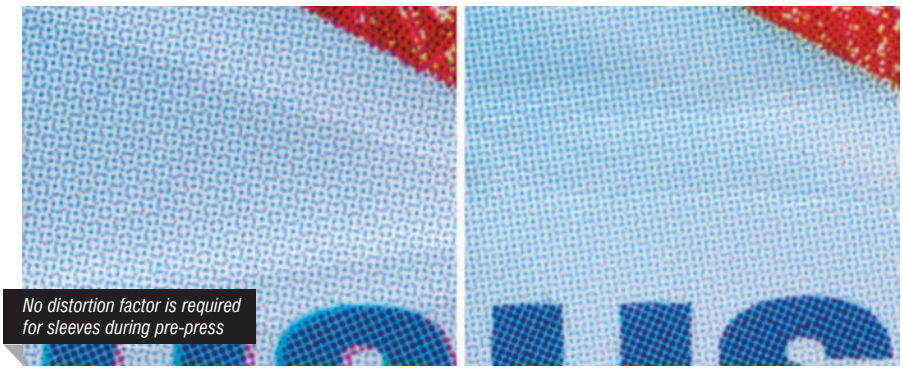
Another advantage of sleeves imaged and processed in-the-round is that pre-distortion is not required. Because a flat flexo plate lengthens during mounting onto a printing cylinder, the image must be corrected in pre-press. With sleeves, the round surface is imaged directly, which ensures that a correct representation of the actual image, with correct dimensioning, is achieved.

DuPont also says that sleeves can have a longer life than conventional plates. 'Not only can they be mounted and demounted an almost unlimited number of times, but the elimination of mounting tape, and the uniform surface of the adapter, mean that a lower impression weight is required, and this makes a significant contribution to the useful life of the round printform,' says Stephan Riechert, of DuPont's tag and label team.

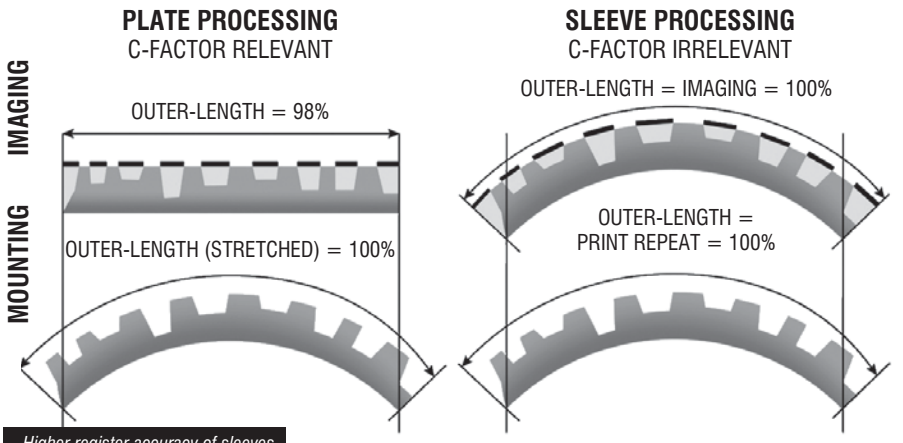
Direct imaging

A second technology track is direct imaging of flexo plates and sleeves, which holds the potential to reduce the number of processing steps in plate production – simply imaging followed by rinse and dry – and to give unprecedented control over dot size and shape on different areas of the plate. Kodak recently introduced its Flexcel Direct laser plate engraving system to the packaging market. This consists of imager, plate material – suitable for both solvent and water-based inks – and

At Labelexpo Europe Kodak launched its Flexcel Direct flexo engraving system



No distortion factor is required for sleeves during pre-press



Higher register accuracy of sleeves vs plate mounted on cylinders

3D workflow software. The system can be used to image continuous sleeve, plate-on-sleeve or flat plates, and will also image LAMS plates and sleeves.

The imaging unit utilizes Kodak's proven multi-channel laser diode array, claimed by Kodak to be up to six times more energy efficient than traditional lasers, with one third of the chilling requirements. Autofocus optics track the media surface during engraving to maximize engraving consistency, and there is an integrated evacuation system for elastomer debris collection. Cantilever sleeve loading allows for fast and easy sleeve exchange, and users can change between mandrel and vacuum drum without the need for an overhead crane. Maximum imaging width is 1.6m and maximum repeat 1,067mm.

Fujifilm is in the late development stages of its Flenex DLE flexo plate engraving technology. The Flenex DLE system incorporates Fujifilm's multi-channel FC laser array platesetter and the company's own polymer plate material. According to John Davies, business strategy manager at Fujifilm Europe, the DLE system should be commercialized some time in the first half of 2012. 'Our starting point is to image a B2 sheet in around 50 minutes, and we expect these times to come down as we move forwards.'

Inkjet CtP

An interesting challenge to established CtP technologies comes from Israeli company Digiflex, with the launch of its FlexoJet 1724 plate imager. The FlexoJet consists of a high-precision flatbed inkjet printer, patented bi-component ink and the software to create an opaque mask on top of the plate. After the image has been jetted onto the plate surface, the plate is finished in a conventional workflow with exposure followed by washout.

Digiflex says the FlexoJet gives better results than low-quality negative films, and offers an alternative to black mask ablation CtP devices. The resolution of the printer is 2,880 x 1,440 dpi, and it will produce plates up to a 180 lpi line screen.

Maximum plate size is 440 x 640mm, and imaging speed for a full plate is 22 minutes, or 6.5 minutes for an A4 size. Digiflex will be distributing its equipment in Europe through Jet Europe.

Thermal platesetting

Screen looks to be increasing its focus on the packaging arena with the launch of a new thermal platesetter for the flexo market. The PlateRite FX1200 features Screen's proven thermal imaging technology, and enables output up to 4,800 dpi for high-quality production of flexible packaging, labels, and cartons.

The third model in Screen's flexo and letterpress range, the PlateRite FX1200 complements the FX870II and FX1524 models and supports all leading makes of plate at sizes from 100 x 100mm up to 1,200 x 1,067mm (47.2 x 42in). It can also be upgraded onsite to the larger FX1524 specification of 1,524 x 1,067mm (60 x 42in), providing a growth path into larger format work.

The FX1200 images at up to four sq m per hour for flexo (3.3 sq m per hour at 4,800 dpi) and 6.3 sq m per hour for letterpress plate imaging. The 4,800 dpi output, and screen rulings up to 200 lpi, are achieved via a newly-developed imaging head and associated optics, using 64 high powered, long life laser diodes, with a backup mode for continued production in the event of laser failure. Screen's FlexoDot screening technology offers a choice of minimum halftone dot size and shapes, enabling better tonal control and crisper imaging in printed highlights.

The PlateRite FX1200 features an easy-to-operate clamp system for holding the leading and trailing edges of maximum size plates to make loading simpler. Smaller plates can be loaded without having to mask the rest of the drum.

Software support

Improved screening software continues to drive high-end flexo quality. EskoArtwork recently released v2 of its HD Flexo suite with improved screening algorithms – particularly impressive in combination with flat top dots. The new in-line UV exposure unit for the Cyrel Digital Imagers offers flexo printers the ability to select the type of print dot – either round or flat top – according to the specific job requirement.

Another interesting software development is the extension of Kodak's Spotless technology to the flexo process. Spotless allows printers to replace spot colors with recipes for four-color process printing, reducing press downtime from cleaning up solid color units, and allowing designers and print buyers to specify a greater variety of spot colors at no additional cost.

In a market that never stands still, converters need to keep their knowledge base up to date if they are to satisfy the ever increasing demands of their customers.

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Managing your business

The automation of management information systems and workflow is an important development for package printers to consider, and is only set to get more essential as David Pittman finds out from system suppliers

In the modern economic climate, businesses are being asked to become more efficient and productive in an effort to keep down costs, while at the same time reduce their reliance on resources. This has led to the phrase 'doing more with less' becoming commonplace on the business landscape.

Kevin Blakey, EFI Radius European operations director, says: 'It's a hackneyed phrase but it genuinely is an issue for businesses.'

'The next year is likely to have a similar profile to the last, with businesses concentrating and focusing on operating efficiencies and squeezing costs; "doing more with less",' says Paul Deane, joint managing director at Shuttleworth Business Systems. 'It will perhaps be even more of a focus going forward.'

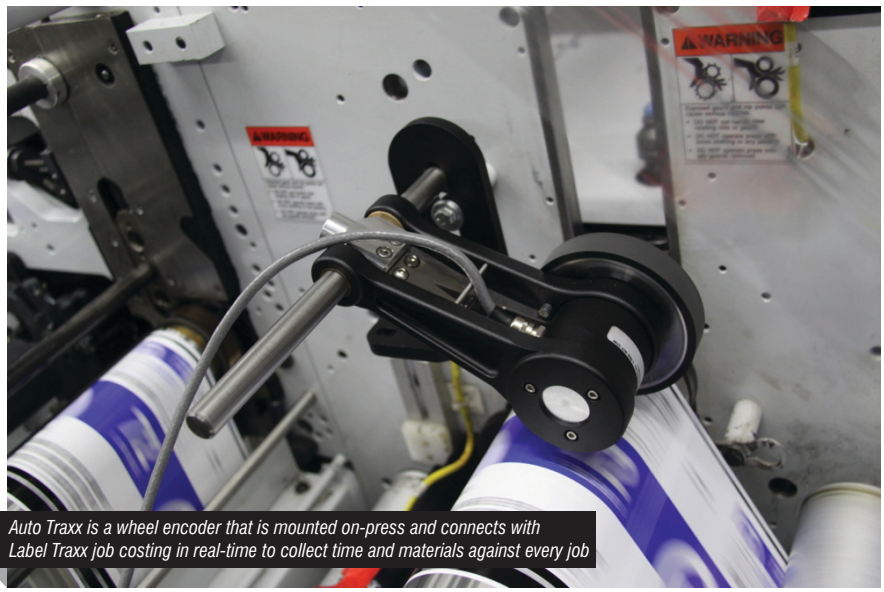
They agree automation of management information systems and workflow holds the key to doing more with less for packaging converters.

For Deane: 'The way to achieve that is to use technology where you can. There's a desire to automate where it can be done and people are looking at their business processes and questioning if they are as efficient as they can possibly be, and how technology can help.'

Elli Cloots, director of product management at Enfocus, an EskoArtwork company that describes itself as a PDF productivity and workflow automation specialist, says: 'Automation will become even more important in the future - even a necessity to success.'

Katy Nightingale, who is responsible for business development at Label Traxx, a specialist in job management software created for narrow web flexo and digital printers, says: 'The drivers for automation are the major trends in the industry – declining margins and shorter runs. In a highly competitive market like labels and packaging it is more crucial than ever to be as streamlined as possible. Every printer has to take as much cost out of the production chain as possible. Automation is a key way of reducing processing time and costs. It can also help to eliminate errors.

'MIS has many tangible benefits; the time saved from integrating and streamlining administration, reduced



Auto Traxx is a wheel encoder that is mounted on-press and connects with Label Traxx job costing in real-time to collect time and materials against every job

inventory levels, profitability data and elimination of errors can reduce your overheads and increase profits. However, there are a whole host of other intangible benefits that are difficult to put a price on, such as being able to react quickly to customers and the value of knowing the status of all work in your factory at any one time.'

Dr Peter Leu, Heidelberg vice president of Prinect Workflow, agrees that the tangible and intangible benefits of automation are numerous. However, he notes that they need to be properly integrated with other systems and processes to provide maximum benefit.

Heidelberg spoke on the benefits of full system integration to package printers as part of the Package Printing Zone at last year's Labelexpo Europe, and Leu says its acquisition of Belgian software specialist CERM in March 2011 will allow it to offer a more complete, fully integrated solution.

Says Leu: 'Packaging converters are focused on graphics-orientated production and the process is quite well managed but software could make it better. The market should look to adopt a more industrial product flow. It's still not as it should be, with a hodgepodge of different systems in the production scenario that are not offering a fully integrated solution.

'Integration is something other industries have done before the printing market in order to integrate all their data and production process in one place. The most important thing is not to have everything scattered around on paper and various computers, as this makes the whole system hard to manage.'

Shuttleworth's Deane says integration extends to printers and converters looking at ways of building deeper relationships with their customers and involving them with their systems and processes. 'They're looking at the relationships they have with their customers and how they can add value to be more than just a provider of printed packaging material. They are asking the customer "how can we better serve what you want and what you do", and then looking for technology to provide a solution. Technology can take information and data from customer systems and bring that directly into their own systems. This makes it more effective for customers but also enables the supplier to remove a degree of administration.

'For instance, if the relationship is one where the printer is holding finished stock, then you can make that stock information available to the customer's system and feed information back directly to their manufacturing processes. It's an important focus because it adds value to what they are doing and ties a customer in, as if you're investing in technology and moving data back and forth it becomes difficult for customers to replicate that by moving suppliers.'

Overcoming bottlenecks

The automation and streamlining of MIS and workflow technologies is playing a part in helping converters cope with the demands of modern printing. While they are working hard to overcome the pressure to handle shorter runs and provide quicker make-ready times, so they have created more administrative tasks.

Blakey says this can cause a bottleneck in the administration process as clients place orders more frequently for smaller runs. This is even more evident for those that offer a web-to-print service, where it is even easier for customers to enter orders into the production process. 'It is important for the front end to be able to handle and cope with the volume of work that is being put through. You can't just hire more customer service representatives. Businesses need to minimize the human intervention and automate the process in as slick and seamless a way as possible.'

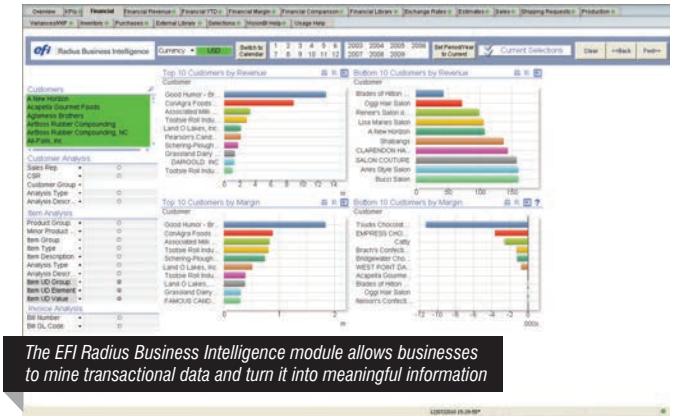
Deane says: 'Our customers are looking to make it as easy as possible to process work and want an interface that is as intuitive as possible.'

Says Nightingale: 'Most printers will have a fixed cost for processing a job through their factory when you consider costs at the front end; for example for estimating, creating job sheets, creating purchase orders, tracking job status, generating delivery notes and finally the invoice.

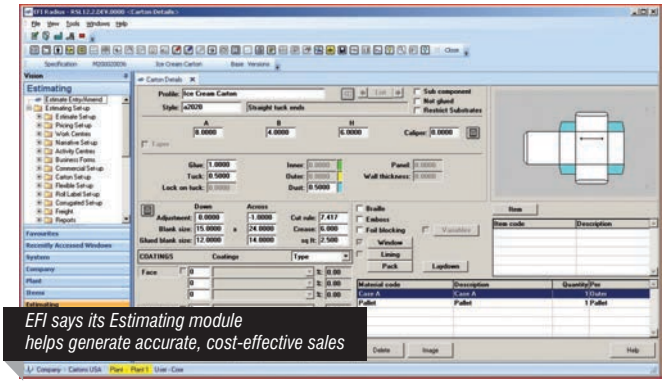
'That cost is fixed regardless of whether that order value is £150 or £1,500. The nature of digital means that we end up with a higher volume of low value orders and it becomes critical to make sure administration is as streamlined as possible. The last thing the printer needs to do is increase his overheads by taking on more administration staff to handle the increase of orders to process.'

Nightingale adds: 'A good MIS will give the user a single system to handle all of the functions within the business to streamline processes and identify what management should do to drive that business forward. Every company has different motivations to review MIS – whether they are wasting time entering data into multiple systems, they need more visibility of production and planning, or they need concrete data on

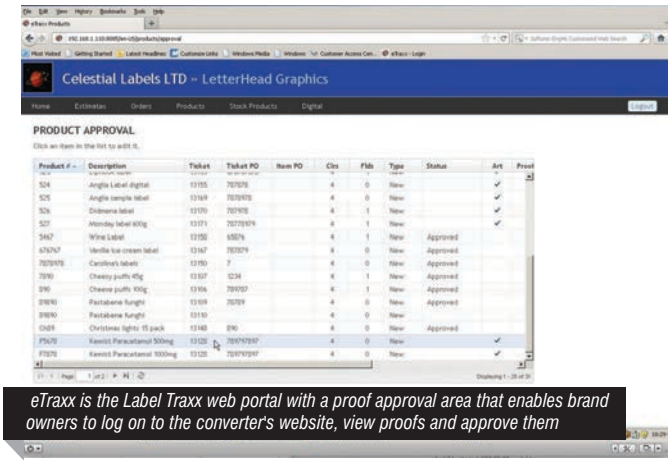
EFI Radius says the Business Intelligence module provides on-demand access to information to answer questions about the company's performance that will enable decisions needed to improve it, every day



The EFI Radius Business Intelligence module allows businesses to mine transactional data and turn it into meaningful information



EFI says its Estimating module helps generate accurate, cost-effective sales



eTraxx is the Label Traxx web portal with a proof approval area that enables brand owners to log on to the converter's website, view proofs and approve them

profitability that comes from shop floor data collection.'

Time to invest

Blakey and Deane proffer that now is the time to invest in technology and training that is capable of improving the way businesses operate.

Deane says: 'Now is the time to invest in technology and training to help employees become aware of what is going on in the market and what technologies there are to help their company and themselves improve the way they operate.'

Says Blakey: 'Most of the customers we deal with are in the transition between conventional and digital printing, or have a hybrid solution. But what they all still want is the ability to gather business information through MIS so they can make meaningful business decisions. This will help them grow and develop their business to meet changes in the market.'

Label Traxx's Nightingale agrees, saying: 'MIS can provide faster access to reliable and accurate data you can use to drive your business forward.'

Deane adds: 'Suppliers have a responsibility to invest in technology themselves in order to move the industry on. We've made a decision to push our products hard over the next 2-3 years, as we think the market will benefit from it.'

Mobile functionality is one area where Shuttleworth is looking to develop its presence, although this will be done in a considered fashion and targeted at specific areas of Shuttleworth's system that lend themselves to mobile, as opposed to making all elements of the software available on a mobile platform.

'I sit here and look at what we've already developed and what we're planning and from an MIS point of view it is the most exciting period I can remember for quite sometime.'

Enfocus will be putting a focus on specific market segments to help them with automation, and much like the opinion offered by Label Traxx, this will focus on digital printing. 'The digital print market is still growing, along with variable printing,' says Cloots. 'While we are already present in that market we will increasingly focus our automation solutions in addressing its needs.'

These developments will be made hand-in-hand with industry, with Cloots adding: 'Enfocus is in the midst of taking programming to the next level by utilizing a new form of agile development. The new methodology will make Enfocus even more responsive and quicker with up-to-date functionality.'

Leu notes that package printers are very open to new technologies and will adopt them if they think there is the potential that they will benefit business, while Deane says: 'We have an extensive and active user group, who give us feedback on developments we make. This is essential as new technologies need to be functional to business, not impractical.'

Educating the market

Despite this interest and involvement from the market, many suppliers still see that there is the need to educate end users on how best to deploy and benefit from the automated of MIS and workflow technologies.

Blakey says: 'Businesses need to understand what the benefits to their operations will be. When they understand these, they need to decide what benefits they want to take advantage of. They should then focus on these before taking the next step and start reaping additional benefits.

'People need to invest in the areas that will give them most benefit. The most successful implementations are where people have invested the time and effort in making the technology work for them.'

'The pace of change is increasing and unless you are investing in your products and services you're going to get left behind,' says Deane. 'You need to invest to bring yourself up with the market.'

And Leu says: 'Mistakes occur from keying things in again and again, and with a system that is not properly integrated you don't have the transparency to know where everything is if something changes in the job. Information should be available everywhere at the same time as the idea of picking up the phone and trying to find someone is something that should end.

'Package printers are more industrialized than commercial offset printers, and are generally bigger, more professional and looking after their workflow. Commercial printers focus more on getting enough jobs into their shops while package printers are entirely looking after efficiency.

'They have to be sure that if they do any reprints they can easily get the same quality so they don't get into trouble with brand owners.

'It's more professional, and with the many repeat jobs, particularly in the folding carton market, they must make sure things are correct each time; for us this demand is driving the investment in production efficiency.'

Blakey adds that suppliers need stay abreast of what's happening in the market too. 'Education is a two-way street. Everyone in the supply chain is in a position to realise a whole host of benefits but as suppliers we need to make sure we're delivering the benefits that industry wants and needs.'

Supporting the world of package printing

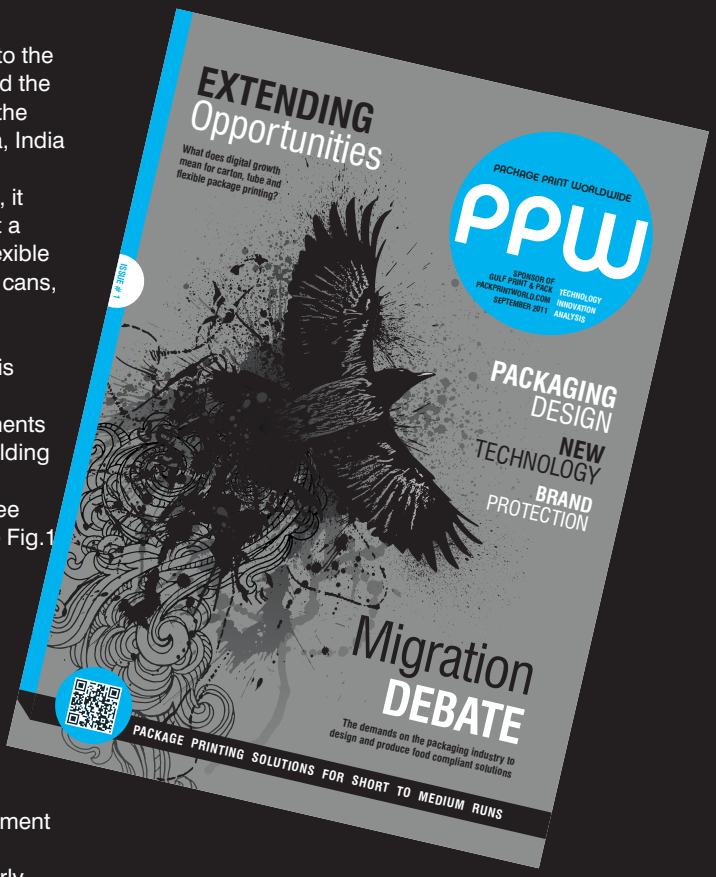
International publishing director Mike Fairley looks at trends and issues in the world of package printing and reviews how PPW is helping to support and inform this fast-growing industry sector

Look at any of the major studies and market reports relating to the packaging sector and it can soon be seen that packaging and the printing of packaging is today a totally global business, with the fastest growth coming from emerging markets such as China, India and Latin America.

While estimates may vary according to which report is read, it seems likely that the worldwide packaging industry is at least a US$600 billion market, made up of folding cartons, boxes, flexible packaging, labels, tubes, corrugated cases, bottles and jars, cans, pots and tubs.

Within that global market the printing and decoration of packaging – estimated to be worth close to US$300 billion – is undoubtedly a key and rapidly growing element of this total packaging market, with the largest and fastest-growing segments of package printing undoubtedly being flexible packaging, folding cartons and labels.

Indeed, industry estimates put the global value of these three sectors alone at somewhere in the region of $240 billion (see Fig.1



All three of these sectors currently have very similar challenges, and opportunities, namely:

- Global demand coming from emerging markets
- Decreasing run lengths
- Environment, sustainability and waste issues
- A need for better management and control of information
- A need to add value and/or diversify
- The challenge and opportunity offered by digital printing
- Rising materials prices, pricing pressures and cost containment

Strong economic growth and packaging demand, particularly from the Asia-Pacific region and India is undoubtedly creating a strong demand for packaging materials, in part fuelled by the globalization of brands, buyers and major suppliers and, more recently by rapidly expanding international package printing and converting groups.

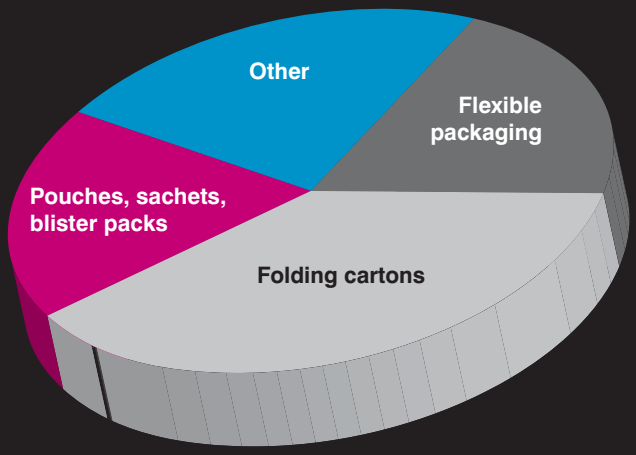
While strong demand from the emerging markets might be good for some suppliers, it is also creating a shortage of materials and rising materials prices, particularly for paper, paperboard, plastics, inks, chemicals and adhesives. At the same time, buyers are looking for price reductions, so squeezing packaging printers' margins. This in turn, means that printers need to try and contain costs, look for cost optimization, improve workflow and better manage information.

This becomes no easy feat when buyers are increasingly moving to shorter product lifecycles and shorter print runs, looking to rationalize packs, seek more variations and versions and require an even quicker response and shorter time-to-market. Conventional press manufacturers are also having to develop their presses with quick changeover and shorter-run solutions.

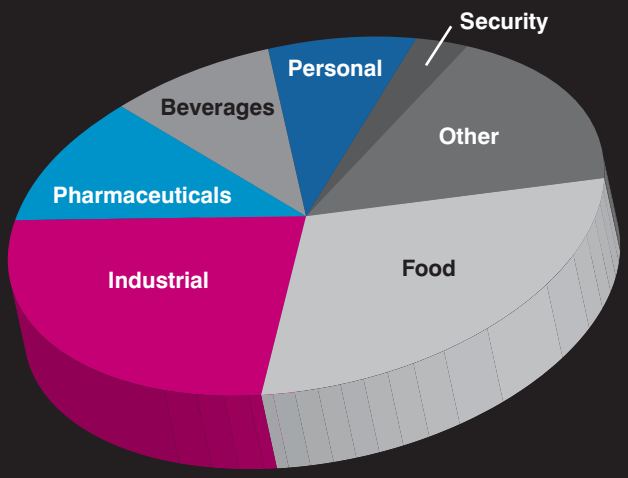
With moves to shorter runs and more versions/variations, the package printer is now finally beginning to see what the label printer has known for some time; digital printing has a major role to play. By the end of this year, some 1,750 digital label presses will be installed and operating worldwide producing self-adhesive labels. Now, digital press manufacturers such as HP Indigo, Xeikon, Xerox, Agfa :Dotrix, and EFI Jetrion, amongst others, are developing digital presses to target folding carton, flexible packaging, tube decoration, sleeve and related package printing markets. Just look at some of the changes taking place in the world of digital printing:

- Digital press manufacturers are now developing faster and wider presses to meet the demands of short-runs, versions and variations required by brand owners and retail groups
- Digital press manufacturers are signing new partnership agreements to link digital presses – in-line or off-line – to the latest finishing technology, including folder gluers, form, fill and seal machines to transfer decoration.
- New and improved UV inkjet head technology, coupled with enhanced performance inks, is now bringing digital inkjet closer to the performance and quality of both offset, and equal to UV flexo
- Digital dry toner is now FDA approved for food contact printing
- Coupled with the latest digital/pre-press and 3D imaging solutions, enhanced workflow and sophisticated MIS software, digital printing is now set to achieve the same kind of rapid growth and success in package printing as that being achieved in label production.

Reader product markets



Reader end-user market sectors



Undoubtedly the management and control of information will continue to grow in importance as run lengths get shorter and shorter. With more versions and variations there comes a requirement for buyers to tap into supplier databases through MIS, a need for better management of workflow and better color management, job tracking from order through to delivery and optimizing of process and materials usage. All these pressures and demands make it essential for package printers to innovate and add value (in-line wherever possible). More use will be made of social media and packaging combined using QR codes, snap tags, etc. as well as more brand protection, authentication and product security. Smart packaging will grow and printers will increasingly become one-stop-shops.

If cost and price issues, and the need to add value for the package printer are not enough, it seems certain that environment and sustainability will become the biggest issue for the industry over the next few years, bringing a need for more sustainable materials, reduced materials usage, the reduction and eventually elimination of waste to landfill, reductions in energy consumption and a reduction in the printer's carbon footprint.

So what's needed by the package and package printing industry today to find out about and meet all these changing demands and pressures? Certainly a good magazine with a global coverage; a magazine that understands the industry issues and challenges, and a management team that knows how to work with an industry to grow the market through exhibitions, summits, publications and books.

Hence the launch of Package Print Worldwide at Labelexpo Europe in September 2011, together with an associated e-newsletter and website and, coming soon, dedicated package printing summits in Europe, America and the Middle East – all put together by the same team that created the world's largest label printing, and only fully global, trade printing exhibitions, the Labelexpo shows in North America, Europe, China and India, as well as the global Labels & Labeling magazine.

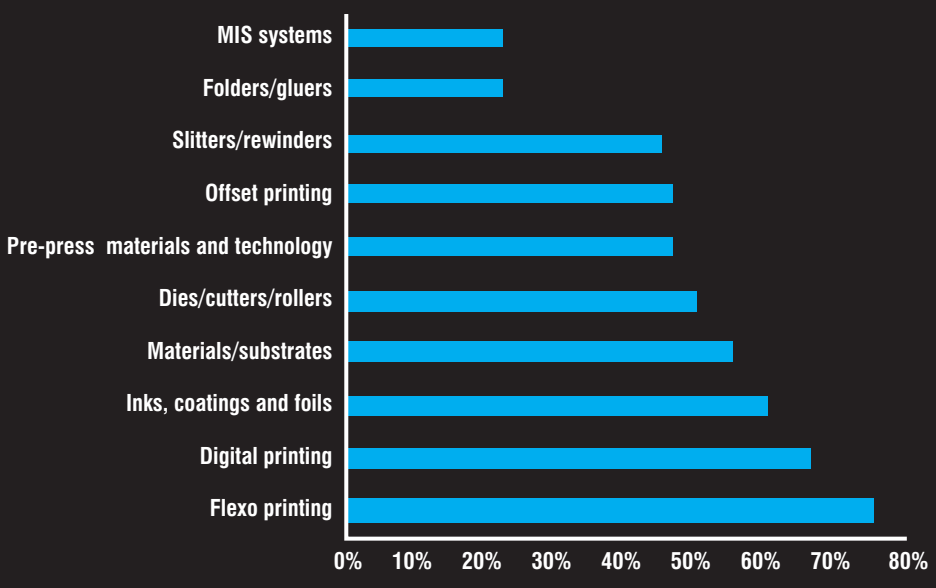
Package Print Worldwide has a worldwide readership drawn from registered package printing attendees at the Package Printing Zone at the recent Labelexpo Europe, from Labelexpo Americas visitors last year, from the Gulf Print & Pack show, plus new requested registrations and from trade associations; all constantly updated.

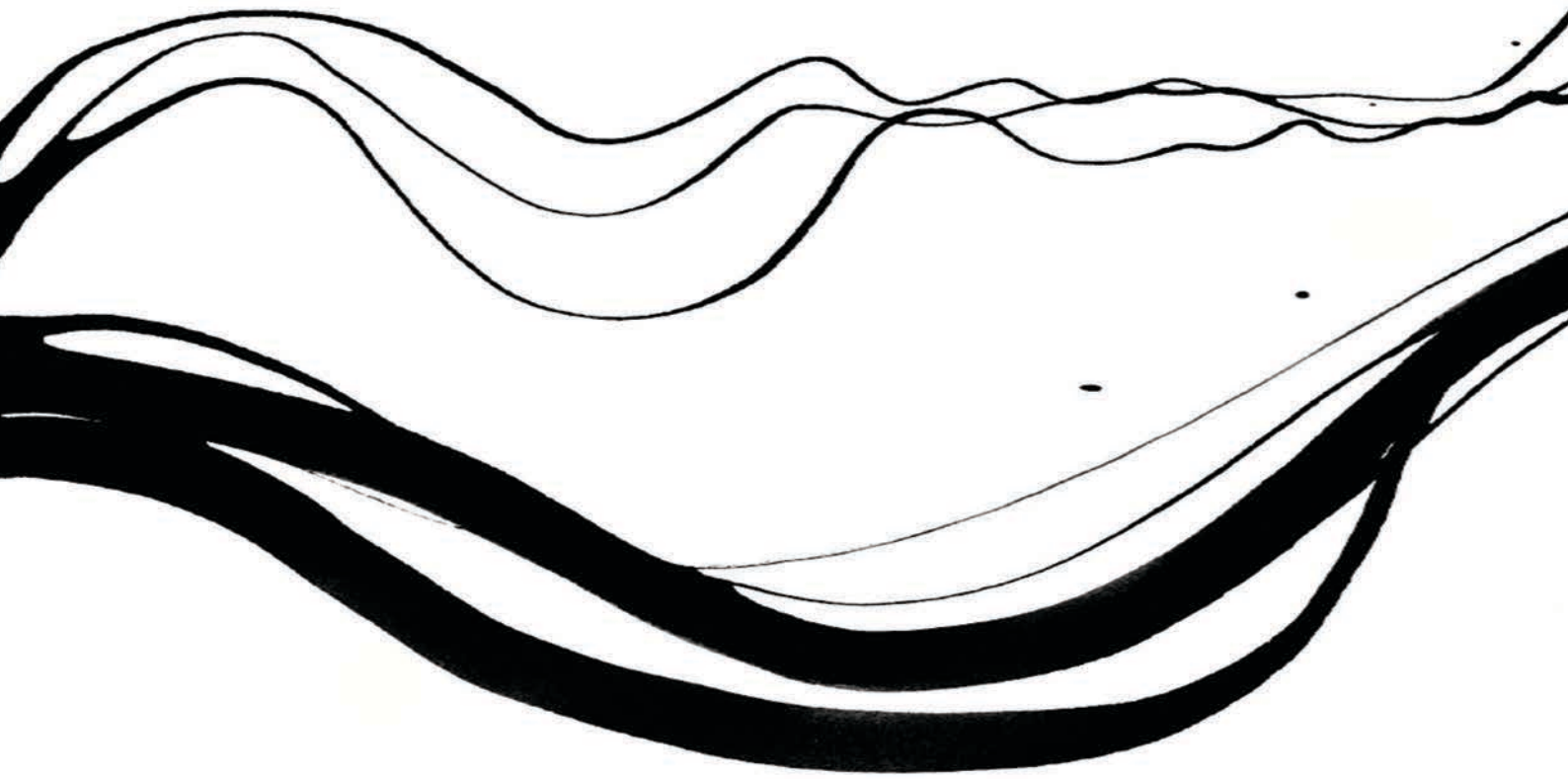
Some 40 percent of readers are the final decision makers in the company's purchasing decisions. Others have a major or some influence in purchasing, and others undertake research and make recommendations. Key areas of responsibility of readers in the packaging sectors are dominated by flexible packaging, folding cartons and pouches, sachets and blister packs. Readers have a wide range of technology, materials and product interests, covering numerous areas and topics.

The end-use markets that readers operate in cover most of the main consumer and industrial package printing markets, with food being the largest of these. Other sectors include pharmaceuticals, personal care and beverages.

So what does Package Print Worldwide offer? Well, niche magazines are almost certainly unable to offer the breadth of possibilities that PPW can offer. The magazine provides: a fresh new readership audience that is totally global; a focus on the trend towards declining run lengths and value-added solutions; a one-stop supplier resource across their printed packaging requirements (cartons, flexibles, etc); knowledge and expertise in digital solutions; and a route to printers and converters who are diversifying into package printing technologies and becoming more global in their operations.

Reader areas of interest





Migration matters

ECMA's GMP Guide for cartonboard-based food packaging is a management tool to help manufacturers minimize the risk of migration and contamination. David Pittman reports on the publication's scope

Consumer health and safety is a top priority for the food and beverage industry. Safe packaging is an essential vehicle to meet the requirements and expectations set by legislators, brand owners, retailers and consumers.

So says ECMA, the European Carton Makers Association, which has published a detailed guidance document for minimizing migration, organoleptic changes and contamination related to cartonboard packaging.

This document, the Good Manufacturing Practice (GMP) Guide, was launched at the ECMA Congress in Barcelona in mid-September 2011 and supported by a special educational seminar at the end of October last year, attended by both ECMA's own technicians and end users.

The ECMA GMP Guide is relevant to all companies that manufacture and use cartons intended to come into contact with food, and those that satisfy the principles detailed in the Guide can self-declare that they meet the requirements and are allowed to use ECMA's special compliance seal.

The GMP Guide for cartonboard-based food packaging touches on a number of areas that ECMA, its constituent national associations and European end user companies operating in the sector have concluded are important to ensuring consumer safety and health, and offers information and insight on areas that need careful management. As a result, ECMA says it is to be considered as the core European reference for carton making.

Topics covered include migration, inks and varnishes, as well as European regulations. A series of recommendations for compliance with the GMP Guide provide the backbone to the document, including purchasing, storage, hygiene, training, quality checks, testing, hazard analysis and more.

On migration, the Guide details the ways in which migration can occur and the various sources of contamination, from hygiene on the printing press to environmental instances resulting from transportation. It also notes that different influences can effect migration, and says that dual use substances, those authorized for use as food additives as well as in ink or varnish formulation, require extra attention during risk analysis and the process of ensuring compliance. In addition, some substances may already be present in the foodstuff by or added unintentionally from other sources.

In order to comply with the GMP guidelines, the Guide recommends a number of key actions for converters. These range from ensuring consistent quality with ongoing use of certified materials, risk assessments and testing, to verifying the composition of raw materials and obtaining information from suppliers about compliance with specific restrictions.

Other recommendations cover responsibilities, purchasing, design specification, product development and performance, control points, warehousing and storage, traceability, quality checks, training, hygiene, hazard analysis, testing, evidence statements from material suppliers and information sharing with customers.

Inks and varnishes have their own section within the Guide as it is said they 'have been a prime source of food safety

incidents.' As a result, the chapter is based around the Packaging Ink Joint Industry Task Force's Guidance for the use of printing inks for paper and board packaging used for contact with food.

The ECMA GMP Guide take on this guidance document includes: information on the use of UV inks and varnishes, plus the increased risk of migration when using flexography with UV curing inks and varnishes; conventional inks and water-based overprint varnishes; printing additives and fount solutions; ink mixing and color matching; cleaning and the use of clean equipment and tools, plus the risk posed by press washes as a source of unwanted migration; correct ink drying and UV curing; control of the whole process from the ink source to storage and transport; ink film weight; and issues of switching from normal to low-migration printing, with a close eye on changeovers, cleaning and the storage of consumables.

A process flow supplied by FFI, the German association, is also supplied, as is an FAQ section, detailing numerous queries carton makers may have such as to the nature of various European regulations, quality management systems and training of staff to observe GMPs.

For example, question 16 of the FAQs asks how can contamination be prevented, to which the GMP Guide responds: 'Contamination can be prevented through knowledge of and the current application of a GMP, in particular the controlling of critical phases of the entire process and the application of all measures suited to the prevention of potential contamination.'

Arend-Jan Luten, ECMA's technical committee chairman, says: 'In recent years, the European folding carton industry has built up a track record in addressing health and safety alerts arising from elevated concentrations of substances found in food products packed in cartons. At several occasions the carton industry responded overnight to individual cases of perceived health risks, most recently related to mineral oils.

'In the absence of a specific legal framework governing our products, the folding carton industry has chosen an approach of self-regulation. The ECMA GMP Guide takes us beyond repairing these emerging issues. It aims to provide guidance to our members on what needs to be in place in order to produce food safe cartons.'

Download the ECMA GMP Guide from the organization's website at www.ecma.org

MANAGING MANUFACTURING

Jan Cardon, executive director of ECMA, shares his thoughts on the GMP Guide with PPW:

'The GMP was compiled with a lot of input from national associations, including BPIF Cartons in the UK, FFI in Germany and the French and Italian associations.

'It is a pan-European document that explains what needs to be managed in the carton manufacturing process to minimize the risks from migration and contamination. This is the key objective of the Guide; detailing safety requirements and what needs to be managed in the industrial process.

'It is up to the company to decide how it manages these issues. Technically, there are different approaches to fulfil the same requirements so it is up to the company to decide how to do it.

'ECMA held its internal conference in mid-September 2011 and a special seminar on the GMP Guide on October 26, 2011, which was attended by our own technicians and customers. The Guide has now been launched and we are waiting to see how it is acceapted by the trade, but the comments we've had back so far have been very positive.

'It took real teamwork to develop the document, with different expertise closely involved including end user companies as well as associations. It is not a document that will remain unchanged for 50 years either. There will be reviews and, although there is nothing planned at the moment, the thought is to update the document every two years.

'The Guide is also well aligned with other partners in the supply chain. Important links have been made with upstream and downstream suppliers, ink suppliers, etc. We are working closely with the supply chain so the Guide is not isolated for our activity.'

Web offset with EB curing for package printing

Bernd Schopferer, formerly product and marketing manager at Muller Martini Druckmaschinen, examines the options for package printing offered by the combination of rotary offset with electron beam curing technology. Nick Coombes reports

The key to successful sales of consumer goods is packaging that stands out at the point of sale. This has led to new demands on packaging printers and converters and many of them have asked the question: 'Do my production processes still meet the demands of today's packaging buyers?'

Web offset printing with sleeve technology offers new opportunities in package printing with its short reaction times, fast time-to-market, low pre-press cost and cost effective production of short-run work. Another advantage is the possibility of using electron beam (EB) curing, which, with its high-quality and low odor, is excellent for food compliant printed products.

Today's stressed-out consumer takes only seconds to make a purchase. Marketers speak of the "moment of truth" at the "point of sale". It is no wonder then that the packaging of the product, especially its design and printing, have a great influence on the products purchased, considering the vast increase in brand variety available. For branded manufacturers, the quality, versatility and variety of packaging are playing an increasingly important role. With competitions and promotions printed on the packaging, food manufactures are trying to differentiate their products in an increasingly wider range, which demands greater flexibility in the production of packaging.

With its VSOP web offset printing press, Muller Martini offers a solution for a wide variety of applications in high-quality package printing, because the press allows simple and rapid format changes and offers a high level of production flexibility.

Handy sleeves

The plate and rubber blanket cylinders in the VSOP print unit are designed as easy to handle sleeves. Because they are lightweight, the sleeves are very convenient and comfortable for press operators to handle. They can be changed quickly and easily and mean the VSOP printing unit is infinitely variable for all print image lengths. A job and size change can be completed in a matter of minutes, and the sleeve change requires no tools, making the process user-friendly and efficient.

To maximize machine productivity, all print jobs can be prepared off-line while the machine is running, and a quick changeover system, which includes pre-register adjustment, automatically enters the settings. These machine settings are stored in an integrated database so that jobs can be reprinted at any time.

The VSOP printing press also has an efficient inking system with temperature controlled oscillator rollers. This system allows the printing units to deliver the first class print quality needed to meet the tough requirements of the package printing market. Thanks to standardization in offset printing technology, and to the high level of automation, precise color reproduction is also easy to match. This is vital for branded products. The strengths of offset printing are enhanced in the VSOP offset printing press with the additional integration of other printing processes. This means that flexo and rotogravure printing units, as well as finishing stations, such as hot or cold foiling, laminating, die cutting and sheeting, can be integrated. The VSOP can therefore be configured to meet the specific requirements of each individual printing company.

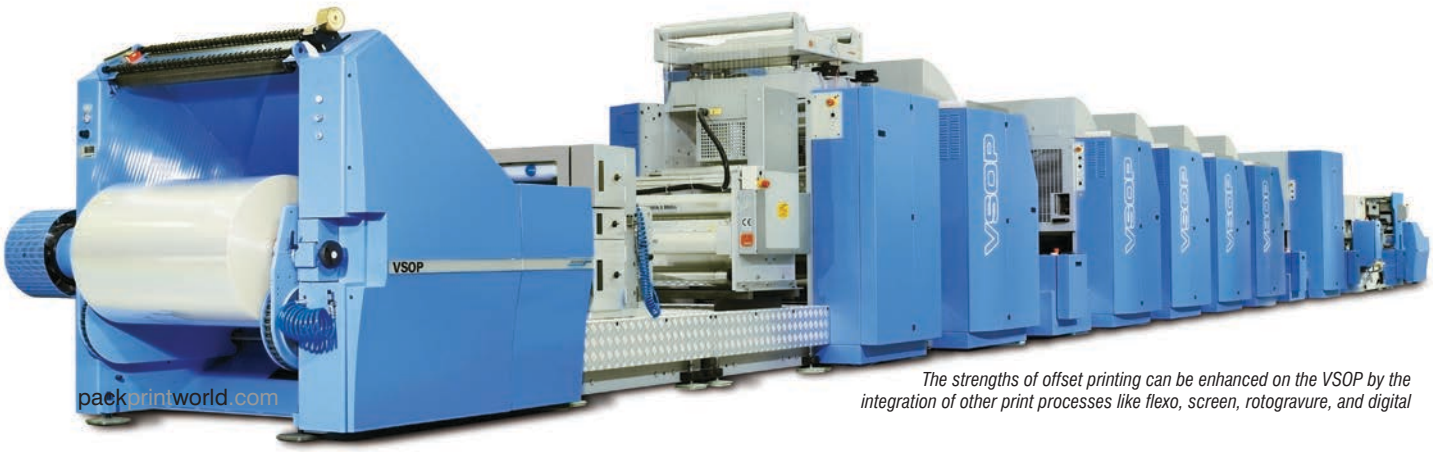
EB curing for food packaging

When the VSOP is used for producing food packaging, EB or UV systems can be used to cure the printing inks. EB curing is especially well suited to foodstuff packaging, since the ink film is immediately cured all the way through. The result is a high-quality, low odor and a low-migration printed product, manufactured under reliable production conditions, without the use of photo initiators or the emission of VOCs.

The major difference between EB and UV curing is that the former is very safe, since it is an on/off process. The curing result is not influenced, for example, by the pigmentation of the ink, dirty reflectors, ink layer thickness or the printing speed. This gives high production safety, and, as an added bonus, EB curing is a low energy consumption process compared with all other ink curing or drying methods.

Today, web offset printing offers a far broader substrate range than it did a few years ago. Thanks to excellent developments by the ink manufacturers, it is now possible to produce high-quality print on thin films for flexible packaging applications. These can be on 12 micron PET, paper for labels, or also cardboard for folding boxes or liquid packaging up to 760 micron (30pt). All leading ink manufacturers hav e EB curing inks in their portfolio, and increased demand is driving research and development as well as generating competition on price.

One major advantage of offset printing is the low cost of printing plates. As standard offset printing plates are used, costs are significantly lower than those associated with other



The strengths of offset printing can be enhanced on the VSOP by the integration of other print processes like flexo, screen, rotogravure, and digital

Changing the print unit on a VSOP is easy, requiring only two lightweight sleeves and no tools

printing processes, such as flexo or rotogravure. This is illustrated by the graphic, which shows the total production costs for 25,000 sq m of packaging film. The graphic shows conclusively that the dominant cost block in flexo and rotogravure presses is printing plates. It is not only on cost that the offset process holds an advantage, there is the speed of plate making too. In less than 30 minutes, a set of plates for a print job can be processed and mounted on the press. Given a job make-ready time on the press of around 45 minutes for a seven-color print job under production conditions, the VSOP offers high flexibility to any printing company.

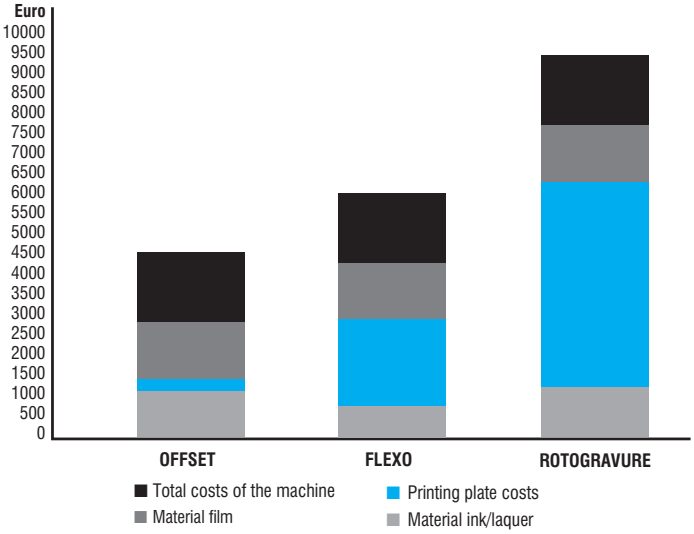
Complementary printing process

The production cost advantages it offers on short-runs, combined with its quick time-to-market benefit, makes web offset printing an ideal complementary partner to the established processes of flexo and rotogravure printing, and enables printers to profit from short-run as well as on long-run work, without the need to subsidize one with the other. In addition, web offset has sustainable advantages in that it uses energy curable inking. The benefit of having a VOC-free printing process is supplemented by the fact that all washing and cleaning operations use far less solvent. The issue of solvent consumption will come more to the fore in the package printing industry as time goes by, and will become a major topic in the future.

The success of variable sleeve web offset technology is highlighted by the fact that, since its introduction in 2004, Muller Martini has sold more than 80 of its VSOP lines, and 11 customers are now multiple users. As its benefits become more widely known and appreciated, the number of these installations among packaging printers is sure to grow.

Production costs for different printing processes

Cost comparison of total production costs of 25,000 m2 "OPP film 30 µm"



Keep it

Keeping the anilox roll in prime condition is a consideration that is often neglected or not given the full attention it deserves in flexographic printing, so says Chris Jones, UK and Ireland sales manager at ultrasonic cleaning systems supplier Alphasonics

It is safe to say that the anilox is the linchpin of the flexographic printing press. Without adequate care and attention paid to it, output can be severely affected, resulting in a loss of production quality and an increase in waste.

The industry accepts that around 70 percent of print problems stem from the condition of the anilox and as such this should be of paramount importance to the flexographic printer. This is especially true where the term "time is money" is more prevalent than ever before.

However, despite this striking fact, keeping the anilox in a prime condition is a consideration that is often neglected or not given the full attention it deserves. This is due mainly to the methods employed to clean the rolls, which make the task laborious and is a job production staff appear to hate. However, a shift in attitudes and embracing current technologies can not only increase production quality in package printing but can also change attitudes towards the task from the viewpoint of production staff. Ensuring the anilox is of the highest standards of cleanliness is intrinsic to the flexographic print process. When the ever increasing screen counts in modern printing are considered, safety of the anilox must also become an aspect that is at the forefront of the operator's mind.

Why is cleaning so important?

It is a common misconception that ink is the sole cause of cells clogging up and becoming contaminated. While there is an element of truth in this statement, it is important to clarify exactly what needs to be dealt with.

The contamination itself is dried ink components such as calcium carbonate, ground silica or other such fillers or binders used in many of today's inks that are being constantly ground into the cells during the run. These ink components are what in effect keeps the ink together and are the nastier elements of ink production. This leaves a contamination that gives rolls a dark grey appearance which is something many will have noticed when dealing with their anilox rolls.

Removing as much of this contamination from the cells of the anilox is absolutely essential. If there is any contamination left behind at all, the next transfer of ink will begin a process of layering. Without adequate cleaning of the anilox, this layer will gradually be built upon thus decreasing the volume of the cell in a short space of time.

To illustrate this point, I'd like to invite you to perform a little experiment. Take your morning coffee and drink it as you would usually, then look at what is left inside. You'll see a staining left behind by the coffee. Even if you shake it up as much as you can, you will not remove the final residue. Repeat this 20 times without washing the cup and see just how much the cup stains. You will actually be able to feel that these stains have depth. Imagine doing this up to 170 times per minute or over 10,000 times per hour with industrial grade inks like cells are exposed to. How thick would the stains be? How much volume would you lose from your cup?

Unless the anilox is cleaned to a microscopic level, there unfortunately will always be something left behind.

Manual chemical cleaning

There is no denying that there are effective chemical cleaners on the market that will do a good job. However, what must be accepted is that the product is only as good as the operator who is performing the task. This requires not only patience but also a sustained amount of hard work. Furthermore, without a strict regime in place, the performance is again restricted. Unless the cleaning is performed to a microscopic level there will always be something left behind, which unfortunately is near impossible with this method. The reason for this is that a small amount of the contamination may be removed from the bottom of the cell yet the sides will remain untouched which means layering is inevitable. This is why manual cleaning often cannot give the cleanliness aniloxes require, and can contribute to the build up of contamination within the cell that will lead to the inevitable requirement of mechanical cleaning at some stage.

In addition, regardless of the pH levels, which can vary, these chemicals are hazardous and pose a danger to the operator. Protective clothing must be worn at all times when using these products, and extreme care and attention must be paid. Finally, always follow the manufacturer's instructions.

Blasting methods

This technique utilizes small beads of soda or polymers which are fired at the cell at high pressure. In effect, blasting systems attempt to knock the contamination out of the cell through the energy levels of the powder or beads fired at the cell. Similar to chemical cleaning, it is equally reliant on the skill of the operator. These combined considerations mean results can be variable.

Where these methods can be found wanting is when tackling screen counts of 600dpi and above and also with

clean

contaminations left behind by UV inks. Because the inks are slow drying, they can absorb the energy of the fired media and therefore, the performance is affected. This method does however provide flexibility when the roll cannot be removed from the press or where chemical disposal is difficult. The consumables can be expensive yet if the system is well managed, the results can be acceptable.

Jetwash cleaners

These systems involve jets of chemical and water at 50 percent dilution fired at a roll and rinsed accordingly. Manufacturers often sell these systems as a complete cleaning solution which can cater for both parts and rolls and for any width or length of roll.

This technology however is dependent on the condition of the chemical used in these systems as it can become spent extremely quickly. This is due to the rolls and ink trays being placed in the system when full of ink. The chemical must also be fresh to maintain a high level of effectiveness. A tip when using this method would be to remove as much ink prior to use of a jetwash system to increase the chemical lifetime and cleaning capability.

Again however, consumable costs can be an issue with these systems. When chemicals require changing often, as they inevitably will here, one must bear in mind the level of chemical required and the costs of maintaining levels of fresh chemical.

Ultrasound

These systems work in entirely the opposite way to the blasting methods discussed earlier. Vibrations at the base of the tank create vacuum chambers which implode on contact with the roll. This is called the kissing effect, which in essence sucks the contamination out of the cell in an effective manner.

Where this technology falls down however is when adequate controls are not built into the system. Over exposure of ultrasound to one part of the roll and not other parts will create something known as hot and cold spots. This means that you will have clean and dirty areas of the roll, which obviously means a lack of consistency.

These systems require low-chemical usage and no additional skill level to operate. However, the capabilities of the manufacturer must be taken into consideration here. There are unfortunately suppliers with limited knowledge of ultrasound, its capabilities, and also how their own technology works. Be sure to rely on trusted sources.

Alphasound

Alphasound is utilised in the technology Alphasonics manufactures and is a trusted cleaning method in both narrow and wide web flexo, and there is a good reason that a distinction has been made between this technology and ultrasound.

Alphasound enables the microscopic cleaning referred to earlier to take place, meaning the cleaning standards achievable are more favorable when compared with the methods discussed above.

An in-house development, Alphasound utilizes ultrasonic technology but builds in the controls to ensure that rolls remain undamaged and are consistently cleaned to a 100 percent level on every occasion. A Super Sweep is employed to ensure the ultrasound is consistent throughout the tank and is of a much wider range than other suppliers. This ensures the sonics are consistent in power, which in turn means safety is assured.

The low-frequency setting is suitable for 600dpi and below and is a slightly more aggressive cleaning cycle which is safe enough to pose zero risk to the roll. However, should low frequencies regularly be applied to high screen rolls, the potential for damage is far greater.

For this reason, the high-frequency setting is a much gentler action. This enables unlimited ultrasonic cleaning again without risk to the rolls, which would be increased with higher screens.

This technology combines the favorable elements of ultrasonic cleaning and builds in the controls that ensure roll safety is guaranteed while providing the most comprehensive and unrivalled cleaning results on the market today.

Cleaning plan

In addition, you need a system that allows you to develop a detailed roll cleaning plan for your anilox. Sticking to it is important and sometimes the hardest part, but one thing is for sure, your efforts will not be wasted. Print quality will unquestionably improve and rewards may be waiting for you because of it and if your supplier will help implement the regime, you've backed a winner. Regardless of which method you use, regime is the essential ingredient.

Super Sweep ensures ultrasound consistency

Alphasound uses ultrasonic technology

Heidelberg's package printing promise

Packaging is seen as a core to Heidelberg's future strategy and growth, and an area that will get plenty of attention under the HEI END banner at Drupa 2012 in Dusseldorf next May. Nick Coombes reports

As recently announced on the PPW website, Heidelberg has introduced its carbon balanced presses at a small price premium. Seen as a way of helping printers to help their more environmentally aware customers (and there are plenty of those on the high street and in the corporate world) to fulfill their sustainability requirements, the carbon used in the manufacture is calculated on a press specific basis, and certificates issued to show that the amount of carbon used has been offset by support of conservation organizations.

This is neither the time nor place to discuss the relative merits of "green" technology in the printing industry, but it certainly gives an indication of the political, if not environmental, pressure that brand owners and retail chains are under, that a manufacturer as large as Heidelberg is prepared, indeed convinced, to underwrite the time and effort, and therefore money, to quantify the eco-efficiency of its production techniques. Who else will follow?

Making its debut at the Dusseldorf expo will be Heidelberg's latest 18,000-sheet per hour Speedmaster XL 105 perfector. Rated to offer an improvement in productivity of 15-20 percent overall, it offers converters the opportunity for double-sided carton printing. One has only to look at the relatively humble breakfast cereal box to realize the growth in demand for this type of two-sided application. Also on show at Drupa will be the Speedmaster CX 102. This high-spec press combines elements of the CD and XL technology, and has sold well, with more than 1,000 units finding customers since its launch 18 months ago.

Relief coating, cold foiling spot colors and Cristala design patterns are features that should be investigated at the show. Realizing the importance of these added value techniques led one leading German carton group to specify a unique Speedmaster XL 105, including the latest integrated FoilStar cold foil unit. The press allows new processes like blind and hot foil, relief and micro embossing, as well as foiling and high-gloss UV varnishing, which is occasionally a substitute for calendering. For the first time, these processes permit the in-line production of folding cartons with new high-brilliance metallic effects. The technique draws attention to the graphics, text and logos, which can now be produced with metallic tones.

Inspection Control for product security, which allows printers to identify and remove faulty sheets, can now even spot a specific box error in multi-up work. This makes a huge saving in waste levels and lost money on a job. Heidelberg has now made it possible to fit Inspection Control onto the Diana X folder gluer as well as the Speedmaster press range. It can also be retro fitted to both. Still with security applications in mind, Heidelberg says it will unveil a 5080 dpi version of its Suprasetter A52/A75. The company is very strong in CtP (Computer to Plate), with more than 8,000 systems sold to date, of which more than half are Suprasetters. Drupa 2012 will see a new compact auto/dual cassette loader for the Suprasetter 105 unveiled, and a smaller processor to reduce chemistry and power consumption.

To maximize the performance of the press, the carton producer must have accurate, measured data supplied to the press, and automated set up and on-the-run adjustment. Heidelberg's Prinect family, including workflow and spectral measurement devices, are constantly evolving so that lean manufacturing, color and even ecological factors, particularly waste, can be controlled.

Integration will be the buzzword for the Prinect packaging workflow at Drupa. It will include modules to cover CAD and one-up design, one-up editing, sheet layout and processing, printing and die cutting, and folder gluer applications. The benefits of workflow are well known by now: it speeds up make-ready, reduces waste and provides the company's management team with the hard facts on which it can base sound business decisions for future investment. As one Heidelberg user commented to me recently when I quizzed him on the value of data flow: 'If you don't know where the problem is, how can you solve it?'

Heidelberg says it will be strengthening its MIS with a collaboration to develop products with Belgian specialist CERM. Packaging printers would also be well advised to take a look at the hot topic of Web2Print, for which Heidelberg has a co-operative arrangement with Pageflex. Although the impact of this relationship management selling and work ganging tool is still predominantly in the commercial response print market, it is an interesting way of supporting, adding value and tying in customers more firmly at a time when old fashioned loyalty, or even cut throat pricing, doesn't work.

According to Bernhard Schreier, CEO of Heidelberg: 'The circumstances surrounding Drupa 2012 are exceptional because the industry is in a state of change, but we are ideally placed to offer valuable guidance and recommend the most appropriate solutions. In the current market and environment, trust and reliability are priorities for our customers. That is why we use our innovations to respond to customer queries that extend far beyond purely technical issues to, for example, which business models will be successful in the long run?'

See p25 for a special early preview of the show and check out the April issue for an in-depth look at Dupa 2012.

Heidelberg's Speedmaster XL 105 will show its 18,00sph capability at Drupa 2012

Bernhard Schreier, CEO of Heidelberg

Addressing today's packaging challenges

Nick Coombes spoke to some of the UK's leading carton converters to find out how technology helps them to help their customers

'The packaging market has changed enormously over the past five years. With customer expectations much higher, we have to do all we can to ensure we meet them,' explains Mark Jeavons, print manager of Offset Productions, Aylesford, an independent packaging, print and greetings card specialist.

Edward Mould, managing director of fourth generation family-run packaging specialist Leyprint, agrees: 'There has been a dramatic shift in the market, and we need to be very responsive to the demand for shorter runs and faster turnaround times.'

The pressure to meet these daily requirements resulted in both operations investing in KBA technology to help them retain their competitive edge. Leyprint is targeting 10.5 percent year-on-year growth with investment in a KBA Rapida 105 combination press, while Offset Productions chose KBA's DensiTronic to help underpin its provision of high-quality, reliable and consistent services.

'For us, the most important factor has to be reduced make-ready times and the associated reduced cost,' said Mould. 'That said, the press will also open up new markets that we couldn't operate in with our old presses; primarily these are printing on plastics, and direct litho onto E-flute corrugated board. There really isn't a great deal of money to be made in cartons these days, so we have to exploit the niche markets to increase profitability. When we first started talking to all the press manufacturers, we were looking at large format presses, but KBA highlighted the flexibility that B1 could offer considering our needs today.'

The press is equipped with an extended delivery, CX package for thicker substrates, semi-automatic plate changing, and runs both UV and conventional inks, which enables the operation to handle a wider mix of jobs. Mould added: 'We need UV for our worldwide telecoms accounts but not always for other jobs. We also have to be able to run low-migration inks, and the ability to swap easily is very important to us.'

But, it is not just hardware that can make a difference. Offset Productions, a family-run operation in Kent, with an established core business of blue chip and household names, chose DensiTronic for its six-color KBA Rapida 142 and seven-color KBA Rapida 105 to help it achieve ISO 12647-2. DensiTronic offers fully automatic measurement quality control and documentation, and allows new or customer-specific color bars to be added to the standard catalogue.

Operations director Vince Brearey explained: 'We plan to grow our business in all areas, but in particular we want to expand our presence in the packaging and fine art sectors.' DensiTronic will also help Offset Productions to attain ISO 12647-2.

Brearey explained: 'We installed the Rapida 142 five years ago, and when we came to investigate how further investment could help us achieve our goals, DensiTronic turned out to be the ideal solution. It will be a vital tool in helping us achieve that accreditation, and also help reduce ink and paper waste by producing saleable sheets faster. This will save money by allowing us to get more jobs on and off the press per shift, and ultimately, that will help us be more productive.'

KBA claims each of its presses is designed and built to meet the unique operational demands of the specifying company, which was one of the reasons Chesapeake Pharmaceutical and Healthcare Packaging, the world's leading manufacturer in this sector, added a second KBA Rapida 106 in less than two years.

Chosen for pharmaceutical leaflet production at the Group's Tewkesbury site, the two-color perfector followed the installation of a Rapida 106 six-color machine, two back four perfector, at the Greenford operation. Both presses are equipped with KBA's lightweight stock option, which reduces minimum substrate specification to 0.04mm, ColorTronic off-press ink and register control system, and DriveTronic for smooth sheet delivery.

'Among our client base, we count many, if not all of the world's leading pharmaceutical companies,' stated Mark Wilson, general manager for leaflets at Chesapeake in the UK and Ireland. 'We need the most advanced technology available to offer them the high level of service they demand, and we believe KBA offers that capability. We are committed to strengthening and growing the business, and the latest press addresses both of these priorities.'

Speaking for KBA UK, executive sales director Mark Nixon comments: 'The current economic environment is driving an interesting move towards greater versatility on all press formats. With such a wide press range we are able to give unbiased advice, which is how we were able to work closely with Leyprint to ensure it chose the right press to meet its exact requirements. Highly automated printing presses give packaging printers more options when it comes to run length, product types and niche markets, and this is crucial at a time when there is so much uncertainty out there.'

KBA Rapida with six-offset units and coater

The green dream

What role do design agencies have to play in ensuring the environmental credentials of packaging? David Pittman speaks to Dane Whitehurst, creative director at Burgopak, to get his views

Consumers are increasingly aware of the impact the products they purchase can have on the environment, from long-standing concerns about chloro fluoro carbons (CFCs) in hairspray to food miles, the distance food is transported from the time of its production until it reaches the table.

Previously, companies and organizations were accused of greenwashing, described as the use of PR or marketing to deceptively promote the perception that policies or products are more environmentally friendly than in reality, but this practice is increasingly disappearing due to the growing consumer awareness of environmental issues and pressure from governments and other official sources to offer genuine solutions.

The green agenda has filtered through to packaging, with the likes of coffee brand Kenco pushing its Eco Refill pack, a flexible packaging alternative to glass coffee jars that claims to offer 97 percent less packaging weight, and UK

supermarket giant J Sainsbury, which has pledged to massively reduce the amount of packaging used in its own-brand products.

At the same time, the printing industry is working hard to enhance its environmental credentials by developing more eco-friendly inks, substrates and processes. This includes work by the likes of Taghleef Industries with bio films and Flint Group Flexographic Products with BioCure F, a new UV flexo renewable ink system designed to offer properties available in other UV flexo ink systems, but using bio-renewable raw materials.

The print industry is even greening its own manufacturing processes. Fujifilm, as an example, has installed five wind turbines at its Tilburg manufacturing and development plant in The Netherlands with the aim of reducing CO2 emissions by 12,000 metric tonnes per year.

This is putting pressure on converters from both ends of the market to adopt the most environmentally friendly technologies and solutions.

Says Dane Whitehurst, creative director at design agency Burgopak: 'Industry drives environmental awareness, while consumers drive environmental friendliness. Environmental design is more apparent now; greenwashing is disappearing and more genuinely environmentally friendly products are on the market.'

Whitehurst says this is where design agencies can have a part to play. 'It is the design agency's job to understand the bigger picture and the different issues and requirements from across the whole supply chain.'

This extends from understanding regulations and issues to the sourcing of new and existing materials, such as a new molded-fiber based containerboard and certified wood fibre products.

The Cradle to Cradle certified molded fiber-based material was the result of a partnership between Burgopak in the US and Be Green Packaging, a molded fiber company based in Santa Barbara, California, and was used by P&G in its Gillette Fusion ProGlide Power Razor packaging.

'The molded fiber container board is grown and harvested local to the point of manufacture, so it is well sourced and a good PR story for brands.'

Positive PR plays an important part in the adoption of environmentally friendly products according to Whitehurst as it can help brands and converters offset the premium cost normally attached to "green" products.

'Consumer PR is worth more and more, helping to offset the cost of "being green". And if you can offer something that is a game-changer, the PR value is massive.'

Another tool in the design agency's armory is its ability to temper higher costs with intelligent design. This can take longer to be implemented if working with a brand to overhaul its packaging, but step changes can be handled fairly quickly by the likes of Burgopak and can lead to gradual change. 'Incremental improvements over time can drive change.'

Structural design

Burgopak is, at its heart, a structural design agency so works with its clients to integrate such principles into its designs. It produces bespoke solutions to clients' exact requirements. Whitehurst says it utilizes a fleet of software in its studio, such as ArtiosCAD and Cinema 4D, to achieve its clients' aims. Burgopak also offers in-house prototyping, CNC machining, calibrated proofs and mockups for product testing and pre-production approval.

Going back to his earlier comment about understanding the whole supply chain, Whitehurst says: 'We offer a grounded perspective with an insight into production. We produce prototypes in-house so customers can see what the end product will look like. We even have a color scientist in the team who's doing a PhD in color management.'

Burgopak's champion product is a sliding mechanism design, for which it holds global patents, and which has been used by a number of international brands as a versatile packaging solution with an 'intriguing and playful opening experience'. This design features a central core from which two additional sections slide out and retract when the manual mechanism is engaged.

Those that have deployed the sliding

mechanism include renowned US department store Bloomingdale's, sports brand Nike and boutique hotel directory Mr & Mrs Smith, who each used the slider in gift card packaging; Italian beer brand Peroni, for the launch of its new light beer range; mobile phone network operator Vodafone, to deliver SIM cards to consumers; and motor racing's Formula One, for its Global Broadcast Reports. Burgopak also designed and produced Formula One management's official pit pass holders for the 2010 F1 Grand Prix season.

Working with the Formula One brand presented the sliding mechanism packaging solution to a global audience, none more so than when Whitehurst recalls Formula One boss Bernie Ecclestone handing Prince Harry one of its pit pass packs live on television. Whitehurst also recalls the time TV comedian Harry Hill demonstrated the sliding mechanism on stage after Burgopak had supplied the British Academy of Film and Television Arts with the design for its invitation for the 2009 BAFTA Awards night.

Accepting the Best Entertainment Performance award in front of a crowd of film and television personalities, Hill played with the mechanism and said: 'If that's not entertainment, I don't know what is.' You can find a clip online, by searching "Harry Hill", "BAFTA", "Burgopak".

The sliding mechanism has other applications, especially in the healthcare market according to Whitehurst. Here, the functionality of the packaging allows medical companies to adhere to strict compliance regulations from organization's such as the Food and Drug Administration in the US that require the medication, patient information leaflet and packaging to remain together.

In addition, Whitehurst says the design offers a more consumer friendly, streamlined solution that is better suited to modern lifestyles, as opposed to traditional healthcare packaging that can become intrusive and easily damaged if carried on the person, as is often the case with the packaging for paracetamol or ibuprofen, as an example.

Designs 2GO

To supplement its bespoke design work, Burgopak has put together a dozen solutions that it is offering as a largely off-the-shelf series called the 2GO range. This, Whitehurst says, is designed to provide a standardized solution that is easier to manage, streamlines the design process and affords Burgopak the time to work on projects it may otherwise have had to turn down.

The range is based around the sliding mechanism functionality and offers a more cost efficient solution than from-scratch designs. In addition, die tools are maintained by Burgopak's partner manufacturing plants so turnaround is quicker than normal, according to Whitehurst. 'It changes the way we do business as it allows us to effectively offer current price lists upon request, which we wouldn't normally be able to do.'

The sliding mechanism is at the heart of much that Burgopak does, and has been repatriated in different ways to enable it to offer tailored solutions for different applications, as well as facilitating other developments in design since.

Whitehurst says research and development is ongoing into new mechanisms and solutions for its existing and potential client base. 'Quality is everything and with patented products that extends to us as well as our customers. What we offer is memorable brand equity; brands and consumers are demanding more from packaging.'

This extends beyond its structural and creative services, which are supported by global teams of project managers dedicated to meeting every challenge and finding a solution to a client's packaging needs. From initial concept brief to delivery, Burgopak's project managers liaise with design studios, licensed manufacturers and extensive logistics networks to offer clients a closed-loop service.

In addition, Burgopak has licensed production facilities in a number of locations in Europe and Asia that collectively hold: ISO 9000:2001; BS EN ISO 9001:2000; ISO 22000:2005; BS EN ISO 14001:1996 accreditations.

As part of this ethos, Burgopak itself has undergone a rebrand. 'The brand strategy is a way of communicating what we are and what we do,' says Whitehurst.

'It's easier to engage with the market if everyone in the company is clear about who we are, with a creative side complemented by a strategic vision of what we are and hope to be. It's a common and a unified message that will help our customers better understand Burgopak.'

Digital specialist in China

The Chinese Eternal group has pioneered digital printing of security labels and flexible packaging, as Kevin Liu reports

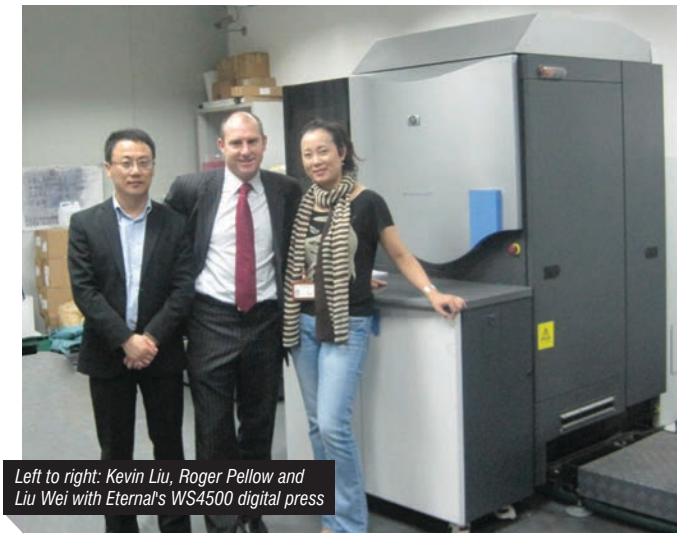
Eternal Anti-counterfeiting Technology is one of the pioneers of digital package printing in China, and in 2011 the company installed its third HP Indigo digital press.

The Eternal Group was established in 1992 and now has six divisions in various regions and industries around China. These include Shanghai Eternal Printing, Evans Data Processing, Eternal IT, Eternal Anti-counterfeiting Technology, Shanghai Yisui Paper and Beijing Eternal Printing. Eternal is mainly active in four industries: commercial banknote printing, business forms, pressure sensitive label printing and packaging.

Compared with similar companies in China, the Eternal Group started digital printing quite early. Before the establishment of Eternal Anti-counterfeiting Technology, Eternal Printing could already carry out barcode inkjet printing for customs bills using a Scitex inkjet press and Oce and Kodak digital presses.

Eternal Anti-counterfeiting Technology was established in 2005 and is mainly engaged in printing PS security labels and flexible packaging such as potato bags. The company purchased one HP Indigo WS 4050 digital press in 2005 – the first such machine installed by HP Indigo in the country – and started to provide a labels and package printing service to a wide range of demands from its customers. Key end user markets are prototyping, proofing and helping customers market and launch new food products. The WS4050 was followed by an HP Indigo WS4500 digital press in 2009 and a second machine just recently.

'Digital printing helps solve some problems where traditional offset and flexo printing always failed, such as short-run printing, variable data printing and personalized printing etc,' explain the company's director Ms Liu Wei. 'The HP Indigo press accomplishes all the customers' demands in a very short time so that the transportation and delivery can be finished in a short time, which assists the company in stock reduction efficiency,' explains Liu Wei.



Left to right: Kevin Liu, Roger Pellow and Liu Wei with Eternal's WS4500 digital press

'The customers usually need samples before the conclusion of a contract and will win purchase orders as long as the samples meet their demands. By traditional technology, the cost of these samples are high. Once the machine is started, the cost of one piece is the same as that of 1,000 pieces. Digital printing solved this problem quite perfectly, with very little expense on paper and ink.'

Security Printing

The HP Indigo presses have been used for variable data printing, including product and security codes. The company has also made use of invisible ink readable by ultraviolet light. They are printing variable security codes with invisible ink which require a specialized decoder to read. Eternal has printed micro security text as well as digital watermarks on labels and packaging.

This branch of the company's activity brings together all its security expertise across the group. The range of products includes anti-counterfeit and security labels for logistics and supply chain management and control. This links product packaging to secure databases via digitally printed codes that allow track and trace through the whole supply chain from raw materials, production, logistics and sales to consumers.

As well as digital security printing, the Eternal group's Shanghai Eternal division has become one of the world's top RFID packaging converters.

Anti-counterfeit label and packaging is provided for many of the top global 500 brands, including Canon, Johnson & Johnson and P&G, as well as leading Chinese brands.

Because of the wide range of packaging and label materials Eternal prints, it dedicates a coating machine to pre-coating HP indigo press materials, as well as using pre-coated PS stock from Avery and Raflatac.

Flexo Printing

Eternal is not limited to providing digital anti-counterfeiting packaging, but is also involved in the pharmaceutical and food label market. At the beginning of this year, Eternal installed one Gidue E-Combat M1 flexo press. 'We introduced this machine targeting customers of pharmaceuticals and food,' says Liu Wei. 'The press has eight color units, with one rotary die cutting unit, a printing width of 370mm and average production speed is 110m/min.'

China is still overwhelmingly an offset and letterpress market, and it is very difficult to find good flexo technicians. How did Eternal solve this problem? Liu Wei explains: 'The operation of Gidue equipment is easy, which is the key reason we chose it. Before purchasing the machine, I went to visit the plant of the manufacturer in Milan, Italy where I also tried to run it. Then I found it is highly automated and very simple for the operator's work.

'Our present flexo press leader is selected from our internal employees, but he has never run flexo or other conventional presses before. After simple training by Gidue, he can already operate this machine quite easily.'

Evangelina Perez, manager of Punto Gráfico, inspects a patch cut from a flexo plate on the Kongsberg table

As part of the partnership, Kodak Flexcel NX and Flexcel NX Wide systems have been installed at Bosisio

Servicing Argentina's packaging sector

A partnership between Kodak and Bosisio, an Argentina-based pre-press house, will provide local brand owners with a wider range of services and applications. James Quirk reports on a services agreement for the packaging sector

Eastman Kodak Company and Bosisio, an Argentina-based pre-press house, have announced a joint initiative that will enable Bosisio to provide new services and applications to brand owners and printers in the region.

The joint initiative will initially focus on customers in South America. Bosisio is an early adopter of new technologies, enabling it to expand its offerings which include reproduction and graphic services as well as printing tools for the rotogravure and flexographic markets. The company employs more than 130 people at its facility in Buenos Aires and three customer sites. The agreement enables Kodak to increase sales of products, services and packaging applications to multinational and global companies doing business in Latin America.

'The agreement between Kodak and Bosisio is broad in nature and leverages the capabilities of both organizations throughout Latin America,' Roberto Colangelo, general manager, worldwide services, Business Solutions and Services Group at Kodak, told PPW. 'As part of this initiative, Kodak Flexcel NX and Flexcel NX Wide systems have been installed at Bosisio's facilities to enable the deployment of a broad portfolio of services to brand owners.

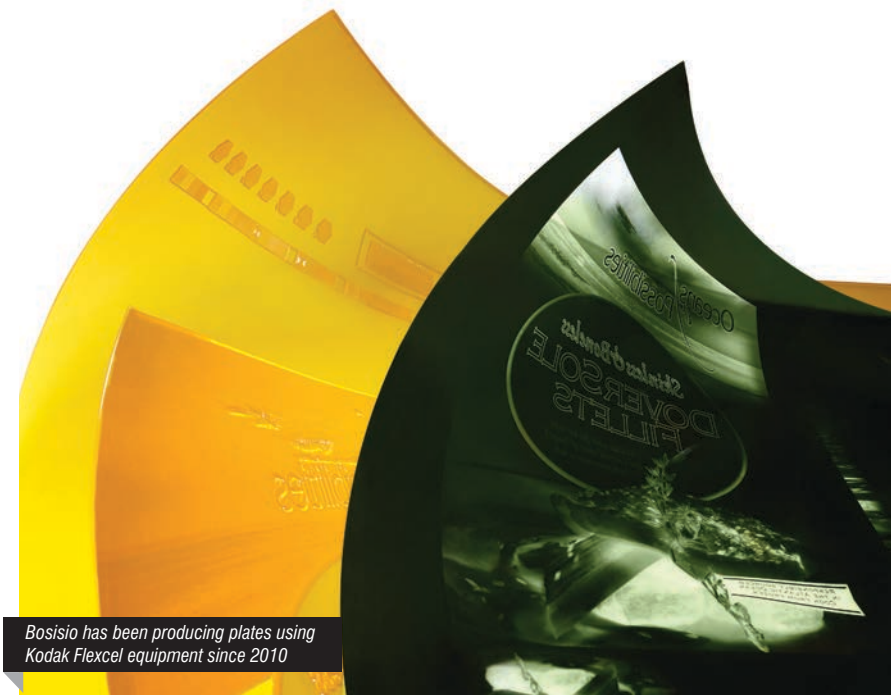
'The portfolio includes brand management workflow, innovative Kodak flexographic technology, proofing technology, print workflow solutions, security solutions for brand protection, digital printing solutions and media management services. This is the first such deal with regional breadth, with the ability to scale and on a worldwide basis.'

The agreement enables Kodak and Bosisio to jointly develop and implement new initiatives, including technologies, services and customer support, for the packaging market. 'It represents a significant transition for Kodak from just a packaging industry supplier to also being a services provider enabling complete solutions for brand owners whose focus is increasing customer satisfaction, providing attractive and successful products and growing their businesses,' continued Colangelo.

The deal allows Bosisio to expand the services it can offer its brand owner customers. For example, Bosisio can now offer Kodak's complete Security Solutions portfolio in combination with Flexcel NX or rotogravure printing technology, as well as the complete turnkey Kodak Traceless AD Solution for anti-diversion protection on the final packaging line. This enables the company to offer a wide range of brand management options for shelf impact, along with overt and covert security for brand and consumer protection.

'Bosisio has significant relationships with regional and international brand owners that will benefit from the expanded set of products, services and applications,' said Javier Bosisio, co-owner of Bosisio. 'Our relationship with Kodak began in 2010, with the installation of Kodak's 100th Flexcel NX System. In late 2011, we expanded our flexographic operations by installing the Kodak Flexcel NX Wide System. Now, we can significantly expand services to brand owners and printers for communications, brand management, brand protection, anti-diversion and counterfeit protection, proofing, print management and printing using all major printing processes and applications for packaging.'

The partnership also allows Bosisio to benefit from future technology developments from Kodak. 'A fundamental point brand owners and retailers in packaging around the world have shared with me is the need to be innovative, differentiated and protective of their brand equity, enabling them to grow sales and customer loyalty for the future. Kodak sees this



Bosisio has been producing plates using Kodak Flexcel equipment since 2010

initiative as a major step in changing how the packaging industry achieves this for brand owners,' said Gustavo Oviedo, chief customer officer, Eastman Kodak Company. 'Our relationship is not limited to existing technologies, but will give Bosisio access for packaging applications in the next generations of flexo, offset, high-speed digital, security, communication software and services to enable Bosisio to provide those essentials necessary for their brand owner and print packaging customers to grow their businesses.'

As well as pre-press services, Bosisio offers brand management advice and production of printing plates and steel bases and cylinder engraving. Flexo reproduction services count on three laser copying lines from EskoArtwork and two DuPont Cyrel Fast systems. The company has a production capacity of more than 100 standard format cylinders per month. Bosisio, which recently achieved ISO 14001:2004 environmental management certification, has created a color administration system for digital proofs based on GMG Colour Proof software management and Gretag Macbeth measuring instruments.

Bosisio is part of the Janoschka Group, a global organization specializing in packaging pre-press services. Janoschka has operations in 12 countries and employs more than 1,400 people.

Argentine pre-press house opts for EskoArtwork technology

Punto Gráfico, an Argentina-based pre-press house specializing in manufacturing photopolymer digital and conventional plates for corrugated and flexible packaging and labels, has revamped its operations with the installation of EskoArtwork's CDI 5080, HD Flexo, Digital Flexo Suite (DFS) and Kongsberg XL24 digital finishing table.

In its 15th year, the pre-press service provider is the first South American company to use EskoArtwork's DFS, which delivers tools for automated platemaking while reducing plate waste. The newest CDI works alongside a CDI Spark XT 4835, which the shop has used for several years.

'Our company's growth is the result of ongoing research and investment in cutting-edge technology, as we are committed to helping clients achieve their goals while minimizing costs,' said Evangelina Perez, manager of Punto Gráfico. 'We continually seek technological innovation so we are able to meet our customers' requirements, whether it's a simple project or a job requiring complex graphics with six colors.'

EskoArtwork's technology is having significant impact at Punto Gráfico, beginning with the DFS for corrugated, which gives the company the benefit of a fully digital flexo workflow, from imaging straight through to plate-ready mounted carrier sheets. DFS, automatically and with computerized accuracy, sends a job to the imaging device, creates files for the cutting layout and data files for mounting. Next is the CDI 5080, allowing large-format corrugated jobs, once confined to an analog plate workflow, to enjoy the full benefits of an all-digital, filmless CtP system. HD Flexo, although not in full production mode, is already delivering high-quality imaging, with line screens that range from 150-170 lpi. Lastly, the Kongsberg XL24 finishing table provides precise cutting on a variety of plate materials.

'With DFS, CDI 5080 and the Kongsberg table, we've been able to improve productivity and quality, a necessity as we look to reach more customers,' said Perez.

'The fact that we no longer have to make conventional plates is very important. Before, with the larger format jobs, we had to make conventional plates using analog films. We had to make the film, measuring the dimensions and manually combining many plates from the films. Then we had to physically carry the large plates to the UV exposure unit. Now, with the CDI Spark 5080, it's a completely digital workflow – we are going straight from imaging to processing. It is a vast improvement.'

Flower City Printing invested in Nilpeter flexographic technology

Narrow investments balance wider portfolio

Wide format specialist, Flower City, invests in flexography and digital, expanding its business platform for efficiency and service needs writes Danielle Jerschefske

Flower City Printing in Rochester, New York got its start in 1970 as a commercial printer in the offset world servicing the consumer-facing manufacturing firms in the upstate New York area.

As the business grew and evolved to meet the various needs of the company's broad customer base, a decision was eventually made to invest in a wide format 55in KBA Planeta to print cut and stack labels. This investment effectively guided a successful path forward in the larger display and POP markets.

Today Flower City continues to print a wide variety of work in the food and beverage markets, for national retail chains and consumer product companies, holding strong to its niche capacity to produce displays, labels, folding cartons, kit-packing & fulfillment, POP materials and garment tags. President Bill Oliveri explains: 'In this way our customers deal with one point rather than multiple allowing them the flexibility to easily obtain efficient and speedy production no matter what volume, type and size of product they require.'

In reaction to the market evolution demanding shorter runs of printed materials more frequently, the converter has strategically adopted the use of new and narrower technology to maintain a profitable business model. It has also invested in a complex internally developed software system that streamlines the scheduling and production of these various materials.

Narrow web expansion

Flower City first invested in flexography a couple years ago with the addition of an eight-color 13in Nilpeter FB press. Since then the converter has experienced significant growth within its flexographic business in two key ways.

Firstly by pulling offset work from the wider sheet fed presses for efficiency in production. 'A lot of our existing work fits flexo better,' explains Oliveri. 'We are also expanding and capturing new business with more work suited to flexo from our current customer base.'

The converter's management including Kirk Ellsworth, general manager of the Lee Road facility housing the flexographic and kit-packing and fulfillment departments, understood the need to expand the company's flexo capability and to seriously review digital printing options because of the lower volume label work being more frequently requested.

Ellsworth says: 'Our offset production numbers showed more waste in shorter runs and multiple make-ready situations than we knew would be the case for a flexo press. And enough work was small enough to necessitate the ultra-short-run capability that only digital printing can handle.'

Flower City selected the Nilpeter Caslon hybrid solution with in-line FA-4 flexographic printing because of the inherent flexibility in the machine's design and integration of two strong printing processes. With four flexo stations, and two die stations surrounding the Caslon system based on Xaar 1001 DoD UV inkjet heads acting as a CMYK module, printing is produced with quality compatible to offset.

The 16in Caslon hybrid was installed in May 2011, followed quickly with the installation of a stand-alone 12-color all UV 16in FA-4 in July 2011. The addition of these narrow web investments complements Flower City's core portfolio. Rising all the wiser out of the economic recession, the converter is poised for continued growth and set to endure any market changes as it continues to modernize.

Ellsworth says: 'The Caslon supports effective production of lower quantities while keeping cost down, and we don't have to compromise with the quality.'

While many materials may require corona treating before printing, Flower City's management likes that multiple stocks can be used on any of its flexographic presses, helping hold consistency in print while maintaining ultimate flexibility in scheduling.

Several people within Flower City have been trained to run the Caslon. The main operator is a successful homegrown employee who has a digital background. The company gave

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The Nilpeter Caslon hybrid solution offered Flower City inherent flexibility

him flexo experience with training on its existing Nilpeter FB press prior to the hybrid installation. Now operators have the ability to tag team work using their skills and experience operating a multitude of printing processes.

'This technology has surpassed our expectations as far as quality and capabilities,' says Oliveri.

The converter produces a lot of sheeted labels within its flexo division, as well as tags and narrow web work on card stock, and is producing some PS and supported film materials. There are sheeters on all of the flexo machines. All digital plates are manufactured in-house for both the offset and flexo sides of the business.

Many of the labels produced at Flower City are still produced using its wide format offset machinery because of the nature of the work. These same machines are used to produce the larger POP, retail display signage and carton packaging work. It has a full range of offset equipment to give the business the most flexibility in producing any sort of job required most efficiently with nine presses from 40in to 73in; two to eight colors and in-line UV capabilities.

Details

Flower City operates with over 300 employees at three locations within Rochester. One plant is dedicated to converting rolls to sheets for offset production; another houses the offset presses, main offices and complex finishing department; the third plant is where flexographic and digital labels and tags are produced, and where kit-packing and fulfillment takes place along with warehousing.

The converter's e-scheduling system is outstanding. It orchestrates the complex production process of the various streams of business within this unique printing operation. A handful of associates collaborated to write the code for this visually friendly system. In the scheduling department located in the main offset building, there are 14 monitors that give detailed snapshots of orders to the minute, which can be pulled-up on any internal computer.

The various run speeds of the presses, average make-ready times, average time required to complete repeat orders and more production details like shift hours, three shifts Monday through Saturday, have been programmed behind the code. The system organizes and can recall real data from order placement through fulfillment. All machines with their respective responsibilities and processes are linked together.

This system is critical to the company's success, particularly when it comes to kit-packing, which refers to the printing, finishing and organizing of in-store displays and shelf promotions. Customer work is often delivered to multiple locations so production and fulfillment have to be in constant communication to ensure on-time delivery without any pieces of the kit missing upon delivery.

One kit-packing customer can have as many as 150 items such as signs, banners, danglers, shelf talkers, and labels that must be packed into one kit and delivered to hundreds or even thousands of retail outlets. To ensure customer satisfaction and repeat orders, Flower City navigates within this custom management software to schedule accordingly.

Flower City's finishing department is filled with state of the art equipment to turn its printed pieces into products for customers to use, and has an extensive die database so that operators and assistants are able to find the required tooling quickly.

There's a machine for adhering materials together, two new folder gluers recently added to two older systems for a total of four, straight guillotine cutters, saddle stitchers and embossing equipment. If a customer is looking for a particular look or feel for their print communication, Flower City can make it happen.

The company has full-time structural designers on-board who use CAD systems to create virtual folding cartons and POP signs. It will also produce prototypes for customers to experience an idea more fully.

Flower City has made the shrewd decision to incorporate narrow web roll-fed flexo and digital technology within its business to enhance its offerings and continue to service clients as effectively as always. This new flexibility will no doubt help the company quickly experience the benefits of this type of business model.

Sustainability

Flower City Printing has long been a steward of the environment. The environment has been taken into account with all manufacturing and capital investment decisions since the business started. The converter has been recycling its paper for a number of years and is Chain of Custody certified with PEFC, SFI and FSC forestry stewardship programs.

For the last five years the converter has pumped offset press coatings and inks direct to presses thereby eliminating the use of 12,000 to 18,000 ink cans each year. And in the last nine months the converter has installed a system that recaptures solvents to be re-used in the offset printing process.

Oliveri says: 'Sustainability is not only a buzz word. We all have the responsibility to leave the planet as a nice place for future generations to enjoy.'

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