The wider world of Narrow Web

Analysis



Low cost on-line inkjet and the future of digital print

Technology

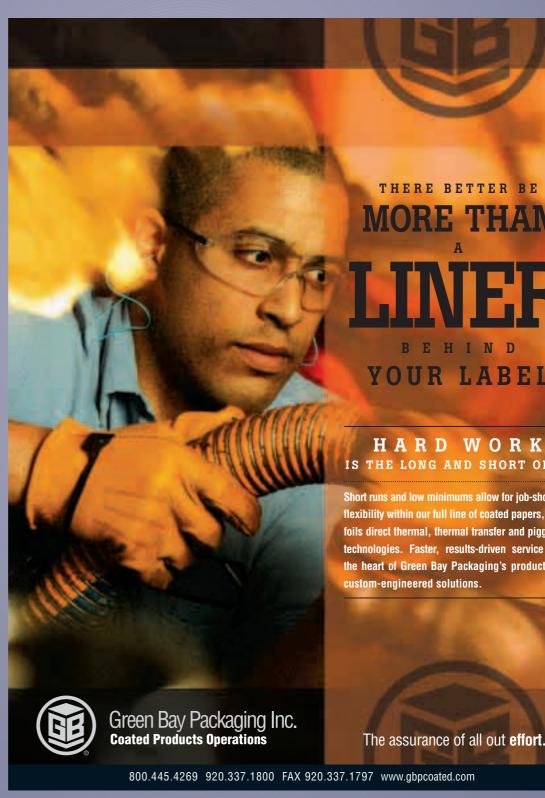


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25 years



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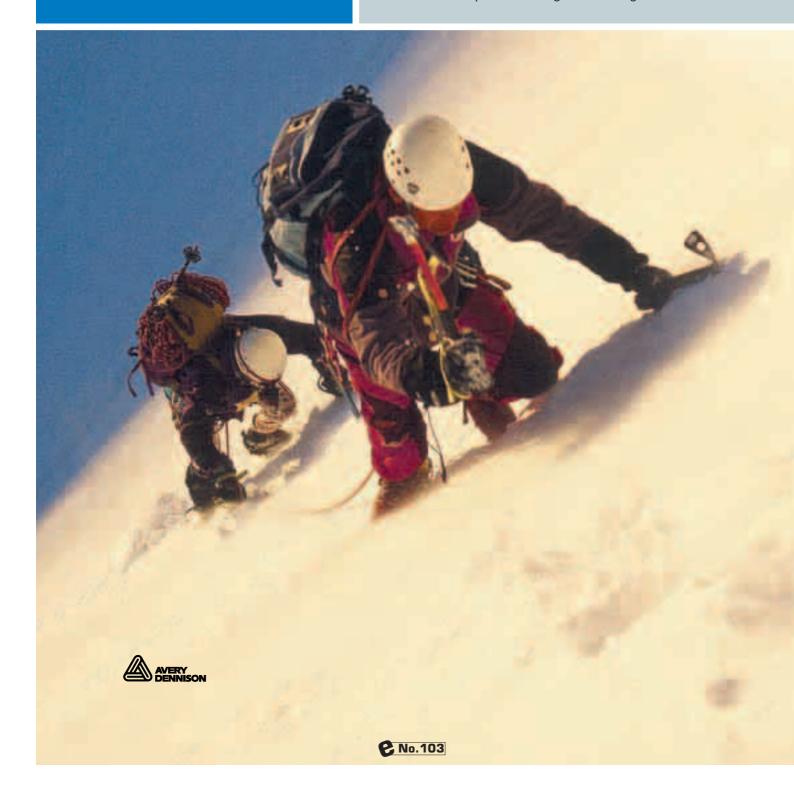


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Leader

his is a momentous issue of Labels & Labelling. As we approach the biggest event for the labels and narrow web industry this year — Labelexpo Europe in Brussels in September — L&L is 25



years old. While it is tempting to look back with awe and nostalgia on the extraordinary rise of the rotary pressure sensitive industry in the last quarter century, we should not blind ourselves to the deepseated problems – and opportunities – the future presents. In this L&L edition, Mike Fairley interviews key industry leaders whose companies have been with L&L since the beginning and asks for their predictions. The key theme which emerges is that label converters have to reinvent themselves in order to survive. It is no longer enough to produce superb quality labels – quality is now a given by end users and cannot be used to

raise the price paid for labels, particularly with the virus-like spread of reverse auctions.

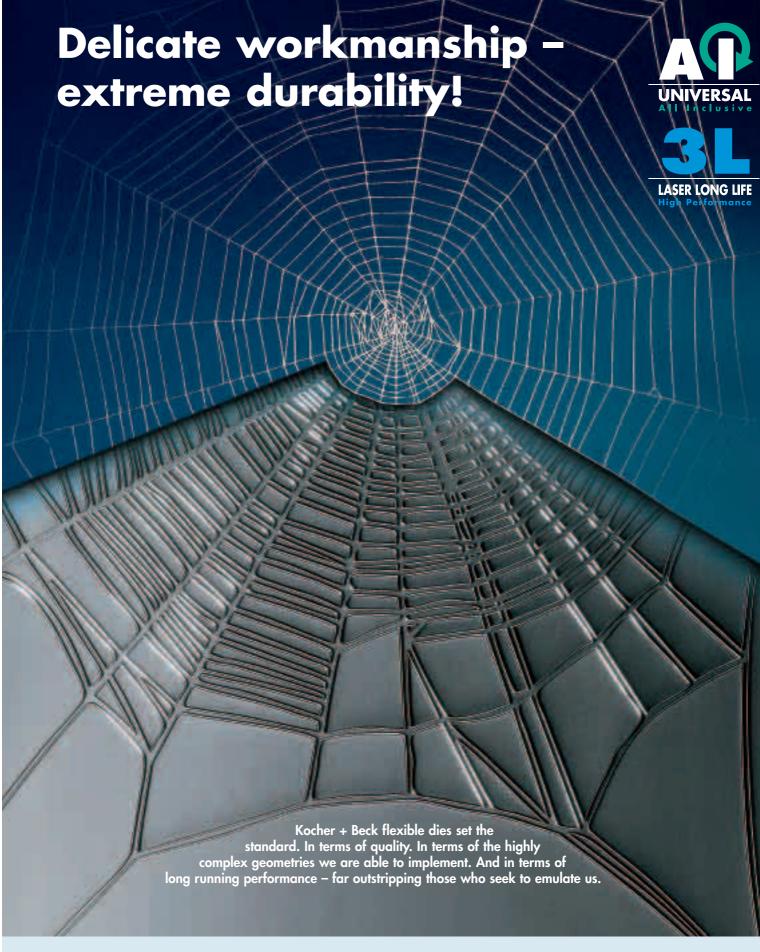
We now need to address the following key issues: customer service; investment in an IT infrastructure; tools for optimising and managing production workflows; finding value added pressure sensitive niches in areas like brand protection, digital printing/overprinting, intelligent labels; development of partnerships with end users and suppliers of presses, substrates, inks and convertequipment; looking at narrow/mid-web opportunities beyond pressuresensitives.

L&L has a continuing mission to help point the way forward through the challenges of the next have to reinvent
themselves in
order to survive.
It is no longer
enough to produce
superb quality
labels. Quality is
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the price paid for
labels.

decade, and our preview of the Labelexpo Europe 2003 show in the next issue will be a great place to start.

You should also look out for the comprehensive range of seminars which will run alongside Labelexpo Europe 2003, as well as the Product & Image Security (PISEC) conference to be held in Prague, October 20-22. Both these events will cover all the key points outlined above.

Andy Thomas Group Managing Editor



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Labelexpo moves with industry trends

This year's Labelexpo Europe 2003 held in Brussels this September 24th-27th will showcase all that's new in added value pressure-sensitive applications, while opening a window on a whole new range of packaging applications for narrow web printers. Andy Thomas reports

he narrow web converting industry is undergoing an evolution, as the full potential of in-line processing starts to dawn on converters, suppliers and – utltimately – end users.

Pressure sensitive applications will remain at the core of the narrow web industry for the foreseeable future, with growth rates around 6 per cent in Europe and in double digits in Asia-Pacific, Eastern Europe and South America. But cartons and flexible packaging — the wider world of narrow web—will grow as a complement to this core.

It was long ago realized that if you could put a web of pressure-sensitive laminate through a printing and converting line, there was no reason, in theory, why you shouldn't send rolls of any material down the same line.

Converting cartons in-line — printing, embossing, foiling, cut/creasing, sheeting, stacking in one pass — makes obvious sense. We start with rolls of cartonboard and end up with finished product at the end of the line. Short runs of high quality product delivered on-demand.

Already in the pages of Labels & Labelling, you will see the first label converters diversifying their pressure-sensitive business by shifting to carton production, where they are

undercutting sheetfed suppliers on price, delivery time and run length and adding significant value.

Most significantly, end users brought up on print-buying manuals which stated cartons are ALWAYS sheetfed offset, have accepted the print and creasing quality of in-line flexo cartons. At the same time, sheetfed carton printers could see more business shifting to narrow web, and will need to consider how the technology could complement — not replace — their existing operations.

However, before moving into cartons, printers need to understand the complexities of selling cartons as well as the technical side of converting board (make no mistake, it's a steep learning curve). The demands of the primary packaging market can be radically different from supplying secondary packaging — for example in terms of cleanroom production environments.

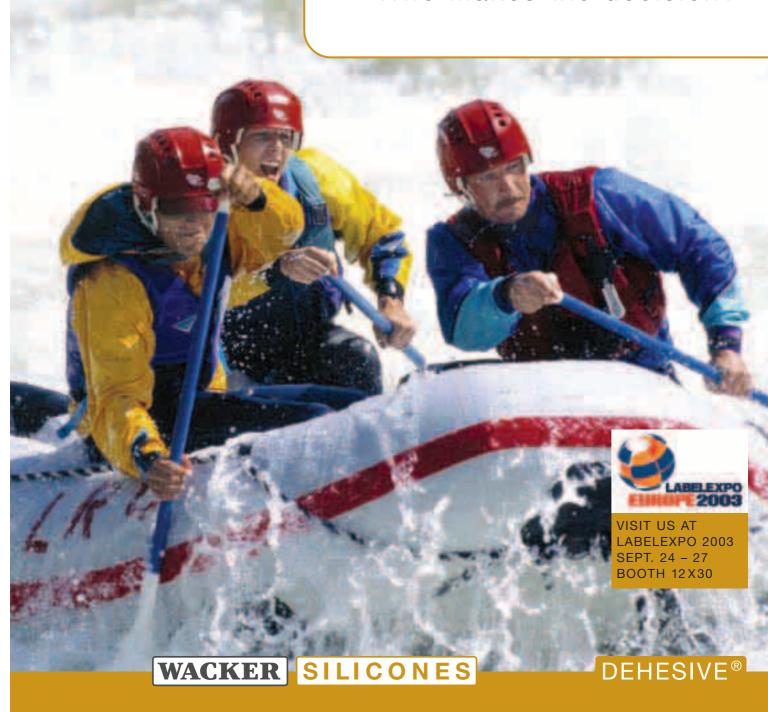
Film

Similar comments apply to unsupported films. Up to now products like stretch wraps, shrink wraps, sachets, pouches and flexible packaging have been converted primarily on

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wide web CI flexo and gravure presses. Now the fmcg brand managers come along and they want more short run work — regional promotions, sporting promotions, new product trialling multi-media tie-ins. A multi-million dollar, metre-wide 8-color press has a high hourly rate, so all the time it spends idle during makereadies for short run products is a terrible drain for any converter. These costs have also to be included in the price the end user pays.

This is where narrow web presses come into their own: producing short run/rapid turnaround batches of film packaging products. We already see a trend in the market for wide web converting houses to outsource short run work to narrow web printers. When this outsourced work reaches a certain volume, these companies could well look at installing some narrow web capacity to optimize their wider presses for longer run work.

For the label printer, the trend towards shorter runs of filmic products offers huge opportunities. Most of these products are already being produced flexo — so there is no culture gap for the end user. Moreover, the ability to convert thin films gives the label printer the opportunity to become a true 'one stop packaging shop' for their customers — offering short lead time, short runs of cartons, labels and film. And this is likely to be higher margin business, allowing label printers to lift themselves free of vicious, cost cutting commodity business.

Again, there are technical issues which need to be faced: where label laminates are pretty robust and can absorb a certain amount of 'stretch' and heat without affecting registration, unsupported films are highly sensitive to combinations of heat and stretch. This required development of presses with lighter touch tension control and heat reduction systems, allowing high quality products to be produced which match the quality of CI flexo and in some cases approach gravure quality.

Against this, wide web technology is good at adding the coatings, lacquers, primers, adhesives, etc., which are needed to produce barrier coatings, heat seal coatings, lami-

Advertisement

nates, freezer packs, pouches and the like – things which narrow web may need to do more of in the future.

Secondary converting

To fully exploit the value added opportunities offered by narrow web packaging presses, converters will increasingly need to take on 'secondary converting' operations. Secondary converting means the operation after the product has been printed and converted on-line. For example, once a carton has been printed, cut, creased, sheeted and stacked, it needs to be folded and glued before it can go to the end user. If printers invest in a folder/gluer, they can retain the value added opportunities rather than contract it out to a third party.

Similarly, shrink and stretch labels need to be seamed into a sleeve before they can be applied to a container by the end user. By contracting the seaming out to a third party, the printer simply cuts into his profit margin.

Then consider pouches. There is a big move by brand owners from metal cans to pouches — think of soup and pet food, for example — and this is a sector driven by short run, high quality packaging. But you cannot simply print the pouch film or laminate and deliver that to the end user. You need to invest in a pouch making machine and become a one stop supplier.

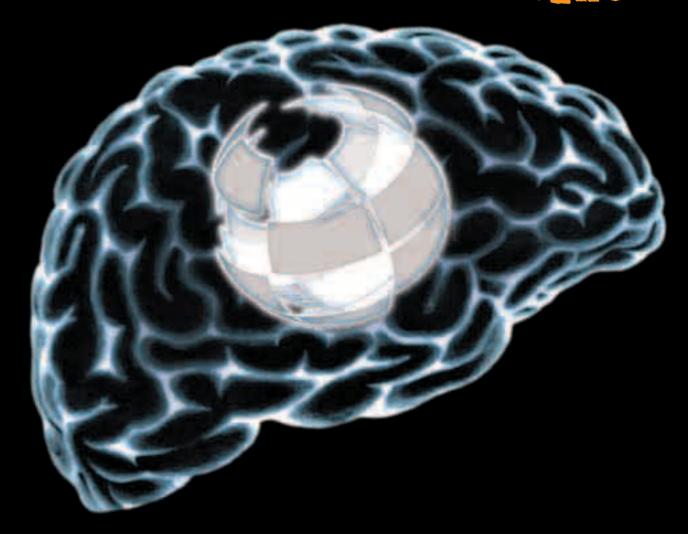
Conclusion

As we said at the outset, none of the above diminishes the importance of pressure sensitive labels for narrow web converters. If converters can learn to manage waste, reduce set-up times and optimise sales, administration and production planning, there are still good margins to be made.

Indeed, the wider world of narrow web takes in a whole new generation of value-added pressure sensitive products — Variable information products, industrial and electronic, security, ID, tracking and promotional labels, RFID and other 'smart' labels. All will be on show at Labelexpo Europe 2003 in September and all point the way out of the cul-de-sac of pricedriven commodity labels production.

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Great minds think alike



The wider world of narrow web

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A series of conference sessions will run alongside Labelexpo Europe 2003:

Day 1, Wednesday September 24

The first day's sessions will focus on Label End-User Markets and Trends, with a keynote presentation on the Current & Future Label Needs of Brand Owners. This will focus on Label performance, Standards and protocols, Creative marketing requirements, Internet enabled service, Brand identity and Globalisation.

Meeting the Narrow Web Needs of the Food Sector will be addressed by Alan Jones, md at Tamar Labels, looking at Specifications and performance, Food standard service levels, taking an integrated approach, cartons & labels and Control & consistency.

There will be a separate stream on Pharmaceutical & Healthcare Requirements, covering development of a strategic global approach, Design and colour specification, Performance testing, Brand harmonisation and maintenance of a Consumer focus. This presentation will be delivered by Peter Frei, Head of Business Development & System Sales, Romaco AG using end user case studies.

Cosmetics & Toiletries Labelling gets its own session, with topics including Taking a b2b approach, Brand rationalisation, Consistency and performance, Collaboration and partnership.

Improving Process Control in the Labelling Plant is the subject tackled by Jason P. Premo, Executive Vice President & Six Sigma Black Belt

Cernotec. Premo will look at the requirements of a World Class Manufacturing operation, including Manufacturing Challenges, taking The First Step to Improvement, Leveraging Knowledge and Technology. This will be illustrated with a real life Case Study.

DAY 2, Thursday September 25

Day 2 looks at Innovation in Labels Materials and Technology, which will kick off with Mike Fairley looking at Materials, Technology & Business Needs of Converters. Fairley will pose the questions: What do converters need from their suppliers? Do today's presses meet the needs of converters? Is digital printing technology providing new opportunities? What are the key pressures from customers?

The next session looks at Developments in Pre-Press & Workflow Solutions — particularly where it opens up opportunities in Supply Chain Optimisation for Label Converters — and is delivered by Esko-Graphics. Creo continues this theme with a presentation on Networked Graphic Production in a Labels and Labelling Environment. Subjects covered by these key technology developers will include The customers' perspective, Prepress tools for shrink sleeve production,

Opportunities in digital platemaking for flexo, and an examination of solutions for collaboration and integration with end users.

A Panel Presentation then looks at the New Rise of Digital Printing, moderated by HP Indigo's Christian Menegon and Andreas Jahr, Digital Project Manager at Rako Etiketten Gmbh.

Next up, New Security & Brand Protection Solutions for the Converter & Brand Owner are examined in a session hosted by Jeremy Plimmer, Chairman of the Product & Image Security Foundation. This will look at Brand protection & security issues, New technology & materials solutions and how to develop a brand protection strategy.

An alternative stream looks at Narrow Web Opportunities Beyond Pressure Sensitive. Subjects covered include Press requirements and performance for extensible film, Converting carton board profitably, and Opportunities in wrap-around and sleeve labels.

Day 3: Friday September 26

The third day's sessions take as their theme What's New in Bottle Decoration & Branding. Klaus Holler, VP Sales West Europe at Krones AG looks at Key decoration technologies and their usage, including wet glue / wrap-around film, rollon shrink-on, pressure-sensitive, as well as cut-and-stack film/heat transfer. Holler considers New and emerging decoration solutions, Design & branding considerations, Advances in application technology, and asks Where next in bottle decoration?

Eric Johnson at ExxonMobil examines Key Trends in Wrap-Around & RoSo Labelling of Bottles & Cans illustrated with end user case studies, while Gero Hantel at Avery Dennison considers New Opportunities in Beverage Decoration Using Pressure-Sensitive. Hantel focuses particularly on Trends & developments in the wine labelling sector, Iced beers & beverages, Added value solutions for the spirits sector and the opportunities presented by the Designer drinks market.

Beverage Solutions with Shrink Sleeving is the subject taken by Sia Memarnia R&D Manager, Fuji Seal Europe, while Haendler & Natterman delivers a paper on Wet-Glue Labelling — Still a Key Technology. This will focus particularly on Materials and technology developments, Web-fed printing and converting and The future of wet-glue labelling

For more information email dphilips@tarsus.co.uk. Also, don't forget to visit the Labelexpo Europe 2003 website: www.labelexpo-europe.com. Order tickets for Labelexpo Europe 2003 on the hotline number: +44 (0) 870 429 4546.

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FINAT Technical

'Innovations emerging in a mature labelling market' was the theme for FINAT's latest Technical Seminar, held in Nice, France. **Durk Schilstra** reports

INAT's recent bi-annual technical seminar covered a wide range of issues ranging from the Environment to Converting, Laminates, Adhesives and Testing and End-user applications.

Recycling of labelstock

FINAT is very active with regard to environmental issues, with delegates from the association participating in a number of committees dealing with environmental problems. FINAT also does lobbying work in Brussels, where most of the European legislation nowadays comes into being.

Jacques van Leeuwen, FINAT/EPSMA Recycling Consultant, presented an overview of the activities concerning the recycling of waste label material. The European converters of self-adhesive labels annually process 3.8 billion sqm. A large amount of this leaves the plants as waste, including 78,000 tonnes of matrix and 62,000 tonnes of trimmings and set-up material. The stream of label waste has to be divided into 'clean' siliconised liner (mainly from end-users) and the more polluted matrix and set-up material.

The siliconised liner contains high quality fibres which are well suited for re-use. The presence of the silicones, however, prevents re-use in printing paper, but there are many other types of paper where the silicones do not pose any problem. The German paper producer Ahlstrom is at present the only manufacturer accepting the liner for recycling. In Germany a successful collection system has been set-up for a regular transport of liner to the paper factory. Also end-users in The Netherlands participate.

The polluted matrix is unsuitable for recycling, but it has a high energy value. Therefore, in Germany the waste is used as an alternative fuel in cement and energy plants. Label converters offer the waste, which may be mixed with foils and card board, to the cement or energy plant. There it is shredded and mixed with other waste materials. The number of plants inter-

ested in the label waste is growing, so in a way the market becomes more competitive. This has a beneficial effect on the price the converters have to pay for the removal of their waste.

Processing waste as described requires intelligent organisation. It is necessary to make agreements about the form in which the waste is delivered and the minimum quantities. The logistic system is critical and should be well planned. This takes a lot of time and effort and that is why these projects are only slowly gaining ground. In Great Britain, France and Italy FINAT members are participating in setting up projects comparable to those in Germany.

The life of many labels ends as waste paper. It has been agreed by the members of the European paper chain to collect 56 per cent of the waste paper for recycling purposes by 2005. The adhesives used for labels may form stickies during deinking and paper making and also reduce the quality of the paper product.

Dr. Erwin Krauthauf is consultant of INGEDE, a European organisation of paper manufacturers engaged in the recyling of waste paper. He informed the audience about the progress that is being made in this field. INGEDE has developed a test for the sticky forming potential of adhesives in order to classify the adhesive for its recyclability. One of the first targets of INGEDE is to obtain a mutual agreement on the minimum requirements for the removability of adhesive applications in standard products and new developments. A good example are the self-adhesive stamps of the US Postal Service, which are now fully recyclable.

Will specialty chemicals disappear?

The EU is developing a new chemicals policy under the name of REACH (Registration Evaluation and Authorization of CHemicals). The aim is to register all chemicals and their potential risks to health and environment before they are allowed onto the European market. Paul Verspoor of Sitmae

seminar

Consultancy (The Netherlands) informed delegates about a White Paper currently being prepared by civil servants in the EU. If these plans become legislation, they will have far-reaching consequences.

The cost of toxicological tests and registration would vary from 100,000 euro for simple products up to 300,000 euro for complex products. Many chemicals are only used in small quantities. The high cost involved in registration could prevent the commercial production of those chemicals and could lead to their disappearance from the market, even if they are completely harmless. Verspoor estimated that of the 10,000 chemicals now used by paint and ink manufacturers, about 5,000 are in danger. The adhesive and coating industries face a similar situation. The plans have not been made public yet, but legislated in their present shape their effect will be higher prices of chemicals and the disappearance of many specialty products.

Servo drive technology

With the present trend to small and medium runs in label printing, set-up times have become an important cost factor. Automation of set-up functions can considerably reduce this cost, said Ferdinand Rüesch Jr. of Gallus. However, for the machines with a central mechanical drive shaft the limits in this reduction have been reached. The central drive shaft system restricts the flexibility and accuracy of pre-setting, and is subject to mechanical wear.

Servo drive technology offers new possibilities and advantages. The various machine components are driven by separate servo motors and the digital machine control is capable of presetting register, repeat length, synchronisation of print cylinders and web tension with great accuracy. Moreover, these data allow for a fast set-up when recalled by repeat orders. The modularity and the platform concept of modern narrow web machines enables a quick exchange of units which can be positioned practically anywhere throughout the machine.

Compared to conventional systems the combination of the platform concept with servo drive technology leads to high savings, said Rüesch, who gave the following average values of these savings:

- Set-up times for first orders 15 to 35 per cent less
- Set-up times for repeat orders 45 per cent less
- Wash-up times 55 per cent less
- Running time 5 to 10 per cent less
- Waste 55 to 70 per cent less.



Dr Erwin Krauthauf: developing a test to classify adhesive for recyclability



Dirk Müller: new topcoat improves printability on PE and PP facestocks



Ferdinand Rüesch Jr: servo drive technology allows automation of press set-up



Michael Takacs: there is a difference in the knife geometry for paper and film cutting

66 A computer simulation revealed that the adhesive is pushed away by the face stock during the die-cutting process. To flow properly the adhesive should have a low elastic modulus 33

The economic advantages can be fully reached only when pre-press and post-press operations have also been streamlined, so investment in a proven workflow solution is required. Furthermore, while the productivity of servo driven machines is high, they are more expensive. So to gain the full benefits, the machine should be operated in at least two shifts.

Improving die-cutting

Michel Takacs of Kocher+Beck GmbH presented some rules for proper adjustment of flexible dies. There is a difference in the knife geometry for paper and for film cutting. The 'break point' of paper facestock is at a compression of 60 to 65 per cent. Filmic facestock does not break until a compression of 90 to 95 per cent is reached. Therefore the knife for paper has an angle of 70 to 90 degrees and for film a sharper angle of 40 to 70 degrees. Cutting blades with a sharp angle can certainly be used for die-cutting paper as well, but they will quickly wear. It is not possible to use knifes with the more obtuse angle for foils, as in that situation the film will not break but the underlying liner.

The wear of cutting blades is influenced by the characteristics of the face material, the stability of the die-cutting station, the number of set-up times and the applied cutting pressure. Sometimes, even the print of the label plays a role. The lifetime of a die can be extended by applying a higher cutting pressure, underlaying the die with a very thin PET foil and precisely adjusting the setting of the anvil cylinder to the labelstock. Variable anvil cylinders (like K&B's GapMaster) give the best results, said Takacs.

The adhesive also has an influence on the die-cutting process. Jacques Lechat of ExxonMobil Chemical Europe Inc. presented the results of an investigation into this matter. A computer simulation revealed that the adhesive is pushed away by the face stock during the die-cutting process. To flow properly the adhesive should have a low elastic modulus. Based on this research ExxonMobil has developed two new types of the block copolymers which are usually added to the adhesive. They are claimed to improve die-cutting performance and give better adhesion with lower migration characteristics.

Topcoats improve printability

Filmic labelstock may show a poor printability, because the surface tension of its non-polar surface is lower than the surface tension of the ink. Therefore the ink cannot wet the film properly, but is inclined to contract into droplets. To

improve their printability, films are often given a corona treatment. The big disadvantage of corona treatment is its instability as its effect disappears over time.

Providing the film with a topcoat is another way to improve printability. The surface tension remains consistently high. Until recently, these topcoats were water or solvent based; both types of coat having some disadvantages.

Dirk Müller of Avery Dennison/Jackstädt informed about the new UV cured topcoat the company has developed. This coat, named TCU, is applied to PE and PP facestocks. The printability has been further improved, while resistance characteristics against water, shampoos and chemicals are claimed much better.

Variations within tests

Every process has its variations, and this includes test procedures in the laboratory. Vesa Laaksonen of Raflatac Iberica S.A. (Spain) presented the results of an investigation into the possible variations within some test methods standardised by FINAT. The variations in the laboratory are caused by sample preparation, the measurement device itself, the atmospheric conditions in the laboratory, the time span between production and test, and the human factor.

Raflatac Iberica has calculated the theoretical inaccuracy of the FINAT Test methods FTM12 (Coat weight), FTM9 (Loop tack), FTM2 (Peel adhesion 90), FTM3 (LS-Release) and FTM8 (Shear).

The inaccuracy of the first four tests was well within 20 per cent, but the Shear Test appeared to have an inaccuracy of just over 80 per cent. For such a test one measurement will not suffice — at least five measurements are necessary. For tests with a high uncertainty level it is recommended to calculate the standard deviation sigma.

When exchanging test data one should not only mention the average value, but also the standard deviation and a number of data points. During the discussion Andrew Jack, chairman of the FINAT Technical Committee, agreed to bring the findings of this research into the committee, in order to implement adjustments where necessary to refine the accuracy of the test methods.

In conclusion, the FINAT Technical Committee, which prepared the programme for this seminar, did a good job. The meeting proved that the mature self-adhesive label industry is not resting on its laurels, but is still very active in finding new ways to secure future growth.





More unusual sheetfed press config to gain a competitive advantage in Labelling looks at two case studies

f there is a standard sheetfed press in packaging it tends to be a six-colour with one or two coaters. In magazine production, the ten-colour perfector is king. But in labels there is no standardisation as such. It is a diverse business, serving a variety of end markets with a broad range of products printed on a wide range of substrates.

Wet Glue label specialist W.G. Spowart Ltd of Glasgow was looking for a 10 per cent increase in turnover when it replaced two presses and committed to a Heidelberg Speedmaster CD 102-7LX two years ago. It has surpassed that, moving from sales of \$7.1m then to a projected \$8.2m in the current year. The press runs alongside a seven colour Roland 300 with Coater and a Speedmaster CD 102-6LX which was also bought last year.

Today the company outputs 1.5-2 million sheets a week, which translates to about 30-40 million labels. The independent label specialist produces a vast array of work for the food-related industries including pet food, water, soft drinks, alcoholic beverages and a variety of house-hold goods contained in jars, bottles and cans. The business encompasses most of the UK's major retailers with England accounting for half its business, Scotland 25 per cent and European exports 25 per cent.

The company selected the unusual seven-colour press configuration for a number of reasons. The first was that it allowed them to consolidate their expertise in the plastics and metallised labels market and each of these sectors now represents 10 per cent of their machine throughput. The first printing unit enabled them to lay down a white before applying what is a commonly used format in the packaging sector of four process colours, a house special and a gold wash.

Another area in which Spowarts had created a niche was hexachrome production, a six-colour process which allows printers to reproduce a brighter range of colours with the use of stochastic screening. It has proved stronger than the traditional CMYK methods especially where vibrant greens and oranges are used and bright illustrations are required.

Coating is an important end process both for aesthetic and speedy turnaround perspectives. Although one week to ten days is the average order to delivery period, many jobs are moved through in two or three days. The company runs a Continental 12 hour shift system to give 24 hour cover, six days a week.

'The introduction of a seven colour print format has been

seven

urations are being selected to try the wet glue sector. Labels &

> particularly appropriate and successful for our field of packaging,' says William Spowart, managing director and the fourth generation of his family to run the company since its foundation in 1862. 'It is unlikely that eight colours or more would interest us. Having said that, 25 years ago when we installed our first four colour press it was felt then this would meet most of our needs. As ever, we will continue to marry technological innovation with the practical needs of the industries we service. We are happy with our current level of investment and technical expertise and in the current climate of tight margins it would be hard to cost justify Heidelberg's new Duo press, with its pre-coating and double end of line coating combination.'

> To ensure colour integrity the company uses the inline Image Control Spectrophotometry which is a major assurance to customers in determining colour and consistency, paramount when reproducing millions of labels, but also minimises downtime and waste.

> Waste is an important matter at Spowarts. It is a member of the Scottish Environmental Protection Association (SEPA). 'The fact is that virtually 100 per cent of what we produce becomes waste and needs recycling,' says Spowart. 'It is an issue we take seriously, recovering whatever we can and keeping abreast of, and complying with, government landfill regulations.'

> Spowart says waste and quality go hand in hand: 'We identified this as a focus for our company several years ago when we invested in a full re-cycling baler plant whereby all material is separated into paper, plastic and corrugate and re-cycled appropriately to avoid landfill.'

> The label itself is a highly technical product and can benefit from ensuring it is produced efficiently on the best presses with the minimum of re-working. Humidity control was introduced to the production areas some years ago to ensure material stability which gives maximum production speeds both on press and at the end user site. Labels must work equally as well on the bottling lines which operate at very high speeds and they mustn't curl or stick together.

> The company has been re-accredited to the revised International Quality Standard ISO 9000 which is now a more hands on, less paper based system of quality targets. Spowart was also the first wet glue printer to become accredited by the British Retail Consortium/Institute of Packaging (BRC/IoP) for Technical Standards covering companies manufacturing branded food packaging to retailers.





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format has been particularly appropriate and successful for our field of packaging > >

William Spowart, md, W.G. Spowart

In making buying decisions, the company looks not only at machine output, but at the more holistic workflow. Its presses run with CTP plates and at the end of the line it has invested in materials handling flow-lines connected to Polar 137 ED guillotines. These include Transomat loading/unloading, joggers and continuous flow line banding and packing.

As an independent, albeit one of the biggest in the UK, William Spowart knows he has to offer added value and greater flexibility. Customers expect quality of product and JIT service and management. A new MIS system that has been vigorously researched and trialled in the past few months will be operational in the new financial year to offer clients a comprehensive stock control and purchase ordering service. This will be a vital aid to the company as it seeks to analyse, measure and reduce its own costs.

Watson undertakes £2m fightback

John Watson & Company is making a bid to regain the Scotch whisky label business, which has moved out of the UK – particularly to Italy and Spain. In a pattern remiscent of the demise of UK colour book production, buyers have gone abroad to take advantage of lower cost supplies as the value of the pound remains high.

Some bookwork came back a decade or so ago, helped by some judicious investment and by the arrival of Electronic Point of Sale technology and just in time delivery requirements. In the label business no such beneficial change in supply methods is envisaged and the concentration of the whisky trade means that buying is ever more professional with many buyers of bottles and labels handling \$10m or \$15m of business a year, which gives them a keg load of buying muscle. They want quality and they want price.

Canny investment to provide more added value and competitive unit prices, hopes chief executive John Watson, will bring some whisky printing business back but the company is also looking at other wet label opportunities in the drinks and other markets in the UK and Ireland. It also produces tube wraps, the labelling on cardboard cylinders packs for premium whiskies. Labels account for 60 per cent of its \$5m turnover, the rest of its business coming from high quality commercial work.

The \$2m press, which has just been installed, is a Heidelberg Speedmaster CD 102-6LYLX, the company's debut in B1 format and a rare beast in the UK as a dedicated UV

model with its double coater and interdeck drying. It will run alongside two B2 Speedmasters, a five and a six-colour UV model, and five-colour GTO.

'It's a fabulous piece of machinery,' says Watson. 'I could just about feed in trees at one end and get high quality print out at the other. Tube wraps go three to a sheet now. Before we might have averaged 40 labels a sheet and now it will be 80. For runs of a million plus that is a prerequisite to getting pricing right and being able to offer the very fast turnrounds required in today's market. I wanted to have in-house embossing but Heidelberg has a way to go before that becomes a commercial reality. That is my Holy Grail.'

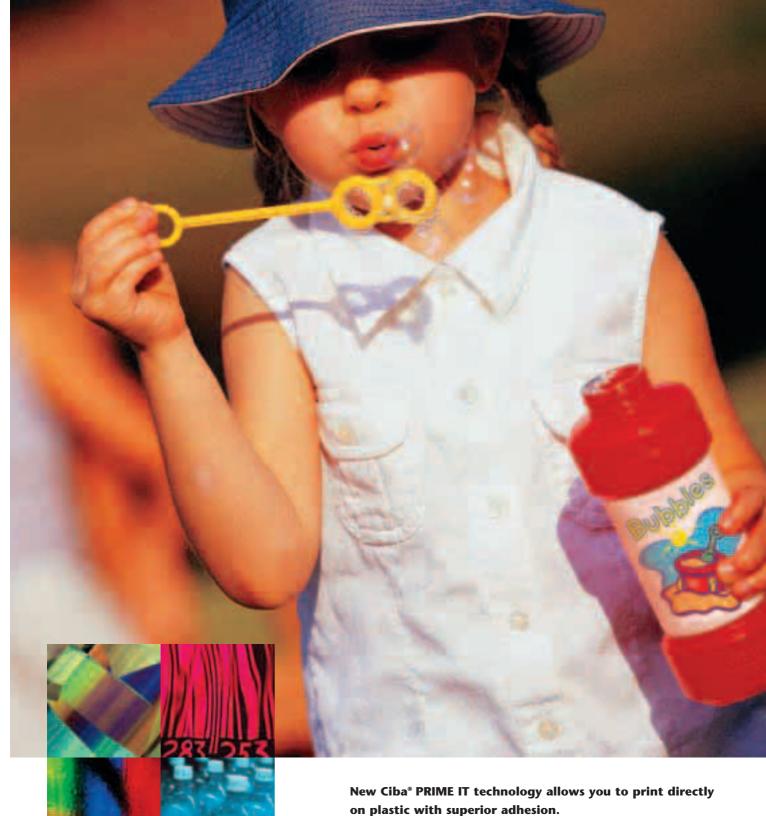
The press comes with CIP 4 connectivity and ImageControl spectrophotometry. With shorter runs and 30 per cent of its throughput in repeat business, the company knows that exact, objective colour match is vital.

'Objectivity of colour means less spoilage, greater efficiency and customer confidence,' he says. 'Flexibility is everything and that is what double coaters give us. We can combine matt and gloss finishes and reproduce metallics. These will not replace off-line foiling on our Geitz line but could give some price-sensitive buyers wanting to take some cost out a means of getting something more economic. This method of coating does give lustre to the finished item.'

Trained at Leeds College of Printing, his father sent John a note on how to budget as a student, a kindly letter displayed in the company reception. The company retains this paternalistic approach with its own staff. It currently has four apprentices and operators working on the new press have been to Germany to Heidelberg's Print Media Academy to train on ImageControl and new coating capabilities as well as the straight printing CD 102 technology. The investment increases manning at the plant from 65 to 75.

As an independent player in a labels market he recognises is increasingly European he aims to offer maximum flexibility, high quality and competitive pricing but still with the benefit of being an independent, which includes speedy response and personal service.

Robert McLachlan (I), md, and John Watson, ceo (r), of John Watson & Company with Heidelberg's Derek Kenny



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Digital printing



More sophisticated technology, longer runs and faster speeds are finally enabling digital colour printing to look to a more profitable and high growth future. **Mike Fairley** investigates the past, present and future of digital label printing

t is now about eight years since digital colour label printing was first introduced to the world of labels, initially creating much interest and excitement at the Drupa show in 1995. It was at this event that Indigo showed their stand-alone Omnius six colour digital liquid toner offset press for label production — a new revolution in the way that labels could be produced. Also at Drupa 1995, IBM launched a 4-colour toner-based printer, while Canon showed a 4-colour ink-jet system for over-printing narrow-web labels.

By Labelexpo Europe in October of the same year, the Omnius had already been incorporated into label press versions through alliances with Comco and Gallus and the whole

buzz at the show was about the new innovations in the digital printing of labels. Gallus, Comco and Kammann also showed versions of digital die-cutting systems for incorporation into roll label presses.

Despite this excitement and interest, digital printing was not initially readily accepted into the roll-label industry, being regarded as too slow and with very high cost of consumables. However, this perception began to change as Indigo continued to develop its digital offset technology to a higher quality and speed and with a reduced consumables outlay. Either on its own or in association with Gallus, installations into label plants began to steadily build.



HP ws4000 press at Labelexpo Americas 2002 - note in-line converting unit

targets

Additionally, Xeikon also entered the digital colour label market with its dry colour toner press and, again, either on its own or through a strategic alliance with Nilpeter, began to build further sales of digital presses. By the end of 1998, digital colour press installations into the roll-label industry were beginning to get close to 100 machines. Indeed, almost five per cent of all press sales into the Western European roll-label market in 1998 were of digital presses.

With growth of digital technology now apparently taking off in the late 1990s, forecasters were soon predicting that as many as 20 to 25 per cent of all new press sales into the narrow-web sector would be digital by 2003 and that the total installed base of digital label presses worldwide by the end of 2003 would be in excess of 300 machines.

Hard reality

So, what is the reality and experience of digital printing amongst printers and users to-date? How many digital presses have been installed in the roll-label industry, and have those quite optimistic forecasts been fulfilled? Well, as of April this year, the total installed base of digital presses in the roll-label sector worldwide is less than 200 machines. Of those, a near 100 are Indigo/HP Indigo, some 40 or so are Nilpeter DL 3300 machines; around 20 are Xeikon stand-alone machines; there are 6 Gallus DO 330, a handful of Agfa Chromapress machines; a couple of Mark Andy SPICE UV inkjet machines and 10 Chromas/Argio spot colour digital machines, plus a few other combinations. It would also have to be said that many of the earlier installations are now no longer operational.

Obviously, the digital printing of roll labels in colour has not developed as fast as predicted, and there are a number of reasons for this. The difficulty of finding a sufficient volume of the right type of work (short-run jobs up to 5,000 or 10,000 labels) to keep the presses occupied is cited by most label printers with installed digital colour presses — particularly with the earlier versions of some of the machines.

Again, with many of the earlier press models the durability and reliability of the machines was often poor and down time was greater than expected, with many printers targeting the high cost of maintenance. Early problems with inks/toners and substrate range or compatibility also hindered growth, while many printers felt they received insufficient marketing support from the press suppliers. Cost of consumables were, and still are but to a lesser degree, seen as too expensive.

As far as brand owners and end-users are concerned, most of the leading companies have tried digital printing with





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challenge of digital printing by producing quick-change, more flexible, rotary presses that can successfully compete in run lengths down to 25,000 or less labels

varying degrees of success. Many highlight that they found it difficult to obtain bright colours, such as oranges or greens and that it became very expensive to obtain specially matched colours and unique brand colours. Others say that product resistance of digital inks has not been very good and that they have a poor resistance to rubbing, scratching and abrasion. The non-availability of gold, silver and other metallic colours for digital printing is also seen as a limitation.

Users of digitally printed labels currently indicate that they believe that the costs of such labels are acceptable up to about 5,000 label, but become too expensive much above that level. Having said that, digital colour presses are widely used by most printers for customer proofing, extended proofing, test marketing and promotional applications, which can largely charged on as a service.

Perhaps the most encouraging feature of talking to brand owners and end-users is that virtually all regard the quality of the printed image from digital presses today as acceptable — even good.

Conventional fights back

At the same time as label printers and end-users have been going through these early experiences — and problems — of producing and using digitally printed labels, conventional



The battery of HP Indigo digital presses at RAKO

press manufacturers have responded to the challenge of digital printing by producing quick-change, more flexible, rotary presses that can successfully compete in run lengths down to 25,000 or less labels, while new generations of semi-rotary presses are regularly producing labels jobs for, say the pharmaceutical industry, in run lengths frequently under 10,000 labels and often down to as low as 3,000 or so labels. Conventional printing has therefore been fighting back against the digital challenge.

Even the digital press manufacturers have been going through change and evolution themselves. Xeikon faced financial problems in 2001 before being acquired by Punch International in early 2002. Punch kept the Xeikon brand name and established a new digital colour press division called Xeikon International. Following the acquisition, Xeikon stopped the market introduction of its sheet-fed digital colour press so as to focus its resources on its family of web-fed products.

Meanwhile, in 2002, Indigo became a division of Hewlett Packard, with the company's presses becoming known as HP Indigo Presses 3000, 1000, ws2000 and ws4000 — the latter introduction being a 7-colour electro ink digital offset press, or an IndiChrome 6-colour CMYK press with special spot colour. Mark Andy and Chromas have also entered the digital press market with UV inkjet technology.

So where does the digital printing of labels stand today? Average run lengths by label printers with installed digital presses are around 7,000 to 8,000 labels. Margins on digital presses are generally better than on conventional presses — providing they can be kept busy — and many of the earlier problems of reliability, performance, inks/toners, etc, are now being, or have been, resolved. Costs of presses and consumables have come down. Confidence in the use of digital technology is beginning to grow again.

However, it is the new generation of 7-colour, 16 metres/min. digital presses that are now beginning to finally change the face and prospects of digital colour printing. In particular the HP Indigo ws4000. 'These presses are bigger, stronger, faster and more reliable than previous digital machines' says Christian Menegon of HP Indigo 'and designed to perform in industrial environments.

'We believe the breakeven point is now found between



Inkjet imaging module on Mark Andy 2200 press

1,500 and 2,000 linear metres (+ or -45,000 to 50,000 labels) - and many jobs fit into that category - but with digital there are no offline preparation costs for repro. While the digital press is printing 2,000 linear metres (around 2 hours running time), conventional presses can be running the longer orders. This means that these new digital presses can easily be integrated into a label production site and print on demand.'

Currently, some six of these new generation digital presses have already been installed in Europe (three more are on order) and three in the rest of the world (one more on order), with the feedback case history applications already beginning to look quite interesting. 'These machines are running with very high uptime' comments Christian Menegon 'which in many cases is even higher than most conventional presses since the ws4000s have minimal set-up times.'

RAKO Etiketten for example, installed its first digital press in 1997 in response to customer demand for short run colour labels. Once the press was at full capacity they added a second, then a third, to give them three HP Indigo Press ws2000 machines. Last year, they added the new HP Indigo Press ws4000, which they see as twice as fast as previous models and much more sturdy in construction. This latest press has fundamentally changed RAKO's digital printing operation — and even changed the economics of their flexo operation.

'In itself,' says co-owner and managing director, Phillip

Schmidt-Prange, 'our digital printing department has always been profitable, even though it only accounts for a modest 4.5 per cent share of the group's turnover. However, this share is growing faster than the rest. Previously, digital printing supported and complemented the existing areas of the business through the production of very short runs, sample prints, and test runs for long jobs. Now, the HP Indigo Press ws4000 is fully integrated into the normal industrial production environment of the plant and is treated just like any conventional press

'It is difficult to determine the typical run length we print on the ws4000. It depends on the size of the labels, the pre-production costs involved in producing flexo plates for many different versions, but we sometimes produce as many as 100,000 to 200,000 labels more economically on the ws4000 than on a conventional flexo press. In general, the cross-over point from the ws4000 to conventional printing in our plant lies at around 1,000 to 1,500 running metres of substrate, but if there are many versions and long set-up times in flexo, the crossover point may be significantly higher.'

Interestingly at RAKO, the aim is not to go out and look for special digital press jobs, but rather to evaluate every job according to its economic parameters, taking into account the make-ready times and the deadlines. Sometimes they will print jobs on the ws4000 simply because all their conventional presses are full.

Economic longer runs

According to Andreas Jahr, who runs the digital department at RAKO, 'Customer jobs on the digital presses fall into three groups: 20 per cent are approvals on the press; 40 per cent are dedicated digital jobs; the remaining 40 per cent are label jobs that can be run either on the Nilpeter presses or on the ws4000. For the latter group, our costings are exactly the same, whatever the press the jobs are run on, with origination only confirmed when the press decision has been made.

'With the ws4000' added Andreas 'we have a digital press which is much easier to change, offers better spot colour capabilities, provides economic longer runs, improved colour stability and a higher quality of printed result. All finishing — for all the digital presses — is off-line using two Leomat machines which are equipped to undertake varnishing, cold foiling, laminating and die-cutting operations. The two Leomat's can easily service the four digital presses, and this minimises set-up times for the digital presses without having to worry about varnishing or die-cutting.'

Today, RAKO Digital prints some 50,000 linear metres of labelstock a month and, most importantly, makes money from

the department. Additionally, they are now well prepared to meet the current trends of shorter product lifecycles, more versioning, niche marketing - all with the benefit of savings on plates and copy change costs.

Other leading label plants that have invested in the ws4000 include Adesa, near Nimes in South-East France (the first beta site for the machine) and Altrif Label in the Netherlands.

For Adesa, the real advantage of the ws4000 is the two to three times faster printing speed, and the ability to print leading corporate spot colours. 'The higher printing speed improves the break-even situation' says Brice Carugati, Adesa's president and CEO 'and in certain circumstances is becoming a serious challenge to our offset and letterpress machines. There are certainly markets now where the ws4000 is more competitive than other printing systems. We would also have to say that digital printing is enjoying a real interest from our customers today.'

Three year ROI

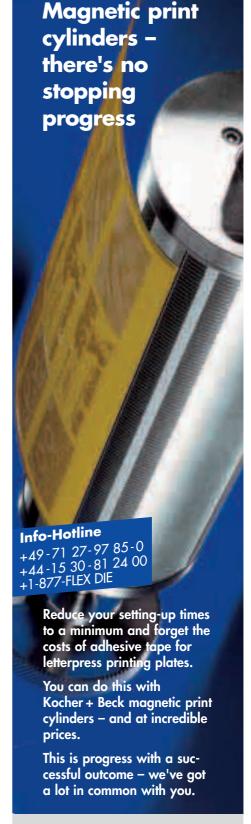
At Altrif Labels, technical director Dion Goderie anticipates a return on investment for the HP Indigo press in less than three years. Already, they see savings from digital jobs being printed directly from customers' files, thus shaving a couple of hours from an offset printed job — and a saving of at least \leq 250 per job. Waste is also lower, with at most 5 metres being lost on a four-colour job. Hardly anything is thrown away.

Certainly the latest generations of digital presses are now fast changing the perception and application of digital printing in label plants that have made the investment. Brand owners and end users who have had disappointing experiences with some of the earlier digital presses may take longer to win round. But that is now starting to take place.

Undoubtedly, the label industry is now in the position in which digital printing looks able to become a serious cost-effective contender for multicolour label jobs up to 50,000 or more labels — and economically complement existing conventional press technology — and will at last begin to fulfil the potential and forecasts of a few years ago.

Over the next three to four years installations of digital presses are expected to clime to a near 10 per cent of all new press sales. Longer term, who can be sure. A lot will depend on a growing acceptance of the technology by brand owners, how the latest presses perform over a period of time, and what the impact will be of new generations of digital UV inkjet machines.

Digital printing arrived some years ago. What is now clear is that it's becoming a real production tool that can make money for the label industry. That's the difference.





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Global wine

Wine labeling is one of the fastest-growing niches around. **Natalie Martin** reports on innovative decoration techniques using combination printing and new material options



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ine growing is no longer a craft industry and is growing at 10-15 per cent per annum. That is the key message from market research consultants AWA Alexander Watson Associates in its new report: the Global Wine and Wine Label Market Study.

While glue-applied labelling represents around 73 per cent of the global wine label market, self-adhesive labels are growing in popularity at around 15-20 per cent per annum. Says Corey M Reardon, principal, AWA, 'With over 590 million square meters of labeling materials of all kinds consumed worldwide today, the wine and wine labeling market must be of significant interest to suppliers throughout the value chain.'

With runs still comparatively short overall, both roll and sheet printing have a valid place in wine labeling. The wine industry is also making good use of the 'personalisation' qualities of the digital print technologies — adding details of the specific grape and the vintage via a digital overprinter to reel-fed generic traditionally-printed chateau labels.

While the boundaries of glass, plastic, and wooden packaging are being pushed back by the wine industry, it is the label that has, overall, the greatest range of contributions to make to an outstanding pack, both in terms of decoration and functional qualities. Says Corey Reardon, 'Both for the traditional, conservative chateau labels and for the colorful and



trends

imaginative labels on the bottles of wine we buy in our supermarkets, labels today are required to provide much more than simple aesthetic qualities. They need to provide a carrier for a bank of information, from the vintage to barcodes, storage, and serving recommendations.' More wine is now consumed in the home which has given rise to the supermarket becoming the biggest vendor of wines, accounting for 37 per cent of all sales.

Rotary Screen

Rotary Screen specialist Stork argues that the onus now is on the graphic designer to employ creative flair as never before, as the label is the key pack component. It's important for the designer to consider the possibilities for exciting graphics with the print technologies at his/her disposal. Rotary screen printing, used in combination with techniques such as flexo, offset and letterpress, offers much scope on the decorative front; it's also an important solution for printing a number of security and traceability solutions.

Rotary screen-printing is best used to create raised images, depositing ink layers up to 300 microns thick making it ideal for opaques, and together with varnishes, brilliant colours. The technique is also compatible with a wide variety of substrates, such as PE, PET, PP, PVC and paper. Many ink varieties can be handled including UV, solvent and water-based inks — even special inks such as metallic, acrylic foam, scratch-off and pearl types.

Varnishes

Varnishes help the wine label to stand out. The 'texture varnish' is one. A colourless varnish, whose particles create a coarse feel, gives a so-called 'ice-look' to the pack. The larger the particle and the thicker the coverage, the coarser the substrate feels.

A highly appealing design possibility is printing a reversed-out image. This is achieved by creating a stencil in the shape of the design in question — such as a logo — to cover the screen so that a striking negative image is deposited. The same principle is used to create line patterns, which, due to recent developments in Stork's screen technology, can be as fine as a human hair.

Another varnish application is the reticulating or 'wrinkle' varnish effect, where a coarse feature offers high visual impact as it stands out from its smooth surroundings. Larger ink particles are used for this effect to create the coarseness. The reticulating effect occurs when it is cured by ultra-high frequency UV-A light. When viewed under a microscope, it resembles a fingerprint. The ink is then cured and polymerised.

Metallic inks

When your metallic effect covers a small proportion of the total label surface area, rotary screen printing allows you to print only



Polyart synthetic paper label from Arjobex

what you need - crucial when it comes to waste reduction.

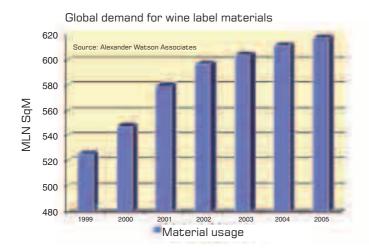
Fine text, and small, tactile images, screen-printed with gold pigmented ink, are highly effective ways of communicating a wine's quality attributes. Stork Prints recently launched a hotair dryer that is compatible with solvent and water-based inks, and easy to integrate alongside a rotary screen printing module.

One decorative wine labelling application includes the 'mirror effect' technique. Here, silver or gold ink is printed on the reverse side of a substrate, whilst its brilliance is observed from the other. This method, used to add impact and eye-appeal to labels at their point of sale, is mostly performed with solvent-based inks. Another exciting application area of rotary screen printing is the creation of matt colours to emphasise a wine's high-value attributes.

The need to provide solutions for product security has grown in recent times. Since there's been a growth in the markets for premium and superior class wines, the wine industry has been faced with the increasing threat of counterfeiting and theft. Holograms can provide custom-made solutions providing authenticity. Since rotary screen printing operates without wastage, the printer can confidently handle the expensive inks which are mostly used for security applications.

RFID authenticity

One such type of ink is a newly introduced iridescent ink that proves product authenticity, with highly noticeable color



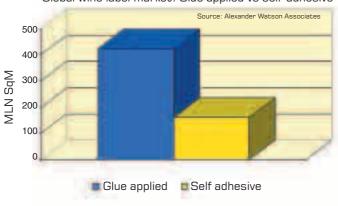
change. The ink is composed of an upper surface of tiny liquid crystal particles to diffract the light, facilitating the change, depending on the angle of vision. This is ideal for application on goods like expensive cameras and electronic equipment.

Rotary screen printing systems enable the printing of the silver conductive inks for RFID constructions. These labels consist of a microchip to store product, price and origin data, and an antenna that receives information via radio waves. A thick layer of ink is necessary to ensure conductivity. Scanning devices can pick up data for an entire pallet of wine bottles, and the information is used to track their movement along the supply chain to the retail outlet. RFID technology advances come from more powerful read-write chips, inlet manufacturers who are finding ways to extend the label's read-distance, better ink conductivity and paper quality.

Thermochromic inks, which change colour in response to a specific temperature or lapse of time, can also benefit from screen printing. A white wine label would incorporate a thermochromic feature that uses a reversible ink to activate at 4°C, the optimum serving temperature. Similar solutions are enabling the indication of serving temperatures for red wines at room temperature.

* For further information on the AWA Global Wine and Wine Label Market study tel: +31 20 676 2069 or visit: www.awa-bv.com





Creating a paper niche

Wooden Labels

Tom Lenderink, president of Lenderink, has found a way of processing wood thin enough – 5-7,000 of an inch – to run over drums on press, including offset and letterpress, in either sheet or roll format. Cutting the tree into logs, the wood is then peeled and processed in a number of steps so it can be handled on printing and die-cutting machines.

Depending on the requirements of the label, hotstamping, and embossing can be used as further added value processes and adhesive is added. Says Lenderink, 'We've managed to get the wood stable, flexible, and thin enough to go through roll drums on press.' In the last five years, Lenderink has been supplying labels to small vendors, mostly private wineries, but it can now supply large orders of this thin wooden veneer substrate to converters in sheets or rolls. The label is costly because it's made out of natural wood. Take Eastern Red Cedar for example, the color can match the color of the wine itself. The label adds class and gives the brand prestige. The customer feels better because they can physically touch the wood of the label, providing a feeling of warmth, and even nostalgia — it's the environmental aspect.

As part of a gift set, Lenderink can take the same thin wood which was used to produce the label, convert it into tubes, bag or a box to package the wine bottle(s), co-ordinating the label, packaging and gift. He can even make a wooden postcard, so that wineries can place a printed wine label onto the postcard to promote its wines in-store.

Lenderink claims to be the first company in the world to supply a wooden veneer substrate which can be managed on press.

No.210

Synthetic Labels

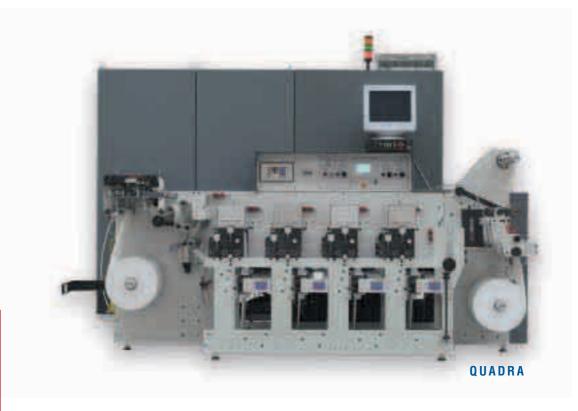
David Hoag, national sales manager from Arjobex says, 'It has only been in the last two to three years since P/S has become more prevalent for wine labels that synthetics have found their way into this market.' While synthetic papers are typically more expensive than cheap packaging films and papers used in wine labelling, Hoag believes that synthetic papers have a better stiffness for automatic dispensing than cheap packaging films, holds better in environments where paper won't; is resistant to water, condensation, ice and humidity, and the appearance and feel of it looks and feels like a high quality dull coated paper rather than a shiny plastic.





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4 colours - 1 die cut



Change Print Cylinder



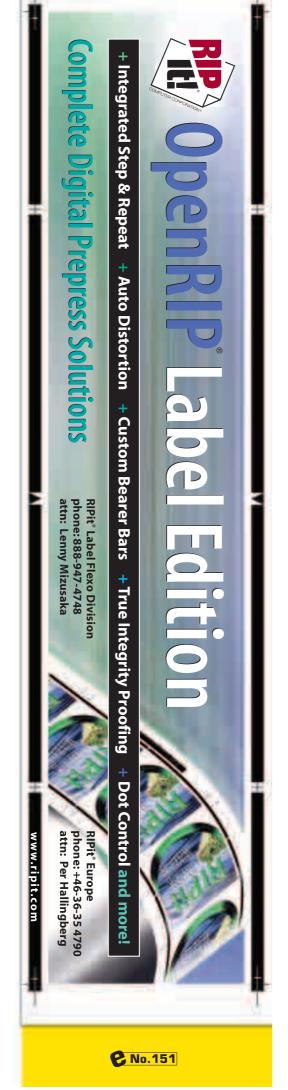


The Flower™Concept



Change ink tray and meter roller





Improving the process

Akzo Nobel held the first technology seminar at its new Plymouth, Minnesota inks manufacturing center. The subject: what active steps are you taking to become more profitable?

as your company developed its strategy for continuous improvement, and ongoing profit improvement? Akzo Nobel Inks' first technical seminar of 2003, Profit for Printers, addressed this issue, with the help of leading industry professionals. The two-day seminar, held in Plymouth, Minnesota, April 8 and 9, was targeted toward those narrow web converters looking to increase their bottom line profits through new technologies or services. Topics included: Lean Manufacturing and SMED, new press and plate technology, Uptime Solutions, multi-process printing opportunities, waste reduction and reuse, ink management, cold foiling and options in metallic ink printing. Speakers from MarkAndy/Comco, Gallus, Chromas, Eckart, Telstar, API, Dupont, Harper Opaltone, Rotometrics, Ritrama, Prime UV, Harper Corporation, and Avery Dennsion/Fasson, Dunwoody Institute, and Akzo Nobel Inks shared their profit improvement ideas.

Chris Faust of Chromas provided an overview of Chromas' Lean Manufacturing program; Lean Manufacturing isn't a call toward new capital equipment purchases, rather it's the way in which you use the equipment and staff you already have. Through just-in-time production and process stream mapping you can produce higher quality products with greater profit margins. Lean Manufacturing puts focus on smaller batches and on overall value.

Terry Trexler of Gallus presented "Servo Drive Technology for Profit". Automation can have a positive impact on label printers' daily work — increasing flexibility in process and substrates, increasing production reliability, increased reproducible quality, and improving the printing environment and overall production efficiency. Among other things, Servo Drive Technology can shorten your set-up and changeover time, which contributes to the Narrow Web printer's long-term cost and time savings.

MarkAndy/Comco's Ken Daming shared with the group how new press technology can add to printers' bottom line. Technology exists to provide faster set-up times, less waste, and low maintenance; presses are now designed with a variety of users in mind, and are providing higher quality end results. Daming said economic benefits could result from servo drive technology, digital printing technology, laser finishing, and other new press technologies. The key is that each printer communicates their specific needs with their press manufacturer to find the technology that provides

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inventory management, supplier reduction, better communications, and converters who know and understand their needs

the highest value for them and their operation.

Also from MarkAndy/Comco, Gary Gates told the audience to "Stay Alive"! End users want inventory management, supplier reduction, better communications, and converters who know and understand their needs. What else? End users want innovative ideas from Narrow Web printers. Gates encouraged the audience to seek out niche markets; put your innovative ideas to the test; think beyond self-adhesive labels. Printers on the forefront will catch the end-user, and will provide an end result that will catch the consumer's eye.

Matthew Bernasconi, of Harper Opaltone Division presented attendees with "Pocket the Profit — Seven Color Process". CMYK was developed in 1869; now we have CMYK + RGB — giving us the seven color process set, and several print advantages. The expanded gamut set provides many cost savings opportunities to printers — an expanded color range can be achieved from less ink, leading to lower production costs. Achieve enhanced job predictability and maintain better consistency run to run. No spot color matching is necessary; no need to change anilox or ink, change only the plates for each job. Reduce job time, and reduce ink inventory and makeready waste.

Doug Stauffer of Avery Dennison/Fasson provided insight into new market opportunities for both pressure sensitive and non-pressure sensitive roll materials. Stauffer outlined Fasson's creative approach to reuse substrate rolls through RollXchange.com, a website designed for Flexographic buyers and sellers looking to "xchange" materials for reuse, where, in the past these materials may have been considered surplus and simply discarded. Converters and suppliers should be encouraged to review materials they consider surplus; and list them for sale through RollXchange.

Akzo Nobel Inks also discussed waste reduction and the reuse of inks through ink management systems. Converters will realize profit improvement through waste reduction and material reuse wherever possible.

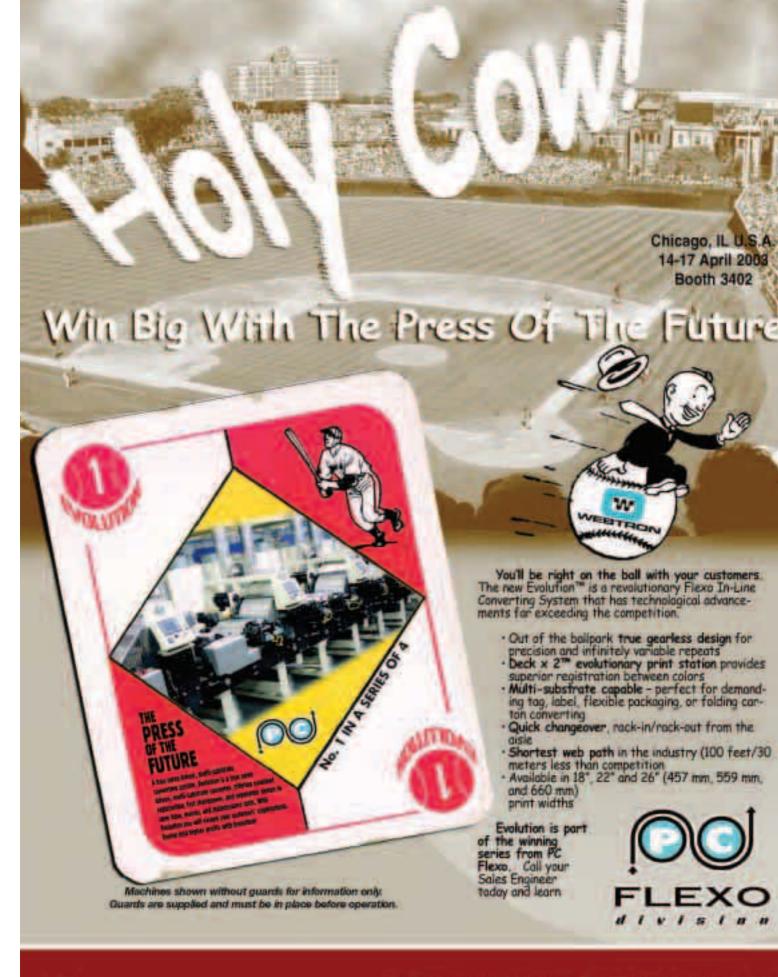
Rotometrics and Prime UV explained how maintenance on current equipment can save printers time and money. Butch Schomber of Rotometrics shared the importance of choosing the right die, and proper die care and maintenance. Variables on press should be considered closely when choosing the proper die; substrates, liners, inks and coatings all have an effect on the wear of your dies, and the degree of their effectiveness. Simply keeping maintenance records and being cognizant of your interactions with your dies can extend their life — always handle dies as if they are brand new; protect your dies from moisture and wrap in bubble wrap when not in use.

Juliet Midlik of Prime UV Systems, Inc. explained the importance on maintaining your UV lamps. A UV curing system is composed of various parts — the UV lamp, the processor, the controller, power supply, mounting system, and cooling system. Each of these provides a key component to the overall effectiveness of your curing unit. Again, converters should develop and maintain a preventative maintenance program. Detecting any problems early will dramatically reduce downtime in the long-term, and reduce the potential of bad product. As Midlik stated in her presentation, "Be proactive, not reactive." Reduce downtime, waste and rejects — keep your equipment well maintained to enjoy greater profits.

The evening of April 8 speakers and attendees were invited to celebrate the opening of Akzo Nobel Inks' new Center for Technical Excellence. 'The CTE is the ultimate result of hearing the voice of our customers, constantly looking for innovations and technology improvements,' states Dave Hiserodt, president of Akzo Nobel Inks. 'Combining the Printing press and CTE facility with the talent of our employees and their dedicated team efforts, we are able to support more demanding requirements of the market. We will develop new products, much faster than before and the continued quality of our products and services will make quite an impression on our customers.'

Commenting on the seminar, Paul Duran of LA Label stated, 'Overall I found a revised enthusiasm of printing; it was exciting to hear new ideas and gain information on new technologies. I came away feeling more excited about what I do in my job. I hope to transfer this enthusiasm to my operators and crew, and get them excited about their careers. I was able to bring back new ideas and information to our operation, and am hoping to put into practice some of what was presented.'

Akzo Nobel Inks will host two additional seminars in 2003: August 12: Introduction to Flexography; which gives an overview of the flexo process from the ink room to the press room, and October 14-15: Narrow Web Packaging.





Seaffering Committee of the Committee of



Ahlstrom invests



Special label papers - not commodity production

pecialty paper supplier Ahlstrom has announced a major investment program embracing several of its European plants to increase production capacity for release liner base paper by 36,000 tonnes annually within two years.

The pressure sensitive industry worldwide is a major customer for Ahlstrom's specialty papers, both for release liner and face stock for labels.

Release Liners are produced in two dedicated plants in France and Italy, as well as on several paper machines in other plants of the LabelPack division. The current investment program targets the plants in La Gere, France and Turin, Italy.

The La Gere plant, situated close to Lyon, operates a 465 cm wide paper machine, and is focused on producing glassine papers for silicone coated release liners. Early last year a new 18-roll super calender was installed to eliminate a production bottleneck while opening up possibilities for future production expansion.

In summer 2002 the drying capacity of the paper machine was increased, allowing machine speed to increase to 600 metres/minute. Further investment planned for 2004 will permit an additional increase in the plant's output.

At Ahlstrom Turin — the group's biggest plant for manufacturing release liner papers — plans for a capacity increase are being implemented. The plant's paper machine No 8, which started in the early nineties, was among the first machines in Europe to be specifically designed and built for the production of release liner papers. With a speed of nearly 900 m/min, its 420 cm width makes it complementary to the La Gere PM6, which produces a very similar range of products.

Taken together with the already announced installation of a new metering press at the end of 2003, Ahlstrom estimates it will be generating an additional 18,000 tonnes of supercalenAhlstrom has announced a €43M investment to increase capacity at its European release liner operations.

Natalie Martin reports from Lyons, France, on how this supplier is coping with the storms of globalisation and consolidation

dered paper per year by 2004. The overall capacity increase of the two plants, Turin and La Gere, will amount to 36,000 tonnes, meaning an 18 per cent increase in less than three years.

Ahlstrom's LabelPack division as a whole produces specialty papers for flexible packaging, for the self-adhesive industry and for wet-glue labeling. The division employs more than 1300 people and operates six production units throughout Europe. In 2002, the division had net sales of approximately €512 million (US\$ 512 million).

Consolidation and globalisation

Diego Borello, president of Ahlstrom's LabelPack division, told delegates that the consolidation and globalization taking place among pressure sensitive laminate producers, and the ongoing trend towards shorter production runs and higher converting speeds, represent the most challenging trends to affect the release liner industry.

'For this reason in the face stock papers market Ahlstrom has chosen to position itself as a producer of special label papers rather than producing commodity grades.' The company's production unit in Kauttua (Finland), for example, now specialises in high quality thermal transfer papers, high gloss spirit bottle label papers and grades for pharmaceutical labels. Ahlstrom's Research and Competence Center, located close to Lyon in France, is able to leverage the company's know-how in other fiber-based materials, such as nonwovens and glass nonwovens.

'In a nutshell, this business is still delivering a nice growth, particularly in developing regions such as Asia, but the cost and the technical requirements make it an increasingly capital intensive industry,' continued Borello. 'Only very few players will be able to succeed in this industry: those with competitive and focused state-of-the-art assets and — even more — the financial strength needed to invest in innovation and additional capacity that the market will need.'

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Cost-effective VIP solution adds value

Long known for their technology for adding text and codes to packaging, Domino has now introduced a relatively low-cost digital 'on-demand' ink jet system that can be added on to label presses or slitter rewind equipment to provide a wide range of added-value features. **Mike Fairley** investigates

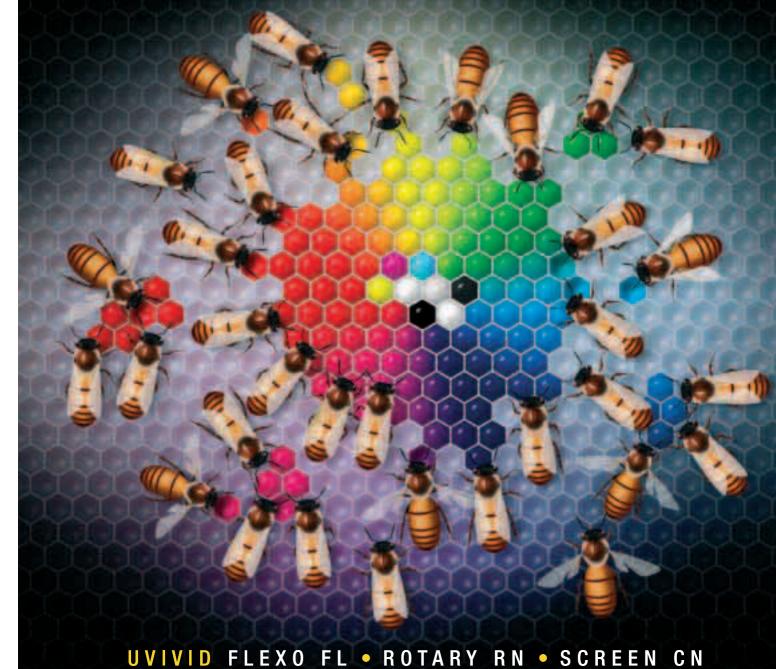


he ability to add 'on-demand' variable printing of everything from text, random or sequential numbers and bar codes through to promotional information, logos, personalised messages, symbols, invisible codes, traceability numbering or unique security features onto labels at the latest possible stage in label production, inspection or application, has long been a requirement for many label converters, pre-packers and end-users. As more and more converters look to produce added-value products and services (and hopefully additional profitability) for their key customers, such solutions become even more attractive.

Often only required in a single, spot or limited multiple colours, with the printed information running in any direction on the label, the range of available print options in the past has tended to be either too expensive, too slow, too limited in print quality, or too difficult to integrate into a roll-label press, slitter rewinder, label application system or packaging line.

Possibilities today include full-colour digital printing using dry or liquid toner, new developments in colour UV inkjet, mono-colour inkjet over-printers, thermal transfer systems or laser technology, depending on where the 'on-demand' element is to be added. All have their place in the label industry. However, many label printers feel the investment in digital colour is still rather too high for them, thermal is not fast enough for on-press or inspection rewind use, quality of or definition of some systems may be acceptable for forms over-printing, but not product prime labels.

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••A key market for this technology is in pharmaceutical labelling and packaging, where high-speed and versatile coding for secure traceability of date and batch information is especially important

David Ellen, director of commercial printing, Domino

on-demand' printing of labels, tickets and tags has been introduced to the market by Domino Printing Sciences, a world leader in the design and manufacture of industrial inkjet and laser printing systems. Label converters are able to undertake high quality printing on either web or sheet-fed presses at production speeds of up to 4 metres per second. Alternatively, the system can be incorporated into slitter rewind or inspection rewind equipment, onto product handling conveyors or onto label application lines to provide production flexibility.

Consisting of one or more drop-on-demand print heads (depending on print width, web width, applications or number of colours) and a sophisticated formatting and controller package based on Windows NT, the system provides an ideal cost-effective solution to most 'on-demand' requirements found in the label, ticket and tag production and usage markets. And by cost-effective we are talking about \$50,000 for a controller and one print head, including all in-built bracketing for easy removal and replacement — without any re-alignment.

Secure traceability

'A key market for this technology' says David Ellen, Director of Commercial Printing at Domino 'is in pharmaceutical labelling and packaging, where high-speed and versatile coding for secure traceability of date and batch information is especially important. Many countries impose a legal requirement on manufacturers to indicate directly on the pharmaceutical or medical product label the date or package contents so as to deter misuse and counterfeiting.

'Many other manufactured products require labels or tags with variable marking which identifies the time of manufacture and the particular production batch. This information can be used in the event of a product recall, or simply for product tracking and inventory control. Domino's fully variable printing technology means that every label can be

different, while production statistics can be viewed on line or historically. From any authorised networked PC.

'Equally, the latest Domino print heads and controllers can cope with a wide variety of bar coding applications, including code 128 and 39, code 2-5 interleaved, EAN 13 and EAN 8 product codes and UPC 12/8 types to name just a few. Additionally, the controller allows for multiple check summing and modulus numbering as well as bar coding. And we can supply integrated camera systems and software solutions to verify bar-codes in-line, or systems for machine reading.'

For label ticket and tag printers looking for high added-value opportunities the Domino system also has sophisticated software which can be utilised for a range of promotional solutions, for example, scratch-off competitions or games, random numbering, coupons, lucky numbers, etc — which can be highly cost-effective marketing tools. 'With our software package we can build multiple checksum algorithms in to a code to prevent fraudulent claims' commented David Ellen. 'Coding is even economical for short runs, as well as for sheetfed applications where cut-and-stack numbering capabilities can be provided by the controller.

'Security applications benefiting from the versatility of the inkjet printing capabilities cover a host of applications, from marking, traceability coding, invisible numbering and coding, multi-locational numbering and orientation, inks for ID tagging, inks for excitement under specific wavelengths, or even indelible or phosphorescent inks.'

To provide a relatively easy move into the on-demand, variable imaging, promotional, coding and numbering or security label areas, Domino can provide a solution to the label converter that can be simply added on to a slitter rewinder or inspection rewinder in the label plant, using just one print head. This can print in black or in a mono spot colour, depending on the requirement.

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'on-demand' variable printing and coding solutions for the label and tag producer now has the availability of a further option which can add value to their products and services at a relatively low investment cost

Systems can also be incorporated into roll-label presses to provide one, two or more print heads anywhere on the press line (before print units, between units or after units) — which between them can provide the same information on each head, different information or colours on each head, different orientation on each head, staggered head printing, matching information in different locations on the same label — so as to provide an extremely flexible 'on-demand' production facility.

Each additional print head added to the press line (using the same controller for all) adds a further £20,000 to the total installation cost — although this is still relatively inexpensive for the capabilities that can be provided. Currently, Domino have inkjet 'on-demand' sollutions installed on Gallus, Mark Andy, Nilpeter and other well-known press lines.

Inks used are fast drying and it is quick and easy to change colours if required. This is simply done by changing a tube and colour cartridge, with the press running again in a relatively short period of time. They also claim to able to match most specific brand owner or house colours.

Easy set-up

In operation, the WYSIWYG screen display of the controller/editor provides easy job set up on the press or in the finishing room and provides easily selectable fonts and characters (down to 0.8mm or even curved characters) and adjustable tab positions. 'The system also directly handles all commonly used data formats' explains David Ellen 'and includes automatic record selection. In addition, the controller contains

comprehensive numbering and bar-coding facilities, as well as variable demographic text messaging.

'Other features of the controller include re-order capabilities, product tracking, selective capabilities, job storage and retrieval, on-line customisation of fonts, multi-lingual prompts and on-line editing facilities, file maintenance and remote diagnostics (via a modem connector). Domino is also the only inkjet company that can offer all different print widths.'

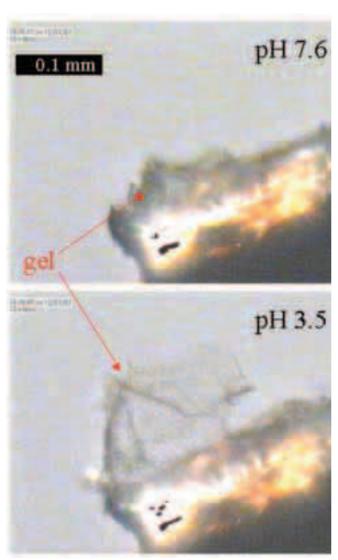
If a label printer requires advanced single jet printing solutions, then Domino can provide the more versatile, more flexible, high quality and high speed print capability of the CP A-Series, a single head printer for reliable printing of text, barcodes and logos. Again, the lightweight print-head can be installed on virtually any production line, the mounting allowing for easy removal and replacement of the head for precise and efficient job set-up.

With all the Domino 'drop-on-demand' printing systems, installation is relatively simple — with only one electrical connection for the controller — while operator training takes no more than a few hours. Integrated diagnostics support remote fault diagnosis to minimise operational down time.

Certainly the range of 'on-demand' variable printing and coding solutions for the label and tag producer now has the availability of a further option which can add value to their products and services at a relatively low investment cost. Few can say that they cannot now easily enter these more lucrative markets – but how many will do so?

Intelligent labels

Interest in materials that react to environmental conditions such as light, heat, gases, pH and moisture is gathering pace. **Robert Shimmin** reviews some of the 'active' and 'intelligent' technologies that have found their way to market and examines research which is exploiting the properties of materials at a molecular level



Gels collapse and expand when subjected to changes in environmental conditions, a force which can be used

ntelligent packaging is designed to sense the environment around it and to convey information to the user. Active packaging however, is designed to change the condition of the contents in order to extend shelf-life or improve product safety.

The definitions between 'active' and 'intelligent' tend to be somewhat blurred, but however you look at it a common theme is the ability of these technologies to add a functional dimension to the label, so that it no longer remains a simple conveyer of brand identity. The ability to actively adapt to external influences means that the label can play a practical role in extending the shelf life of a product, in promoting it or even protecting it from counterfeiters.

The aim of this article is to provide an insight into some of the emerging technologies with a view to highlighting some potential avenues of opportunity for converters to add value to their products.

The growing interest in active/intelligent packaging concepts in western markets is being encouraged by a number of drivers:

- the rising sales of convenient, fresh-food products that are placing increasing demands on the packaging industry for formats which act to preserve taste, appearance and nutritional qualities
- the demand for more product information by the consumer;
- the need improve product life tracking, communication and control within the packaging supply chain particularly to indicate where product or packaging abuse has taken place
- the rising pressure to reduce costs, and the desire to improve brand image and appeal

These demands combined with recent advances in material science and biotechnology are fuelling new applications in both food and non-food areas alike.

'Active' Developments

The main focus of active packaging tends to be on main-

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0 4 2 **X** June/July 2003

taining or extending product shelf-life. The most commonly used 'active' technologies are desiccants, moisture absorbers and oxygen scavengers.

The market for 'active' packaging is expanding. Valued by Pira International at \$1.18 billion in 2001, the global market for active-packaging technologies is forecast to grow by 12 per cent in 2002 to \$1.32 billion, reaching \$1.73 billion in 2004 and \$2.60 billion in 2007.

Whilst active packaging features tend to relate to the incorporation of additives into packaging film or within packaging containers there is evidence that the label is being

used for specific applications:

Moisture absorbers

Excess moisture is a major cause of food spoilage. Soaking up moisture by using various absorbers or desiccants is very effective at maintaining food quality.

Although these absorbers tend to come in sachets, pads and sheets, there are applications where loose items in packs can be problematic and here the label can play an important role.

Freshness Indicators

There are currently a limited number of freshness indicators on the market where for instance an indicator label reacts to volatile amines from fish with a visual colour change.

Gas Indicators

Gas indicators attached inside the package can provide information on the integrity or correct gas concentration within the packaging headspace. For many perishable products exclusion of oxygen improves the stability of the product. A typical visual indicator can be formed as a printed layer or laminated in a polymer film and involves a distinct colour change.

Active Films

Leading edge research, supported by the Faraday Packaging Partnership, is currently focused on developing new materials that offer enormous potential for the packaging and labelling sector. Led by Tony Ryan, head of department and professor of Physical Chemistry, University of Sheffield in the UK, the research uses "nanotechnology" to assemble materials "atom by atom" that are able to respond effectively to environmental stimuli such as light, heat or changes in gas or pH.

Packs able to change the condition of their own contents, activating responsive pores, valves or barriers to optimise product shelf life and quality, are now a reality.



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Light activated valves

The introduction of valves, that can be switched on or off to allow the packaging to breathe like an 'active gortex', is now possible.

A polymer layer grown on the surface of a porous packaging film can be designed to cover or uncover the holes in response to specific environmental conditions thus creating 'packaging with pores'. A change in light conditions could for example, trigger valves within the packaging to open and release an aroma, flavour or essence.

Pump Action

Research inspired by muscles is focused on the introduction of chemical energy to produce molecules that change shape. Changes in pH for example can cause a molecule to expand by up to one hundred times. These responsive molecules can be harnessed to power responsive features within the packaging.

Smart gels that expand and contract are already in use delivering doses of insulin in response to glucose variations. The good news is that these reactive gels are based on the moisture scavenging gels found in nappies and are therefore relatively inexpensive.

The throbbing effect of gels that collapse twice as fast as they expand when subjected to changes in environmental conditions can result in a force that can be used. The same principles can produce actuators in the polymer that can expand in one, two or even three dimensions.

Adding pumps to packaging materials offer some interesting possibilities.

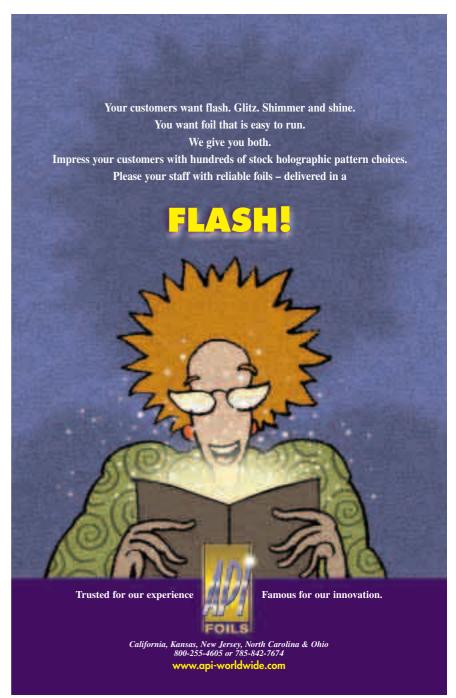
For example, they could be used to remove unwanted gases from a pack altogether or perhaps to concentrate them into another compartment within the pack.

Light reaction

In a second area, academic work is progressing towards making both passive and active optoelectronic components exploiting what is already known about self-assembly.

One example, which is already patented and approaching commercialisation, is to use self-assembly of block copolymers to create dielectric mirrors in a single, cheap, processing step. The process uses the same principle as in butterfly wings and holograms, where beautiful colours are created from the diffraction of light off ridges or layers.

The ability to grow molecules to different structures that form gratings that reflect light at different wavelengths opens up interesting opportunities for integral decorative or security features in packaging.





for the indicator takes account of all temperature fluctuations and can be read at a glance by both store personnel and shoppers !!

Time Temperature Indicators

Often categorized as an intelligent technology, the time temperature indicator (TTI) is one area where the label is already established as in as a carrier. But what are TTI's?

If perishable foods are stored above suggested storage temperatures, rapid microbial growth takes place and the product is spoiled. Typically attached as labels onto the pack surface, TTI's integrate the time temperature history of the packaging throughout the entire distribution chain and provide information about the product quality. US based Lifelines Technology is one company that has focused on the development of visual indicator systems that provide information about package breakage.

The Fresh-Check Smart Label is an indicator used to check the integrity of the cold chain. They are adhesive labels with a 'bull's-eye' containing a special time and temperature sensitive ink in the centre. The centre gradually darkens as a result of cumulative temperature exposure, faster at higher temperatures and slower at cooler temperatures. The formulation of the device is tailored to match the temperature-dependent shelf life characteristics of a specific food product. The indicator takes account of all temperature fluctuations and can be read at a glance by both store personnel and shoppers. As long as the centre is not darker than the outer ring and the use by date has not passed, the product can be used. This allows consumers to check, at the time of purchase, whether or not the products they buy have been stored properly and to manage their segment of the cold chain right through to consumption of the product.

In the healthcare sector, maintaining the cold chain is funda-



mental to all vaccination programs, because vaccines and biological products are very sensitive to heat. A vaccine, for example, must remain active from its place of manufacture right through to the most remote areas where it is administered. If the cold chain is broken, the vaccine will lose its protective capacity. TTI's can be manufactured in a dot format which is highly adaptable to being placed onto the primary label or the package.

The Heat Is On

Active' ink systems that respond to changes in heat and light are increasingly being used as a promotional vehicle and as a highly effective and cost-efficient method of protecting value documents and products against fraud. Harlow based Luminescence has developed ink systems that can be employed to detect counterfeiting, alteration and unauthorized trading and can be printed using most of the mainstream processes

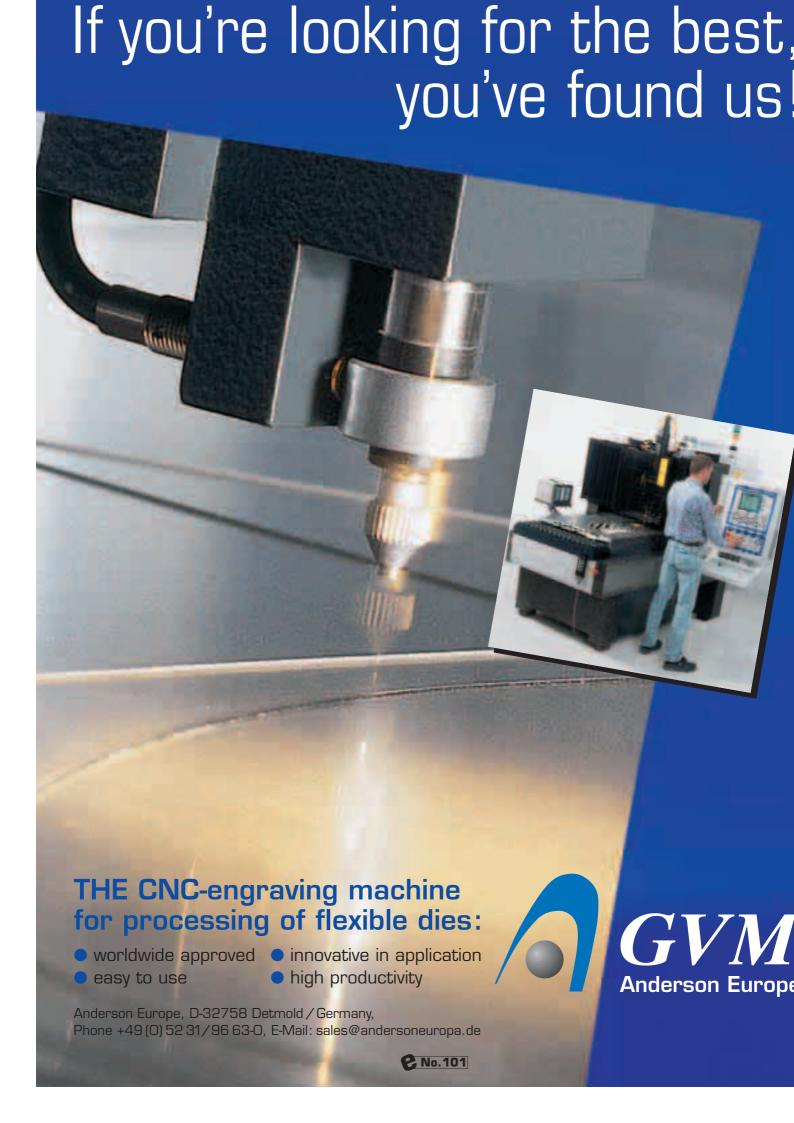
Heat sensitive inks called thermochromics are able to disappear, or change colour, when exposed to temperatures above their set level.

Although the ink can be manufactured to react at a variety of heat levels, it is most commonly and practicably set close to normal human body temperature. This allows for authentication of a document simply through the warmth of an individual's hand. With no need for sophisticated equipment, such as UV lamps, these inks can be quickly and easily verified. This ease of authentication is a major strength of this system as an overt validation and anti-fraud application.

Thermochromic inks are coloured below the set/specified temperature and become colourless/transparent when this temperature is exceeded. It is possible to add a visible, non-changing colour to increase the range of effects: for example by using a 27°C blue thermochromic ink and adding yellow it is possible to achieve green below 27°C, and yellow above 27°C.

In addition a number of Irreversible Thermochromic inks are available that remain invisible until exposed to high temperatures, when an intense colour develops. These are often used as a tamper evident device to show when heat has been

The Fresh-Check Smart Label is an indicator used to check the integrity of the cold chain. They are adhesive labels with a 'bull's-eye' containing a special time and temperature sensitive ink in the centre. The centre gradually darkens as a result of cumulative temperature exposure, faster at higher temperatures and slower at cooler temperatures



Powiet grill Marchial House Confe

Thermochromics used as an indication that white wine is at the correct temperature to be served

applied to remove objects from laminates.

The colour-changing property of the thermochromic ink is derived from leucodyes that form microcapsules around the inks. At 3 to 5μ m, these microcapsules are ten times the size of average ink particles. The heavier ink laydown needed to protect the microcapsules makes rotary screen the most effective printing method. A key factor in the cost-effectiveness of rotary silk screen printing is the screen quality itself. Stork Prints pioneered its own patented Rotamesh technology, to develop a range of screens with a pure nickel construction, which is non-woven and manufactured by electroforming. A hexagonal mesh structure gives it an outstanding stability enabling the screens to be suitable for long runs in both narrow and wide web printing. The Rotamesh range allows the printer to achieve the ideal mix of ink deposit, particle size and resolution.

Shine a Light

Photochromic inks exhibit spectacular colour changes when they are illuminated with either ultra violet light or natural daylight. They are colourless in their natural state and when exposed they produce their visible colour. These inks are reversible; reverting to their colourless state when the light source is removed. They are often used for product verification or in promotional applications.

Light plays a key role too when it comes to optically variable inks. Known as the 'flip-flop' type, they change instantly from

19,000 19,000 With PUAL 24" Rewind (800)-829-8351 one colour to another depending on the angle at which the ink is viewed. Because of this visual colour change, Optically Variable inks are extremely difficult to replicate and are often used as an anti-reproduction device. These inks go from a colour to clear depending on the angle of the light.

Conclusion

There is no doubt that the flood of emerging technologies offers some interesting possibilities for converters. But development of the next generation active materials, intelligent labels and printing systems will be very challenging. It is likely that collaboration with the academic research base will play an important role. In the UK the Department of Trade and Industry-sponsored Faraday Packaging Partnership offers a 'gateway' for the packaging and printing industries to access academic and commercial technology experts. Converters wishing to exploit the rising demand for responsive packaging may want to check out this route to packaging innovation.

Smart technology briefing

The Faraday Packaging Partnership will be holding a FaraPack Briefing 2003 – New Technologies for Innovative Packaging to be held on 15th and 16th October at the Banqueting Suite, Elland Road, Leeds in the UK. An excellent opportunity to hear about new and emerging technologies in active and intelligent packaging and many other packaging issues. For more information on the Faraday Packaging Partnership or the research into active packaging materials contact Pauline King, marketing & account Manager (pauline.king@ faradaypackaging.com), or visit www.faradaypackaging.com

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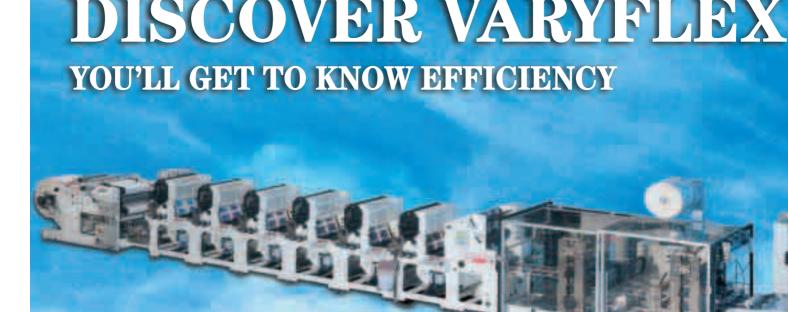
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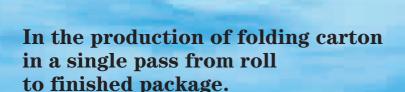


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Challenging, and hopefully



On the 25th Anniversary of Labels & Labelling **Mike Fairley** talks to industry leaders about the future of the narrow-web sector and highlights their thoughts and ideas for the future growth and success of a fast-changing industry

t is now 25 years since 'Labels & Labelling' was founded in 1978 in a climate in which pressure-sensitive labels were achieving high growth levels, in which margins and profitability were excellent – for both label printers and suppliers – and lead times for printed label jobs could be measured in terms of many weeks.

Intermittent feed, semi-rotary letterpress machines were the core technology in Europe at that time, with rotary letterpress being heralded as the press technology of the future, while heat-sensitive label materials were beginning to be used for fresh produce labelling in stores. How different everything has become since then.

Key developments for the continued growth and expansion of pressure-sensitive labels came in the mid 1980's with the introduction and rapid acceptance of thermal labelstocks for VIP labelling. Soon to be followed by laser, copier and ink jet variable printing capabilities using surface treatments and top coatings.

Rotary letterpress technology grew rapidly throughout much of the 1980's, with flexo and rotary screen also finding increasing applications for label printing. Digital artwork and origination solutions also entered the world of labels.

Into the 1990's, with the rapid rise of flexo label printing — and then UV flexo — the introduction of new generations of semi-rotary presses and quick changeover press technology, the first colour digital presses, magnetic dies, cylinder sleeve systems, cold foiling, rapid growth in the use of filmic label-stocks, and the industry was changing fast. Indeed the list of innovations and developments in the 1990's is almost endless.

Unfortunately, the 1990's also began to see growing pressures coming on margins and profitability, with lead times reducing, run lengths decreasing, buyer purchasing power



exciting— profitable

increasing, a slowdown in pressure-sensitive growth – and a growing issue of over-capacity in the industry.

At the same time, new label technologies were entering the world of labels to compete against pressure-sensitives, including in-mould, shrink and stretch sleeving, wrap-around and cut-and-stack film, so placing ever more pressures on the narrow-web label converter.

Into the new century, and there seems little real improvement or encouragement for the label producer or supplier. Consolidation and globalisation of major label user and brand owner groups has continued to exert downward pressures on prices for the label converter. E-auctions and e-procurement have not helped either, particularly with some major brands claiming to have reduced their overall label spend by up to 20 per cent through on-line auctions.

Label users and brand owners are also looking for new services which many printers are reluctant to become involved in; supply chain management, customer focus groups, new management information systems, standard business tools (statistical process control, six sigma, etc.) to drive costs out of the

business and make converters more efficient.

If label printers and industry suppliers think that the 1990's and early 2000's have been challenging times, then what can the industry anticipate for the future? Particularly at a time when most global economies are under pressure, there are major uncertainties in the world, and taxes on business everywhere seem to be continually growing. The last thing a label industry under profitability and margin pressures needs today is global uncertainty, higher business taxes and a major slowdown in global GDP's.

It was against this global marketplace and the ongoing changes in the label industry that Labels & Labelling asked some of the key industry suppliers to contribute their perspective on where the industry is going, whether it still has a good future, what changes it can expect in the next 5, 10 or more years. Quite simply, to say what they believe lies ahead?

Economic development drives market

For Christian Simcic, group vice president, Avery Dennison, Roll Materials Worldwide, the future for the label industry



66 Business will be done faster and faster.

Speed will be the essence of success

Christian Simcic



for the industry needs to be in close cooperation and dialogue with customers Pentti Kallio



can be expected in further globalisation and consolidation of end-users, as well as the emergence of the first global converters. 'I also see a shifting of our center of gravity. A market that used to be US-centric is now changing as economic development drives increased pressure sensitive consumption in new areas of the world. Europe, with 10 new countries entering the EU in 2004, will become the single largest market for pressure sensitive materials and we will see a lot of manufacturing developing in Eastern Europe, and also in Asia Pacific, which will become a third major label economic and market region.

'The growing use of the internet will fuel more tracking labels and contribute to the global usage of products, and easier access to consumers, with the result that the transfer of technology will accelerate across the whole globe. Additionally, we'll see growth in functional, security and interactive label technology.

'An increased demand for food protection and chemical-detecting labels will drive the usage of additional new materials. Shrink sleeves will have a complementary, not supplementary role, as end user marketeers look for more ways to catch the consumers' eyes. Linerless will become a reality, and dispensing will continue to evolve — allowing thinner materials to be used at faster speeds. Global consumer trends for convenience will drive new opportunities in the use of labels.

'Business will be done faster and faster,' continues Christian Simcic, 'speed will be the essence of success in complex business environments, and logistics and service will become even more important in the future.

'The technologies of communication (internet) will play an increasing role in our future. Artwork development and approval, inventory management, order management/status, and invoicing will all be handled electronically to increase speed

and accuracy while reducing the cost of doing business between business partners of the entire supply chain.

'But at the end of the day, the value the industry adds through innovation and the measurement of how easy/convenient it is to do business with the label industry (converters and suppliers alike) will continue to be the key to success and the winning recipe for the industry's future.'

Despite the economic challenges faced by nearly all industries and economies worldwide — and certainly the pressure-sensitive industry — Raflatac's CEO and president, Pentti Kallio, also has a very positive outlook on the future of the pressure-sensitive market.

'Even during this economic downturn, it is anticipated that the pressure sensitive business, as a whole, will continue to grow globally by at least three to five per cent per annum. I also believe that when the economy picks up, it is realistic to expect the pressure sensitive market to reach an annual growth rate of between five and seven per cent. The key in the present situation is to be in close dialogue and cooperation with customers and to be sensitive to the needs of the market. As far as label-stocks are concerned, suppliers must consistently provide exceptional quality products and services and be proactive with solutions of real added value to market conditions.'

According to Mr. Kallio, promotional as well as logistics applications are areas with real growth potential globally, along with the synthetics market. 'Each of these areas is in a stage of continual growth. There are openings here for innovative labelling solutions that deliver a competitive edge.'

Mr. Kallio added that in order to be competitive, labelstock suppliers must strive to further develop their performance in supply chain management, with a customer-driven focus.

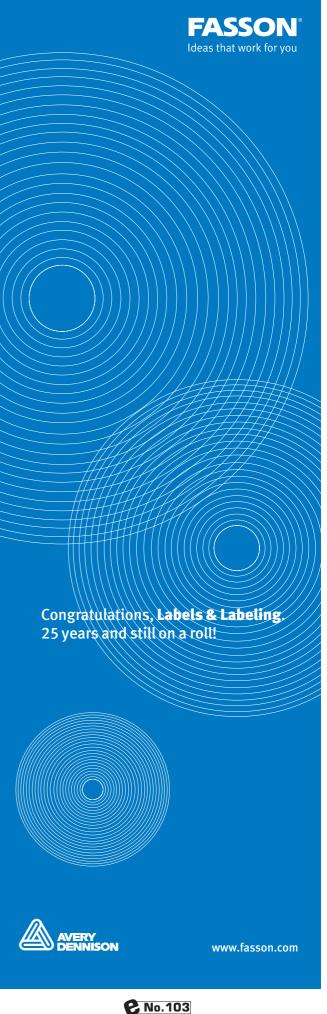


• We envisage a future where flexographic printing provides unparalleled process control • •

Bob Dalton













No.130





What we see in the market is a very broad range of quality levels produced by flexographic printing. This broad range causes confusion in the market about the consistency of flexo and when to use it

'Strategic cooperation with converters needs to be strengthened in order to streamline product and service development together with other players in the value chain, including end users,' he says. 'Furthermore, active development of new intelligent labelling solutions is needed to meet the future demands of product authentication and online supply chain management.'

Unparalleled process control

Perhaps unsurprisingly, global origination and digital technology suppliers — especially in the pre-press field — see the future of the industry in somewhat different terms to the labelstock suppliers. To them it is a future where interconnectivity and the Internet become ever more powerful tools.

At Creo, the world's largest supplier of pre-press solutions, offering a specialised computer-to-plate system for the label market, Bob Dalton, product manager of the ThermoFlex product line of flexographic CTP devices for Creo Inc., envisages a future where flexographic printing provides unparalleled process control and is the unquestioned leader and standard in tag and label printing.

'This means eliminating variability and streamlining the entire production process. It also means treating the production of flexographic print as a scientific, repeatable, manufacturing process, including not only prepress and press activities, but also all activities from concept to converting and delivery.

'In prepress and printing today, flexography provides tag and label repro houses with a high degree of flexibility. Flexography allows them to differentiate themselves based on the application of a unique combination of variables to achieve a high-quality printed product. Although flexibility is positive in this sense, it has a negative impact on the industry as a whole.

'What we see in the market is a very broad range of quality levels produced by flexographic printing. This broad range causes confusion in the market about the consistency of flexo and when to use it. The high level of flexibility also increases the overall cost, making the market less efficient and thereby rendering flexo less competitive than it could be, relative to other technologies.

'In the future we believe there will be fewer choices in terms of printing forms, while the size format flexibility that is currently available to package and label buyers is maintained.' Continues Bob Dalton, 'This will be difficult for many stakeholders to accept, as we have grown used to the flexibility of our chosen printing process. If we make the right choices about standardisation, however, we will not lose any of the important aspects of flexibility, and we will eliminate its costly aspects.

'In the future we will see a label and packaging world fully standardised on open connectivity standards such as Portable Document Format (PDF) for graphic communications and Job Definition Format (JDF) for data communications, as well as continued use of the Internet and web-based tools. Leveraging these standards eliminates data redundancy and dramatically increases efficiency in communications and prepress operations.

'Once the standards are in place, we can expand on the current trend toward integration — not only by integrating conventional data, but collaborating across organisations and between geographic locations. We cannot forget that we work in a global industry, where our job is ultimately to assist consumer product companies and retailers in the business of brand management around the world. Effective brand management requires unparalleled process control and very quick responses to market trends and current events.

'Now and into the future, we will see the relationships among consumer product companies, repro houses and converters become tighter and tighter. This will likely include continued consolidation in the market, as well as integration—in the form of partnerships and alliances—as these major stakeholders in our industry work toward improved process control, reduced cycle times and reduced costs.

'Integration will also take place within printer/converter shops as tools become available that allow the sharing of information between traditional back-office systems and production workflow systems. Historically and up until today, the content production workflow and the job information workflow (which includes estimating, job entry and tracking, inventory control and billing) were managed separately. The wall between these environments developed naturally as a result of different suppliers focusing on production workflow or job information workflow but not both. Today, we are already seeing, and will continue to see, the benefits of information sharing between these two functional areas.

'With standards defined and integration in place, we can start automating processes. There is no better way to



for The brand owners will virtually become the trade shops of tomorrow series René Delbar



improve process control — our ultimate objective — than to automate processes to eliminate guesswork and human error while at the same time introducing quality control procedures to ensure that the automated process is working as intended. In the future, we will see dramatic increases in automation, particularly in prepress and platemaking.'

At Esko-Graphics, with one of the broadest CTP products of any organisation in the world, as well as market leadership in a number of graphic arts and packaging business sectors, the emphasis is also on productivity and complete systems integration — bringing high-end design and trapping tools to the desktop — together with exciting new developments for the future, such as ArtiosCAD.

This innovative feature for example, allows users (brand owners) to take "snapshots" or frames of a new design as they are creating, folding (leaflet/labels) and displaying it on screen. The 3D module then creates a smooth animation of the final design — ideal for demonstrating how prototypes will look and assemble, even appear on the supermarket shelves.

Such developments are just part of what René Delbar, senior vice president marketing of Esko Graphics, sees as brand owners moving towards becoming virtual trade shops and taking on more and more of the conceptual stages of image creation and design, thus impacting on the way label and packaging printers will operate their businesses in the future.

Not unnaturally, brand owners are increasingly looking to have more and more control over their brand image and identity, and how it is presented, with label and packaging printers having to re-think how they can convince the end customer of the value of their services.

'In future,' says René Delbar, 'label and packaging buyers will pay less attention to how their printers actually print a job, but far more attention to how the label printer organises his business, adds value to his services, responds rapidly and flexibly to service requirements, offers remote proofing, file exchange and asset management.

'The brand owners will virtually become the trade shops of tomorrow.'

Consequently, many of the front end operations – now starting to incorporate not only label and pack design but also advertising, TV commercials, 3D visualising, virtual stores for home shopping – will perhaps be undertaken by former prepress trade shops, while printers will control the technology of platemaking and manufacturing operations.

'As a consequence,' adds Mr. Delbar, 'label printers will need to have a greater mastery of plate materials and pre-press technology, quality control procedures, standards, software solutions and all areas of suitability of designs for mass production and how to achieve them.'

More industry and technology

Without exception, all the leading narrow-web press manufacturers see the label industry becoming more complex in the future, through continuing industry consolidation, globalisation and cost reduction issues.

Certainly John Eulich, CEO of Mark Andy, highlights the



Fraditional printing will give way to digital printing as the only profitable answer to the label and packaging market's requirements for cheaper, better, and faster converting solutions



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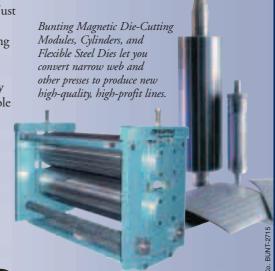


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Closer together in the supply chain !! Klaus Bachstein

growing complexity of the label industry. 'From almost purely pressure sensitive labels, the narrow web converting industry is moving toward the supply of virtually any kind of label (shrink, sleeve, cut/stack, thermal transfer, PS) as well as moving toward more traditional flexible packaging and folding carton production. The drivers for this diversity will continue to be the search for economically viable niches.

'Consolidation in the industry will continue, but should actually accelerate at some point. The number of very small companies will be substantially reduced. The mid-sized companies will either become the seeds for acquisitions, or will be acquired.

'The largest companies will become global suppliers to the global consumer products companies (which is one driver for consolidation). Beyond supplying global purchasers of packaging, the industry will remain essentially a "local" business, e.g., supplying to regional or local buyers of packaging. Cross continent alliances with other converting companies will be one means of being a global supplier, but it won't be the most efficient or preferred by buyers.'

In terms of where label production technology is moving, John Eulich sees 'Any and all equipment will become more user friendly, more productive, and more electronic. Electronics will help with productivity (more running time, less waste) but will complicate the user-friendly side of the equation. Mechanical equipment is inherently easy to understand and maintain. Equipment designers will need to be very conscious of the complexity that can be built into a machine for the sake of flexibility.

'As the industry changes to produce a wider variety of products, converters desire more flexible equipment, both in terms of substrate and process capabilities. Machine developments will continue to move toward greater flexibility. The trade-off for converters will be an increase in the complexity of their operations. As the industry matures, it will be essential that businesses focus their manufacturing capabilities to avoid the expense of complexity by trying to be all things to all people.

'Traditional printing will give way to digital printing as the only profitable answer to the label and packaging market's requirements for cheaper, better, and faster converting solutions. Digital printing systems/devices will get faster and cheaper, taking market share from conventional printing machines. However, conventional printing presses as we know

them now won't go away. They will continue to play a role, albeit diminishing as the years go on.'

For Klaus Bachstein, CEO of Gallus Group, the future is very much to do with creativity and innovation — something which he believes the label industry has been excellent at over many decades — and about understanding the roll-label sector.

'In my view' says Klaus 'the roll-label industry has for some years been going through a process of globalisation and consolidation — and will continue to do so. Globalisation as such is already a fact and is driven by many factors, like the reduction of trade barriers, global manufacturing and distribution by global brand conglomerates and distribution chains (for example, Unilever, Procter & Gamble, Coca Cola, Nestle, Walmart, Carrefour, Tesco, and the like), and the impact of low cost and highly efficient communication means, like the Internet.

'Industry consolidation can be observed in several ways,' explains Bachstein, 'this can be seen in small to flat (or even shrinking) growth rates in recent years for the self-adhesive label market in major regions like the US and the UK. Then there is the trend towards dominance of global players at every level of the supply chain — from end-user, to label converter and industry suppliers — as well as continued cost pressures on all levels of the supply chain.'

So what do these trends mean for the press supplier? 'Our aim,' says Klaus Bachstein, 'is to support converters coping with the trends by, firstly, allowing them to create value through the presses and services that we supply. The Gallus platform press concept for example, provides maximum investment security, and enables future adaptation of the press as the need arises. These new needs may be new application or new/future press requirements, or customised service packages like printer training programmes or common product development packages. All of which support the converter in achieving high productivity, but with low complexity.

'Secondly, technology support allows converters to be cost leaders. With the ongoing trend of decreasing job/run sizes, the requirement for high press uptime is eminent. Our aim is to bring further contributions to the reduction of set-up times and wastage, while current and new technologies — like servo drive technology — allow us to increase automation and the printers' efficiency.

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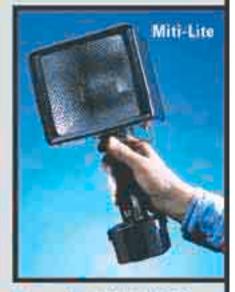
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Frofitability lies not in the process, but in how short the idle period is between processes!

Lars Erikson

fault finding processes and on-line training programmes, storage and transmission of job and set-up data from one location (press) to another will lead to new levels of productivity.

'Finally, our aim is to allow converters to find throughout the world the same high class consultancy and service competence of the Gallus Group in local organisations.

'As far as the label industry is concerned,' concludes Bachstein 'it will have to learn to work closer together throughout the whole supply chain — from imaging, plates, inks, substrates, presses, drying technology and converters through to dispensing and application and the end-user — in order to further drive down costs, although hopefully not the margins.'

Like the other two key global press manufacturers, Nilpeter also sees continued globalisation as a fact from which the label industry is not exempt. 'Globalisation brings transparency' says Lars Eriksen, president of Nilpeter 'and introduces other competitive factors to pricing. The industry has to fight on service, quality and innovation to provide the necessary profitgiving structure to the market place.

'Converters will also continue to face shorter and shorter runs as product life cycles decrease. In turn, this means that press manufacturers will need to provide even more flexibility than is currently offered. For Nilpeter, this is achieved through our patented Platform Technology, which in its upmost form will enable reconfiguration of the press from job to job — or even during jobs. To achieve you cannot be bound by process, but must have the possibility to change printing and converting processes according to the actual need. Profitability lies not in the process, but in how short the idle period is between processes.'

Certainly, Nilpeter believes that products will become more application orientated in the future, but with an open architec-

ture that will allow for adaptation of the press to the market needs. Customisation of presses will be the standard. 'We will choose our standard units,' comments Jakob Landberg, Nilpeter sales director, 'but the press configuration will be chosen by the converter, with the end result based on the application need. Our role will turn even further in the direction of software, training, consultancy and as a provider of solutions — rather than being mere press suppliers.

'Also, we expect the borders between printing technologies to crumble and vanish. Why choose either flexo or gravure for flexible film when you can have the benefits of both. Even single labels we expect to grow in complexity. And digital will be combined with conventional.'

According to Nilpeter, branding in a global market brings a worldwide demand for identical appearance, and a need to enhance the repeatability and conformity of all processes in the labelling (in its widest sense) chain. 'We expect this to favour the offset process in the blue chip segments.'

'Packaging will become labels and labels will become packaging!' adds Jakob Landberg. 'Packaging will become an integrated part of the product — and will add value to the product. Labels will become a very broad spread of means to identify and brand the product. We will see many more labels in the form of wraps, shrink sleeves and flexible films. Both from a design and resource point of view mono web will grow faster than laminates.

'In terms of the converter, we will see a few global labelling providers in the future and a vast number of small ones. The neighbourhood printer will serve local products, whereas the blue chips will source from providers that work cross border. This is already the case, but we will undoubtedly see this intensified in the future.'

last moment in the supply chain
Christian Menegon





for UV ink jet printing in the label industry printing in the



The digital future

Picking up on the digital aspects already mentioned by Mark Andy and Nilpeter, Christian Menegon at HP Indigo, sees the label printing world morphing into one of shorter runs, customisation, speed and variable data. Just-in-time (JIT) production entails that labels will need to be printed as quickly as possible with maximum flexibility and minimal waste. Optimally, the label should be printed at the very last moment, dramatically — but positively — impacting the supply chain. Increased security concerns are putting new pressures on converters to devise tamper-proof features to keep products safe.

'To get a leg up on the competition and meet these and other growing customer demands, label print shops need to embrace the digital printing paradigm as quickly as possible. At Hewlett-Packard, a technology leader in the industrial label printing market, we are now providing the tools to do just that with the latest developments and innovative digital presses, finishing options, workflow solutions and supplies.'

Certainly, independent market research from the likes of PIRS and GAMIS indicates that within the next three years, 40 per cent of all labels printed worldwide will be printed digitally. Also reported was a telling statistic from key peers in label manufacturing: 45 per cent of those contacted felt digital printing would be a 'very important factor' in their businesses and the industry by 2004.

'It's no secret that long-run work is eroding and customers are asking for smaller runs, delivered faster and cheaper,' adds Christian Menegon. 'In fact, 67 per cent of label manufacturers polled in the previously mentioned study felt that short-run capability would be a "very important factor" by 2004. These demands are geared to give customers' customers visually appealing reasons to pick up products and meet ever-evolving customer tastes. If printers are geared to help them do that, they stand to gain — in both loyal customers and larger profits. The time to enter the world of digital printing is already now — not sometime in the future.'

HP of course, already provides a unique and evolutionary digital printing platform for label production called the HP Indigo press ws (Models ws2000 and ws4000), which are designed to handle the needs of today's and tomorrow's converters. Both these presses enable high quality labels to be printed on demand, with full customisation, in short to moderate runs, as brands increasingly require. Both also streamline the label printing process by eliminating the need for films, plates, and set-up, while offering the converter a wide range of colour, variable data and finishing options. It is therefore easy to see why integrating modern digital presses today is an intelligent business for future demands — either as a complementary solution to an existing flexo press investment or as the cornerstone of a new digital printing business strategy.

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for the whole narrow-web converting industry has an exciting future, which will be more diverse, more complex, and will operate and perform in ways that will be very different to the industry of the past

was initially sceptical.

'Now' says Akzo Nobel Inks global product manager, Niklas Olsson, 'our constant review of new technologies highlights a key future for UV ink jet in the label industry. We are therefore already reviewing the technology to see if we should dedicate the necessary resources to it. New technology will only be successful if the whole network is synchronised. We intend to take a proactive role to lead this integration process for a successful future in the label industry.'

Whatever can be processed will be

Like most other industry leaders, Gerhardt Engraving see the whole market changing. 'Label producers are not just producing labels any more,' says Jørgen Gerhardt, 'but whatever product that can be processed in line on a narrow web press is now being produced by today's converters. That now includes gaskets, seals, pharmaceutical products, folding cartons, intelligent labels, alarms, electronic components, automotive parts, and much more. This tendency will undoubtedly grow in the coming years as converters try to fill their growing machine base — with all sorts of new products.

'In terms of dies,' says Gerhardt, 'we have already seen a major shift to flexible dies and magnetic cylinders — and tools supplied in one to two days. Already, all major European label producers have discovered the benefits of this evolution. We now expect the rest of the world to follow this pattern of change. Volume runs are getting even smaller, and required



just-in-time. Faster supply, of ever more reliable tools, world-wide, will be the trend for the future.'

A consensus for the future

Having looked at the major issues of the industry, and talked to many of the key industry leaders, the question arises as to whether there is any real consensus on the future of the label industry and where it will be in 5, 10 or more years time?

The answer is undoubtedly yes. There are common issues or topics that continually arise to provide a picture of the future — albeit from different supplier perspectives — from which everyone in the industry should be able to gain strategic analysis for business and industry development. These issues are highlighted in the summary analysis that has been provided.

Undoubtedly globalisation and consolidation in the world of labels and label customers will continue to grow. More and more products will be produced on narrow web converting lines, expanding the industry far beyond pressure-sensitive labelling – and becoming ever more complex to manage.

Certainly, the way label businesses operate will continue to change significantly in the years ahead, with computers, the internet, supply chain management and new levels of service becoming critical elements of future growth. Speed and agility will be the essence of success in the future of this fast changing label business.

Undoubtedly the label industry still has the potential for future growth and profitability. More precisely, the whole narrow-web converting industry has an exciting future, which will be more diverse, more complex, and will operate and perform in ways that will be very different to the industry of the past.

Challenging it will be. Exciting perhaps. Profitable hopefully. Let's see what the next 25 years brings. ■

Clive Smith (I) presents the Label Industry Man of Acheivement Award 1992 to R Stanton Avery, founder of the pressure-sensitive industry

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Flexo



What do the top industry suppliers see in their crystal ball? Key highlights from industry leaders' thinking on the future of the industry



The future of labels

- There will be further globalisation and consolidation of end-users and industry suppliers, as well as the emergence of the first global label converter groups.
- An enlarged Europe will become the largest single market for pressure-sensitive materials, with Asia becoming a third major label economic and market region behind Europe and the US.
- The pressure-sensitive industry will continue to grow worldwide achieving growth rates of 5 per cent to 7 per cent in the foreseeable future.
- Promotional and logistics applications for labels will have real growth potential globally, along with synthetics markets.
- Technology transfer in label materials, technology and applications will accelerate across the whole global market.
- Speed will be the essence of success in the label business, and logistics and service will become critical elements in the industry's future.
- The Internet and computers will play an ever increasing role in the way the industry operates and services its customers.
- The industry will have to further develop its performance in supply chain management, with a customer driven focus.
- Active development of new intelligent labelling solutions will be needed to meet the future demands of product authentication and on-line supply chain management.
- Flexographic printing will develop to provide unparalleled process control and as a scientific, repeatable, standardised, manufacturing process.
- Consistency in process control, and very quick response to market trends, will be required for the industry so as to provide effective brand management services.
- Tools will become available for the greater sharing of information in the manufacturing and supply chain
 and will need to be used by the label industry.
- There will be a dramatic increase in automation in the label industry particularly in pre-press, platemaking and presses.

- Label and packaging buyers will in future pay less attention to how printers' actually print, and more attention to how the label printer organises his business, adds value to his services, and responds to customer requirements.
- The narrow-web converting industry will become ever more complex and diverse in its operations, moving from almost purely pressure-sensitive label production so as to incorporate all kinds of labels and packaging.
- Whatever products can be processed in-line on a narrow-web press in the future will be, including gaskets, intelligent labels, electronic components, automotive parts, seals, alarms, etc.
- Production technology will become more userfriendly, more productive, more electronic and more flexible.
- Traditional printing will eventually give way to digital printing as the only profitable answer to the label market's requirements for cheaper, better, and faster converting solutions. Conventional printing will still have a place.
- Remote diagnostics and servicing, on-line fault finding and on-line training, storage and transmission of job set-up data, etc, will lead to new levels of press productivity.
- The platform press concept will provide maximum investment security, with maximum press adaptability to market and application needs.
- The label industry must learn how to work closer together throughout the whole supply chain to further drive down costs – and improve margins.
- Labels will develop to become a broad spread of means to identify and brand products. Packaging will become labels and labels will become packaging.
- The time to enter the world of digital printing is now not sometime in the future.
- UV ink jet printing will have a key long-term future in the label industry.
- Faster supply, of ever more reliable press tooling, worldwide, will be a trend for the future.

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Release properties track end use trends

Label printers/converters and end users traditionally pay little attention to the up-stream process of coating the release liner with silicone. Yet, as **Loretta Jones**, associate industry scientist at Dow Corning Corporation points out, technology developments here are critical to the laminate's performance right thru the value chain

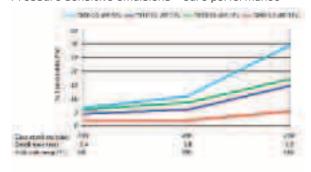
any distinct processes go into creating pressure sensitive constructions, and some, like the early step of applying a silicone release coating, may seem distantly removed from the final step of applying a label. In reality, all the processes and materials in making and using label laminates are interrelated, and a change in one impacts the performance of all the others. That is why it is critical for a silicone release coating supplier to study market and technology trends to understand and anticipate new customer requirements throughout the supply chain.

Market trends

Trends affecting end users have an impact on every step leading up to the label's final application. One consistent trend throughout the supply chain is the need to reduce cost through all possible means. This includes improving the efficiency of old processes and supply channels, along with developing new materials, processes, and product designs.

With end users competing for consumers' attention, attractive labels are critical for brand differentiation. Filmic release

Pressure sensitive emulsions – cure performance



liners are currently used in only nine percent of the label sales, but filmic labels are the fastest growing market segment due to their versatility and appeal. This is driving development of new processes and materials for label laminates.

The converting industry is somewhat fragmented, with little concentration of purchasing power and a variety of technologies. Even so there is a consistent trend toward higher converting speeds that is driving demand for more versatile materials to help reduce the frequency of changeovers.

Today's market is seeing consolidation of laminators, driving investments in capacity to increase efficiency and economies of scale. This means laminators, like converters, are looking for more versatile products and fewer changeovers. Today's laminators are willing to push the limits of processes and construction parameters to control costs and so are asking for more robust silicone release coatings. The role of liner suppliers is shifting more toward production of specialty and lower volume release liners. Likewise, specialty laminates are being made by facilities with more versatile equipment and processes.

Requirements for higher speeds and lower costs put demands on silicone coaters, too. They are looking for coatings that deliver similar performance at lower silicone coat weights. They also need faster and more efficient processes. Coating films or polycoated papers requires silicone coatings that can cure at lower temperatures. Solventless silicone release coatings account for about 60% of the silicone release coatings market in the world, and that share is growing. The use of emulsion silicone systems, while targeted to specific applications, is also growing. Recent technological advances in both these systems are a direct result of changing user requirements.

Silicone emulsions

The most common chemistry for emulsion silicone release





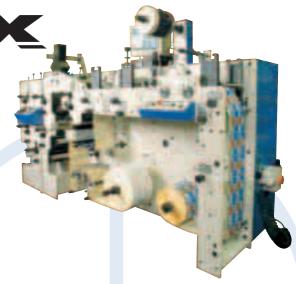


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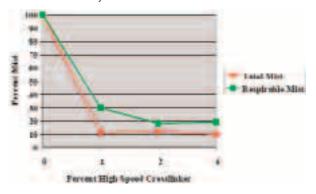
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coatings is based on a platinum catalyst. Today's products offer outstanding cure performance (faster cure at lower temperatures) for pressure sensitive release systems. They also allow coaters to achieve lower release levels or to modify offmachine release levels for an extended range of performance characteristics.

Silicone emulsions are used for most food release applications today, where on-machine siliconizing is common. The newest emulsions offer faster cure, improved runnability, and premium release for baked goods. They generate less dust, reducing build-up in the dryer can section. Development work focusing on improved runnability for on-machine use has been facilitated by the use of pilot facilities which mimic the drying processes encountered on paper machines.

Continuous improvement in formulation and availability of platinum-based emulsions is good news for customers, whether they are new users or familiar with earlier emulsion technologies. New platinum-based systems can be processed at higher line speeds because of superior cure performance, and avoid regulatory issues related to the catalyst in tin-based systems.

Thermal solventless systems

Development efforts focused on popular thermal solventless silicones are yielding benefits in terms of speed and flexibility. One area is that of delivery systems. Batch and meter mixing systems allow users who want customized release coatings to reduce bath size, thereby reducing waste. Such mixing also permits the use of a variety of other components so more adjustments can be made using a smaller number of base coating polymers. The use of smaller batches reduces the demand for bath life, allowing the use of formulations with lower inhibitor levels, and thus resulting in faster curing systems. A significant advance for high volume, high speed coaters is the use of additives or crosslinkers that diminish the mist generated at the coating head. Dow Corning was the first to develop and commercialize a family of "high speed crosslinkers" for use with thermal solventless silicone coatings. These materials reduce maintenance time, and improve working conditions and product quality. New developments are focusing on the optimization of polymer and crosslinker architectures to allow formulation at lower platinum levels to address the demands for lower cost materials.

The development that is perhaps most significant to the marketplace is that of new silicone systems for filmic substrates, particularly polyester (PET) which is used more than any other film for release liners. A new thermal solventless material developed by Dow Corning offers excellent anchorage to unprimed PET both immediately off the coater and also after aging. Anchorage was demonstrated with both accelerated aging tests at elevated temperatures and humidity, and six month's aging at room temperature. This anchorage performance means the new material can be used on unprimed films, resulting in significant cost savings. The new coating has demonstrated stable release and also eliminates the need for corona treatment, resulting in improved coated film appearance.

Development work is underway on solventless release coatings for low temperature films: polypropylene and polyethylene. This involves using reactive polymers and crosslinkers, optimizing platinum concentration and SiH:Vi ratio for cure performance and anchorage. Results to date demonstrate excellent cure and anchorage and new materials may be on the market by 2004.

Relevant testing

Given all the steps required to create a finished label, it is easy to assume a silicone manufacturer is far removed from the end customer. Yet, as stated earlier, any variation in process or material can impact overall performance. How can a silicone supplier be sure their testing is relevant to the customer's ultimate outcome?

To answer this question, Dow Corning tested actual laminate constructions and then correlated results to the company's standard laboratory materials testing. Four solventless polymer/resin combinations were used to construct the same label laminate construction on a commercial coater. The four represented a range of combinations typically used in label laminate construction. These samples were subjected to tests designed to demonstrate their performance in end-use applications. The tests included release by a variety of configurations and speeds, dynamic mechanical analysis to compare rheological properties, and actual label converting on a commercial press. The results confirmed that the laboratory tests carried out to evaluate material properties could accurately predict converting performance.

Conclusion

Trends in new label designs and materials as well as changing performance requirements for converters and laminators all have an impact on the effectiveness of silicone release coatings. Coating manufacturers are working to keep ahead of the curve by developing materials that can be used with today's substrates and adhesives, keeping up with demands for higher line speeds and faster cure at lower temperatures.

0 / 0 **(X** June/July 2003

Etiketka/Lab



Andrei Lapshin, general manager of Sokolniki
Expo Centre (I), sign the joint venture agreement
Below right: Angelo Depietri (r), regional general
manager for Eastern Europe, Avery Dennison Roll
Materials Europe, with Valentina Vishnevskaya
and Andrei Lapshin

This year's Russia Label Show was an undoubted success, reflecting the continued dynamism of the pressure sensitive market in the CIS. L&L reports on the event set to become part of the Labelexpo series of shows next year

elshow 2003

his year saw the ninth Etiketka exhibition in Moscow, and the last to have that name — as from 2004 it will be called Etiketka/Labelexpo and will be run jointly by the present organisers and Tarsus Group, organisers of the world-famous Labelexpo shows in Europe, America and the Far East.

The show got off to a good if slightly delayed start with drum majorettes heralding the opening ceremony presided by Andreï Lapshin, GM of the Sokolniki Expo Centre. Among the guests of honour at the ceremony were Angelo Depietri (Avery), Igor Smirenny (Soyuzupak) and Svetlana Krzhizhanovskaya (Ministry of Industry). Yevgeny Margolin of the Ministry of Mass Media congratulated the organisers on their success 'Particularly at a time when the exhibition business in Russia is experiencing certain difficulties'.

Self-adhesive laminates

A discussion during the Etiketka conference (organised by AWA and held concurrently with the show) revealed the wide differences between experts on the size of the Russian market. Corey Reardon, giving an overview of the Russian market, put total sales of self-adhesive roll stock in Russia, based on his own extensive research, at 63 million m². Not so, said a voice from the back; Raflatac's man in Russia put the figure at 85 million m². When two acknowledged experts can disagree by as much as 30 per cent on total market size, it pays to treat all market statistics with caution. But whatever the actual market size, all agree that is growing very fast.

Avery flying high

As one of the official sponsors of the show, Avery was very much in evidence at all the public forums. The newly created post of Country Manager (Russia) is held by Nikolai Moskalchuk, who presented a paper at the conference held alongside the show. The Avery stand at the show took as its theme 'FassonJac: the best of both worlds' — as offered by the recently-united product ranges and by their local service partner Artmark Label Systems, now also offering the new, fast delivery Fasson Rapid-Roll service for non-adhesive labelstocks. The Jackstädt network, which was based in Saint Petersburg, has been swallowed whole, and Fasson/Jac materials are now distributed from three Avery/Artmark slitting stations, including one in Rostov to serve the industrial areas of the Don basin.

No market share figures are available for the Russian self-

adhesive laminates market, and if they were they would probably be less than 100 per cent reliable (see above). It is clear nonetheless that the Fasson/Jac and Raflatac brands together have a very high proportion of the total market (there is no local production). Itraco (a trading company which supplies almost everything a Russian label printer could dream of) offer self-adhesives under the Intercoat brand, and Maratech (who buy and sell 'reprocessed' and slightly off-spec grades) were both enthusiastic about their prospects, but it is unlikely that their tonnage adds up to much when compared with that of the two market leaders.

Moscow-based Double V Company represents Italy's Arconvert, which makes and sells in Russia a wide range of papers including self-adhesives. Says Double V's Galina Nikulina, 'We have some good business here in certain niche markets but we cannot yet offer the same service and delivery times as Avery or Raflatac'.

Another label paper supplier well established in Russia is the Finnish group Ahlstrom. Their stand at Etiketka was mainly promoting the non-adhesive label papers widely used for beer and beverage labels, although some self-adhesive materials were offered. Ahlstrom is also one of the very few Western companies in this field to have set up manufacturing in Russia. At present it is limited to manufacture of paper cores, but more ambitious projects could follow

Another Finnish company present at Etiketka was Bang & Bonsomer. With offices in Saint Petersburg this trading company supplies a wide range of materials including holographic papers, metallised label papers, hot stamping foils and adhesives. Product Manager Olga Taushkanova made light of the increasing competition on the Russian market: 'We have top-quality suppliers including UK's API Group and Rohm & Haas from Germany, and we are expanding our business year by year.'

Press Manufacturers

As befits the doyen of print machinery companies in Russia, Heidelberg took the biggest stand at the show (virtually a whole hall), and demonstrated equipment including a Gallus EM 280 press (UV flexo/rotary screen) equipped with the new hotfoil stamping unit. Staff on the stand were resolutely optimistic, emphasising the large number of new entrants into the Russian label converting sector. They admitted however that the good old days of "never mind the price, feel the quality" are probably

66 An interesting reflection on the changing nature of the Russian market was the emphasis on imaginative financing packages for Russian investors. Out have gone the suitcases full of dollars and in come the smooth bankers talking of balance sheets and ROIJJ



Gallus EM280 UV flexo press with new hotfoil unit

gone for good. Says Heidelberg's Ashot Akopov, 'Yes, we are still market leaders, and probably even stronger now than a year ago. Despite the fact that we have sold fewer presses last year that the previous year, our competitors suffered even more. This is probably due to the current general situation on the local market. As in the past, we rely on our good sales network good service, and the really excellent reputation of the Gallus brand name'.

An interesting reflection on the changing nature of the



More sophisticated marketing will drive PS innovation

Russian market was the emphasis, this year, on imaginative financing packages for Russian investors. Out have gone the suitcases full of dollars and in come the smooth bankers talking of balance sheets and ROI. During the show Heidelberg and Gallus, for example, along with three major Russian banks, hosted a round table discussion attended by Russian printers. Avery's Credit Manager Ewa Wedell went so far as to say 'This is the first time I have ever attended a forum where banks showed themselves to be really keen to lend money to customers.' During the show Heidelberg/Gallus also held a workshop 'UV-technologies in offset and narrow-web flexographic machines', and organized a round table addressing ordering spare parts for Heidelberg equipment.

The Russian narrow web equipment market is still very much dominated by big importers/distributors who aim to secure as many exclusive dealerships as possible. One of the biggest of these groups is the German/Russian ITRAKO, based in Saint Petersburg and with regional offices in some 20 other major cities. Among the many companies represented by this distributor is Nilpeter, and the FA3300 flexo press shown on this year's Itraco stand attracted considerable interest. Also displayed was a 3500 model hotfoil stamping machine from UK's Newfoil. Itrako's Communications Director Sergeï Kalinin said, 'The range of equipment and consumables at Etiketka 2003 is practically the same as last year. But there are a lot of clients, and it is an effective show for us, I would even say successful. For example, we've sold a whole set of equipment from the exhibition to the Stavropol Printing House (Stavropol is a town in Southern Russia, just North of the Caucasus. As for the services provided by the organisers, they are much better this year.'

Like Itrako, the Moscow-based Variant company attempts to be a one-stop shop for Russian printers and converters, representing among others, Spilker, Zecher, Stork, Burton Engineering, Elite Cameron, Recyl and — last but by no means least — Mark Andy. Variant's boss Vladimir Boulat is quick to point out his company's success in installing Mark Andy presses in Russia (over 25 sold so far, including the 5-colour flexo model shown at the exhibition). But Boulat reckons that the next boom market for label machinery could be the Ukraine, where Variant now has offices and service facilities.

Although this year, there was no Ko-Pack press on the stand of their distributor YAM International, a company pokesperson was able to confirm that both Ko-Pack

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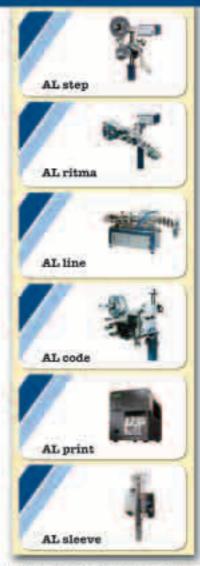


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66 As for digital label printing, HP Indigo, though making its debut at this year's show, was not counting on any immediate sales sensations **33**



KDO has extensive experience of selling into Russia

International and YAM are still firmly committed to promoting Ko-Pack products to the Russian packaging and labelling markets. Glenn Miller, Ko-Pack's Technical Sales Director, commented 'We are currently at an advanced stage of negotiations with several customers in Russia, with one project involving the development of a new Ko-Pack press, to meet a specific packaging application. As concerns the other CIS states, I can confirm that Ko-Pack has recently also appointed YAM as their distributor for the Ukraine'.

One of the biggest crowd-drawers at the show was Gi-Due's



Vodka branding is more important than ever

Combat flexo press. Generally considered as a just-above-entry-level machine, the Combat is obviously in a price category that attracts the Russian label converter. Gi-Due's agent/distributor Apostrof had good reason to be pleased with the show, at which, according to Apostrof's Konstantin Ramburger, many enquiries from new potential customers were received.

Britain's KDO and Focus Label were both showing flexo presses, as was Converpress (Spain). Luis Händler, Converpress' Sales Manager, said 'It's our first time at this show, but we plan to be back next year. We haven't yet installed any presses in Russia but I personally am very optimistic, due to the huge flow of contacts generated by Converpress' first visit to Moscow.'

Klemm GmbH is no newcomer to Russia, but was exhibiting at Etiketka for the first time. General Manager and owner Gerhard Klemm explained how his company intended to get back into the Russian market where it had been well established before the fall of communism. 'Our web screen label presses and finishing equipment are ideal for the kind of specialty label markets that are opening up in Russia now. If our contacts at this year's show prove effective we'll be back next year with a machine.' Sharing the Klemm stand was another newcomer to the show, Schönberg & Cerny, the Vienna-based maker of electro luminescent lights.

As for digital label printing, HP Indigo, though making its debut at this year's show, was not counting on any immediate sales sensations 'It will come,' said sales manager Christian Menegon, 'But it's probably a few years down the line.'

Among the press manufacturers there were some absentees, however. Rotatek and Imer, two Spanish press manufacturers who both showed presses at last years show, were nowhere to be found, and Orthotec and Labelmen (both Taiwan) and Omet (Italy) all had only a token presence. UK's Edale, a successful flexo press manufacturer who exhibited regularly in Russia until a couple of years ago, again decided not to take at stand at Etiketka. Edale's GM Bernhard Grob explained: 'Etiketka's an excellent show, but we have an office here in Moscow and decided to concentrate on one-to-one personal contacts with our existing and future customers.'

Interpreters wanted

There are always some surprises at Etiketka, and this year's show featured a very large stand taken by a company called Beiren Group, representing a consortium of 12 Chinese printing equipment manufacturers, none of whom makes machinery for labels. Sergei Sidorenko of Beiren explained, 'We are a brand new venture, and using the Etiketka show

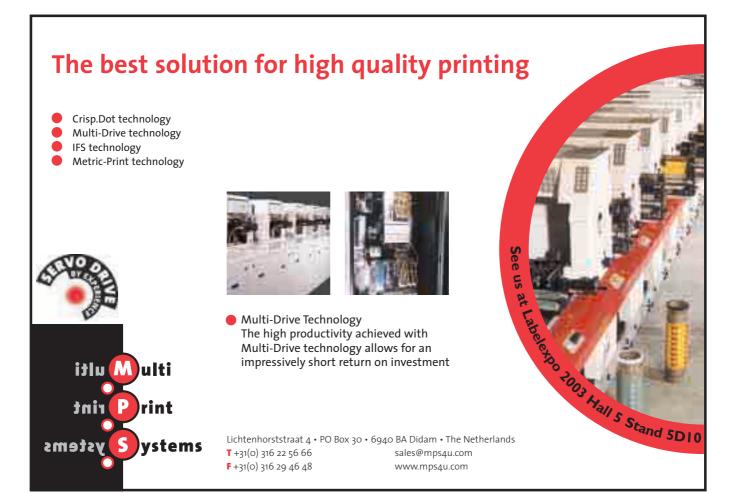


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It will be one of the challenges of the new joint venture with Tarsus (next year's show will be called Etiketka-Labelexpo) to bring new expertise and vigour to the show, and to the Russian label business !!



Luis Händler, Converpress sales manager

to launch an extensive range of Chinese printing and finishing equipment. Our main difficulty at this show is that the technicians working the machines speak only Chinese and most of us speak only Russian.'

Labelling systems

A small but growing number of exhibitors were showing labelling systems. Chief among these were Avery/Videojet and Willett. Avery's Labelling Systems Division has its own independent structure in Russia, and its own local representative,



Forintek. Yuri Mitrokhin, Business Manager of Forintek, reports no sign of a slowdown in market growth, which is still 'Very dynamic'. Willett, with its own offices in Saint Petersburg and also in Kiev (Ukraine), is certainly also among the market leaders in labelling systems.

A special mention must also go to the Moscow-based Pribor Company, which showed what may well be the only genuinely Russian-made machinery at the show. What's more, Pribor is not even a private company, but is attached to a technical research centre. In addition to its range of hand labellers and automated labelling lines, it also, according to its sales brochure, makes – wait for it – 'mini-breweries'.

A Russian private company with 14 years' experience is a rarity in this country where private enterprise was against the law until Mr Gorbachev came along. But that's the proud claim of Kompas-S, which imports and distributes a full range of applicators, label printers, barcode printers and readers. Says the company's General Manager Andreï Bukhtenkov, 'Increased competition? We haven't seen much of it. There's still room for everybody in this kind of product.'

Several other labelling system manufacturers were using Etiketka 2003 to put their toes into the Russian market. Stralfors (Sweden) hopes to use the show to build up a network of agents for its labels and labelling systems. The Belgian company IIMAK likewise hopes to find new outlets for its range of (US-manufactured) thermal transfer ribbons. David Steeples, IIMAK's Business development Manager, said he was 'reasonably satisfied' with contacts made during the five days of the show.

Future challenge

This year's show was a success, there is no doubt about it. Nonetheless the headlong expansion of the late '90s is a thing of the past. Despite the exuberant growth estimates, is the Russian market starting to peak?

Heidelberg's Ashot Akopov sees it this way: 'I agree with some observers who could see this exhibition weakening as compared with previous years. Probably we have now too many exhibitions a year in the Region — Etiketka (Label show), Rosupack (Packaging Show), Polygraphinter (biggest local one), ... and a number of smaller ones.'

It will be one of the challenges of the new joint venture with Tarsus (next year's show will be called Etiketka-Labelexpo) to bring new expertise and vigour to the show, and to the Russian label business.



Will you still be printing me a Valentine?

One of the most significant changes in the label printing industry over the last 25 years is the advancement of added-value as the key to a label printer's success

Even before the first edition of Labels & Labelling twenty-five years ago, the Danish press manufacturer Nilpeter A/S was at the forefront of developments in the label printing industry. And like this highly respected magazine, Nilpeter has continued to move with the times, going from one success to another.

One of the most significant developments in recent years noted at Nilpeter is the increasing need for special-purpose solutions. Label printers offering "added-value" solutions, especially those specialising in a particular area, are very much in demand despite the current economic climate. The crucial advantage for these printers is their ability to offer solutions suited precisely to their customers. Typically, these are companies who face tough competition in attracting consumers' attention to their particular products. On the contrary, printing houses feeling the pinch of the current economic climate are primarily those manufacturing standard-design labels and labels as mass-produced goods.

"

It is no longer sufficient simply to combine different printing methods. Printers require increasingly complete production systems

Lars Eriksen, President, Nilpeter

Similarly, the greatest challenge for nearly all manufacturers of label printing presses has been to weather the storm of external economic constraints. According to Mr. Lars Eriksen, Nilpeter's president, it's a case of producing technical solutions

that give label printers the potential to realize the degree of specialization required. "It is no longer sufficient simply to combine different printing methods," says Mr. Eriksen. "Printers require increasingly complete production systems so they can produce labels with untraditional designs, often for new purposes. We have adapted our thinking to accommodate these developments."

Responding to market developments

At Nilpeter, quick response to market challenges is top priority. Nilpeter's sales director Jakob Landberg says that printing houses' customers are the driving force behind the current trends in narrow web development. Due to the characteristics of the solutions they are required to produce, printing houses are demanding ever more comprehensive equipment and complex configurations. Consequently, the ability to produce presses that meet these demands is crucial to the success of press manufacturers in today's label printing market.

Like press manufacturers, label printers also need to adapt to changing market conditions. This has seen many diversify their offerings, allowing them to move into new market segments. For example, some label printers have begun printing on monofilms, others small folding cartons. This has only been made possible by the advancements in printing technology, which is why areas such as servo technology, in-line combination processes and UV-flexo are receiving closer attention.

The prevailing trends reveal not only that demands have become more diverse, but also that technologies will need to constantly develop to keep up. Nilpeter will continue to play its part in accommodating the market's requirements, delivering solutions that have increased value for printers and their end-customers.



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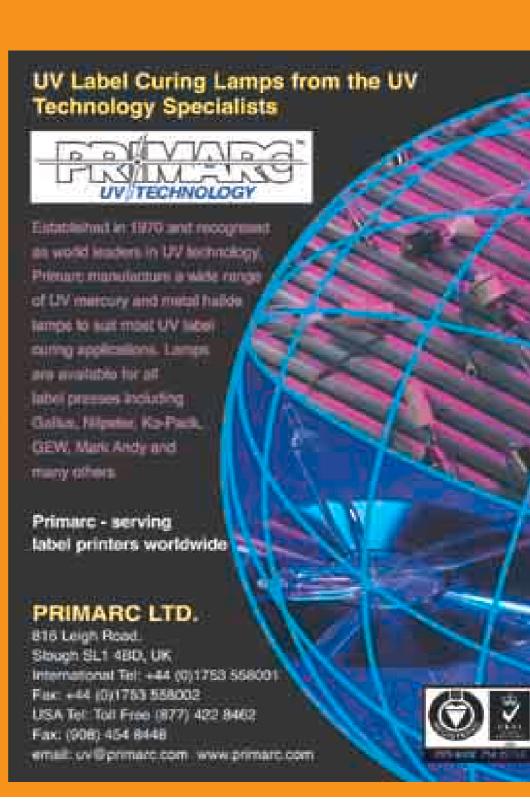
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- Carton converters
- Flexible packaging converters
- Label converters

Inside:

- Rotary die cutting options for folding cartons
- Quality control printing of tubes on narrow web presses
- Printing thin films without chill drums



Rotary options for carton dies

Sheetfed quality cut/creasing of cartons on a rotary press is one of the toughest things to achieve for converters switching to in-line technology. Xynatech's **Jim Redd** looks at the strengths and weaknesses of three diecutting options open to



he converter investigating the move to rotary die cutting of short run folding cartons has three die cutting methods to choose from. A fourth option, solid rotary pressure cutting cylinders is used on some narrow presses but not for short runs. This option is not discussed here.

converters

Crush Cutting with Solid Cylinders

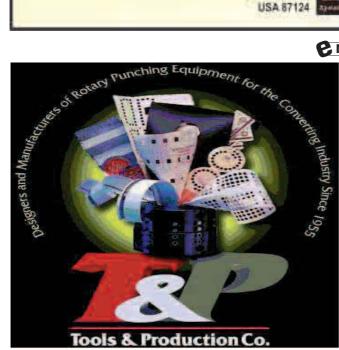
Either direct machining or electrical discharge machining is used to produce these tools. In either case, hand sharpening is required to obtain the required land profile. In some cases cutting and creasing operations are separated and two die sets are used. This is done because cutting dies wear much faster than creasing dies. Normally the upper cylinder has the cutting and creasing lands. The lower cylinder contains the cutting lands and creasing slots. This arrangement is followed whether a one or two die set is used. The advantages crush cutting offers are ease of use and low waste since the repeat length is specific

to the job being run. Waste between the cartons can be minimal. The disadvantages of crush cutting are costs (purchase price as well as shipping and resharpening) and space required for die storage. Make-ready is relatively fast although if tight scores are required, make-ready can be more troublesome. Design versatility is limited. The inclusion of other features such as dual heights, braille or embossing is difficult. Reverse scores are not generally available. Die life is a very severe limitation when recycled board is being converted. This is more evident in the lower hardness steels but is even a factor with the hardest D2 cylinders with Rc values of 62. With SBS, die life is much less an issue.

An actual example may illustrate the limitations of solid cylinder crush cutting. A Central American converter was running abrasive recycled stock on a 26-inch repeat solid cylinder. The cylinder width was 24 inches with bearers. After approximately 200,000 revolutions the quality of the cuts had deteriorated to the point of being unacceptable. The dies were returned to the manufacturer for rework. The manufacturer



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responded that the dies could not be reworked and would have to be replaced. Apparently, the wear was so severe as to make resharpening impossible.

Case Studies

Die System: Solid Crush Cut Cylinder

Carton: Match Box Board: 12 pt., recycled

Press: 24" Chromas Repeat: 24"

Die Life: 200,000 repeats

The rapid loss of cutting was due to the slicing action of crush cutting. Recycled board contains very abrasive TiO2 whiteners to improve graphics. The lands simply abraded away in rapid fashion. This experience has been repeated whenever recycled board is converted. A solid cylinder can be anticipated to last at least 4 to 5,000,000 impressions or more when converting SBS. This would require several resharpenings. One resharpening costs approximately 25-30 per cent of the die's original cost. Typically, a solid engraved die may be resharpened two or three times.

Die System: Solid Crush Cut Cylinder

Carton: Pharmaceutical Board: 0.014" Press: 16" Comco Repeat: 14"

Die Life: 4,000,000 SBS/750,000 recycled

Crush Cutting with Flexible Dies

This option differs from the one above in that flexible dies mounted on magnetic cylinders replace the solid rolls. The combination of magnetic cylinders and flexible dies costs less than the solid crush cutting cylinders and the magnetic cylinders are usable for other jobs. Crush cutting with flexible dies has an advantage over solid cylinders in that most special features are more easily included (for example, embossing) than with solid dies. Make-ready is relatively fast when the quality of the score is low (loose scores). Tighter scores require more time to make-ready. In instances where the repeat does not change, the make-ready can be faster than with solid crush cut since the heavy cylinders are not replaced, only the lightweight flexible dies. The big drawback to flexible crush cut dies is their poor die life. The materials used in flexible dies are simply not as durable as that used in solid cylinders. Flexible dies used for crush cutting are normally in the range of Rc 45-48. Consequently die life with flexible crush dies will be only 20 per cent of that obtained from solid cylinders. Flexible dies can be packed to compensate for wear but this is time consuming as it

requires that the dies be removed and made-ready once again. If not properly done packing can cause die fracture.

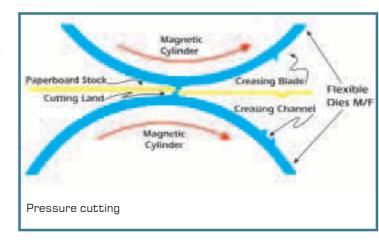
Die System: Flexible Cut Crush

Carton: Pharmaceutical Board: 14-16 PT Press: 16" Comco Repeat: 15" Die Life: 100,000 SBS/750,000 recycled

Crush cutting dies can create shock and vibration problems for the less sturdy presses. Diversifying label converters must proceed with caution when using existing equipment. Stock thickness of 0.025 inches is the upper limit of crush cutting.

Flexible Dies Rotary Pressure Cutting:

In rotary pressure cutting with flexible dies, thin sheets of steel that contain the lands and crease channels mount on magnetic cylinders. The feature of pressure cutting (and its great advantage) is that the lands do not touch. There is always a gap between the upper cylinder lands and those of the lower cylinder. This 'daylight' is usually 20 per cent or less of the board thickness. 'Cutting' occurs by compression of the paperboard to the point of rupture. Creasing involves the pinching of the board between the male blade and the female channel. When partial cutting is required (such as in glue assists and cut scores), crush cutting lands are used. Die costs are primarily a matter of the size of the die. The inches of cut or score rule in the die are of little influence. Die life is a strong point of flexible dies for rotary pressure cutting. There is one U.S. printer running long runs who gets over 7,500,000 cartons per die set running recycled board. A long time user in Europe running both recycled and SBS claimed, 'Basically flexible dies do not wear'. This converter stated that one 6-up die has produced over 8,000,000 cartons and has been made ready 83 times over the past two years. This die is still running and past experi-





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ence leads to anticipation of 3,500,000 to 5,000,000 revolutions before replacement will be needed.

Die System: Flexible Pressure Cut

Carton: Pharmaceutical Board: 16 PT SBS
Press: 18" Propheteer Repeat: 21"
Dies have been made-ready 83 times
Die Life: 1.3 million and still running

As a point of reference, the printer quoted above has run sizes varying from only 300 all the way to 3 million cartons. Cutting make ready is done off line on a module that can be rolled into place. A skilled operator requires twenty minutes or less to mount and adjust a die set. Changeover of his six-color flexo press requires fifteen minutes when all six UV colors and plates are changed. This includes rolling the module into place with the die set in register. In rotary pressure cutting, there is little functional distinction between the upper and lower dies.

This differs from other systems and adds to design flexibility. Single level embossing, cut and crease, perforations, partial cuts (used in glue assists and cut scores) can be obtained at no upcharge. Applications vary widely from flip top cigarette boxes produced from paperboard of 10 point stock (.25mm) to garden supply cartons of 32 point material (.81mm). Plastic and plastic laminated materials can be converted with these dies. In fact, liquid packaging is an important end use. Recent advances include direct imaging (computer-to-die).

The elimination of photographic film in the manufacturing process has resulted in greater accuracy of the dies. This is particularly valuable as it makes registration between the upper and lower dies much more precise. This has reduced makeready times and increased die life. Without the move to C-T-D manufacturing, rotary flip top cigarette carton dies would not be possible. This process improvement has made the production of multiple die heights much easier and less costly. This is important in liquid packaging where it is desirable to have the score lands higher than cut lands since score specification on the blanks stress increased height.

Summary

The converter investigating the move to rotary die cutting of short run folding cartons has three die cutting methods to choose from. The selection of the best option in a given situation should begin with the paperboard to be converted. If SBS is the exclusive material, then all three options should be considered. If recycled board predominates, the decision becomes easier since rotary pressure cutting is the only method offering reasonable die life and thus, cost effectiveness.

Assuming the material is largely SBS and no options are eliminated, then consider the type of work. Are there creases or

other special features such as embossing or braille, multi-level cuts or any other carton design elements that would enhance the package? The presence of certain features such as internal embossing might rule out the use of crush cut solid cylinders. You should be aware that some die manufacturers offer proprietary special features to ease converting problems on certain type packages. (For example, flip top cigarette boxes, blister pack and dosage cards). Make sure the die system suits the carton design.

The cost variations between die systems must be determined. These include storage requirements, die maintenance, packing and shipping (both initial and subsequent). Downtime should also be calculated. These cost factors are in addition to the initial cost of the set required to produce a particular carton's pattern and features. Finally, the prospective user should ask questions such as 'can make ready take place off line?' Would my current customers and prospects really welcome better carton designs or one stop shopping? How will I increase my sales volume and bottom line? Any converter, whether a current or prospective supplier of folding cartons, should consider the system differences discussed.



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Cebal takes control

Converting tubes on narrow web presses demands a high level of quality control. After extensive development work, Cebal Americas has successfully installed on-press process controls to its Kopack machine lines



Operator interface on Genius process control system

n September 2000, Cebal Americas' Shelbyville, Tennessee, facility started looking at new defect detection and process control systems to improve the quality of its printing operations. Cebal Americas is a division of global giant Pechiney, and the Shelbyville plant produces laminated and extruded tubes primarily for the dentifrice, cosmetic, pharmaceutical and personal care product markets for some of the

biggest names in consumer package goods — Unilever, GlaxoSmithKline, Procter & Gamble, Pfizer and Schering to name a few.

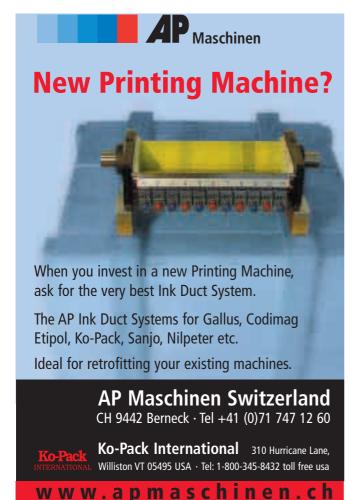
For its laminated tubes, the substrate is a complex plastic and foil-based structure, which is printed and then converted into tubes. At Shelbyville, printing is done in multiple widths on 11 inch Kopack UV letterpress machines.

Cebal has won numerous awards for technical innovation in tubes, and is driven by an aggressive Continuous Improvement program in every aspect of its operation. So the concept of continuous on-press process control made good sense.

According to Bill Zebick, operations manager, 'Customers expect zero defects, and that is our focus.' In addition to ensuring that customers receive high-quality products, the implementation has helped fix other problems in the tubeforming process. According to Ben Hilliard, shift supervisor, 'We were proactive in improving our total system capability, and we have seen significant quality improvement as a result.'

To achieve its goals, Cebal required a system which included automatic color monitoring, on-line bar code verification, and defect detection of spots, such as missing print, mis-registration and offsets. Offsets are a common defect in letterpress printing and are a tough challenge for defect detection systems because they are not always repeating phenomena. Most defect detection and process control systems on the market are designed for either random or repeating defects, not both. Cebal wanted both in its system.

Effective color monitoring to ensure color consistency was also essential. Cebal tubes carry some of the most recognized brand names and graphics in America – Aquafresh, Close-



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Mark Thompson (I), shift supervisor, and Reid Rucker, press operator using the BST Genius system

Up, Crest, Colgate, Arm & Hammer and L'Oreal's Preference. The company wanted to manage press color in real time and to achieve consistently repeatable color from run to run. And it required evidence of this performance.

Additionally, Cebal required a system that could verify bar codes on the press at current press speeds and at higher speeds that will be achieved in the future through the Continuous Improvement process. The company's finished products use a wide range of bar codes, including the typical UPC to 128, I 2 of 5 and pharmacode.

In its drive for continuous improvement, Cebal asked for even more. According to Mark Thompson, shift supervisor, 'We wanted to improve quality, increase our run speeds, and give our operators a tool to make them more confident running at higher press speeds. Sometimes, increases in speed can yield higher spoilage, and we have prevented that from occurring.'

Zebick added, 'Our operators have worked diligently with BST Pro Mark to develop a tool that will give them a competitive advantage in the future. It is rewarding to see their effectiveness improve as a result.'

Bring in a Genius

Early in 2002, BST Pro Mark installed a BST Genius LeX system in the Shelbyville plant for Cebal to evaluate. Cebal's Reid Rucker played a critical role putting the BST Genius through its paces and evaluating it on press. Says Rucker, 'I was one of the most skeptical in the beginning. Now I am 100 per cent for it. Press operators are more comfortable running at faster speeds and have a tool to find defects that might appear. It does a great job on registration, CLOSE-UP and color monitoring is excellent.

identifies offsets spots immediately. BST Genius will pick up both repeating and random defects, and any you cannot see

• We wanted to improve quality, increase our run speeds, and give our operators a tool to make them more confident running at higher press speeds ""

with the eye. Cebal can make a better quality tube now.'

Cebal also is pleased with the powerful on-press color monitoring capabilities of BST Genius. An operator can take a sample of the colors running, and the system generates the RGB color values. They can compare live color with the standard or desired color, and if color starts to change, they get a warning. The operator can then adjust the color and bring it back into spec, and never stop the press. BST Genius provides output on each monitored color, and the data tells the operator if a color needs to be adjusted and by how much.

'I've seen what competitive systems can do, and BST Genius does more,' says Rucker. 'BST Genius gives an alert to color problems before the press is running scrap.'

The system also is effectively monitoring color on very small text, such as ingredients statements. Early on, the plant ran a series of tests to see how well the defect detection worked and to test its limitations. One of the tests involved removing small, three-point text. In another test, a single digit was removed. In each case, the BST Genius system immediately identified the defect.

Cebal was also concerned that most defect detection systems cannot deal with normal process variations such as web drift, substrate stretch, snap-back or wrinkles. The BST Genius system did not have this limitation, according to Brian Patrick, BST Pro Mark director of engineering, due to 'some

> very advanced algorithms unique to our product. These lock onto an image or image area and automatically compensate for web movement, stretch, snapback and more. The BST Genius system has advanced algorithms that compensate for shadows, making it particularly useful for films.'

Cebal also tested the bar code verification program successfully on press. BST Pro Mark's vice president of marketing, John Thome elaborated on the capability: 'Most converters use hand held laser scanners. They are rarely calibrated and samples are taken in a random manner. Six operators will get six different readings, and by holding the scanner a certain way, the devices can be manipulated to give the desired reading. That is a high-risk way to verify bar code quality.'

The BST Genius system in use at Cebal checks bar code quality on a continuous basis during the run, and will read and verify UPC, EAN, I2 of 5, 3 of 9 and many other common bar code symbols. It allows the operator to define the desired minimum acceptable bar code grade and to set alarm points. The system then alerts the operator if bar code quality begins to deteriorate, but before it reaches unacceptable levels. If desired, the data can be fed to any common database program to generate reports and certificates of compliance.

The BST Pro Mark system also has a Root Cause Diagnostic Tool that identifies components of ANSI or ISO bar code quality, such as decode, modulation, defects and symbol contrast. The tool identifies the probable cause of bar code failure and the various corrective actions required for each attribute.

After documenting systems capabilities, Cebal wanted to know the income impact and ROI. Over four months, the company benchmarked results and tracked metrics related to print quality and press productivity that were directly traceable to the process control system. The results with the BST Genius on-press system were then compared with historical data from the same press. In particular, Cebal was interested in knowing whether the amount of product rejected by the down stream QA auditors was reduced, and the impact on press speeds and overall spoilage. The result was better than expected.

'Our target was to significantly reduce in-plant rejections on the line; after four months, we have exceeded our goal,' said Thompson.

The Cebal team has seen the desired press speed increases; and, Zebick notes, 'We have not had a rejection on the line using the BST Genius system in four months. We've achieved the planned performance goals, from both management and the operators' perspectives. The operators now have the confidence they need to run the presses at the optimal speed.'

Cebal insisted that the system be user friendly, and BST undertook extensive training of operators so they could take full advantage of the sophisticated process management tools.

Cebal has now installed BST Genius systems on other Shelbyville presses, and plans are in place to quickly install similar equipment at other Cebal facilities. Zebick says, 'Any company running a printing press must have defect detection or they are throwing money away in scrap. Process management systems are a necessity to meet customer demands, continually drive out waste and control the process.'

While many companies tend to think of defect detection on newer presses, the Cebal installation has shown the impact process control systems can have on older machines.

News in brief

Freeze on packaging innovation

API Foils has launched its new thermochromic foil – a temperature reactive colour changing hot stamping foil that will put a range of attention-grabbing effects at the fingertips of brand owners and printers.

When applied to the thermochromic foil it resembles a transparent varnish, but when cooled to a temperature of below 7°C, the foil is transformed to a vibrant blue. When the temperature of the foil returns to above 10°C it becomes transparent again.

The technology has a number of advantages over thermochromic inks currently available. It provides more flexibility as it can be used on a wide range of surfaces, and is easy to apply using conventional hot stamping technology. The process of stamping also incurs less wastage than that of printing thermochromic ink, and ensures a higher level of gloss and protection, providing long lasting high quality results.

David Jarvis, applications project manager at API Foils, believes the company's new thermochromic foil technology will bring numerous benefits to brand managers and printers. Said David, 'Thermochromic will be especially relevant to the food and drink retail industry, but it also offers numerous benefits to those in pharmaceuticals and security. It gives brand managers the opportunity to achieve true brand differentiation and appeal to the imaginations of their target consumers.

'The foil can be applied onto UV cured inks and coatings, conventional ink printed paper and board, coated paper and board, acetate laminates and self-adhesive papers. It's suited to both fine detail and medium area work, and its ease of use in any application means that printers can accommodate the needs of clients without getting involved with complicated application processes.'

Decoration and protection for Softmints

The unusual pack for Trebor Mini Softmints employs full-length sleeve labelling combining product decoration with tamper-evident protection. The sleeves are applied and shrunk at speeds of up to 180 per minute by a custom-designed line from Turpins Packaging Systems Ltd of Clacton-on-Sea. Located at Cadbury Trebor Bassett's Chesterfield plant, this consists of an individually-adapted Sleevit 125 SL sleeve labeller with a special infeed and handling equipment, a pocket conveyor to hold the product upright and a ShrinkMaster tunnel.

The green tubular plastic container has rounded ends and a sprung closure which is sealed by the sleeve. One end is slightly flattened to provide vertical stability. The multi-coloured sleeve embodies a tear strip and a bar code and the date is laser-coded through the sleeve to provide a permanent record on the container.

0 9 0 Julie/July 2003

UV curing film without chill drums

EW has launched a UV curing system designed to cure heat-sensitive, unsupported filmic substrates on presses without chill rolls.

'With VCP-FILM printers can now UV cure heat-sensitive unsupported light-weight packaging films on a standard label printing press,' says GEW sales director David Horton.

Presses designed to print such substrates are normally equipped with chill rolls beneath the UV lamps to minimise heat at the point of curing. 'VCP-FILM enables such work to be undertaken on presses not equipped with chill rolls,' says Horton. VCP-FILM dryer has its own integral water cooled chill roll, which takes the place of the conventional air cooled flat heatsink. Cooling of the web is more efficient because of the wraparound contact with the chill roll at the point of curing, and low water temperature.

Available in power up to 160W/cm and print widths up to 450mm, the compact VCP-Film units are suitable for films down to 15 microns - subject to register



control on-press.

The system incorporates a small refrigerator to provide water-cooling to control each roller to the optimum temperature for curing, while GEW's 'Cold' reflector, shutter and 'Varipower' controls are designed to maximise UV cure and minimise heat from the lamp. The curing units are mounted in slide-out cassettes for easy access to lamp, shutter and reflector.

Other design features include low-friction bearings, rotary water unions, and close-tolerance precision machining to minimise roller drag and help keep tight register. Each control cabinet provides power for one or two lamps.
No.206

Gi Due targets flexible packaging converters

Gi Due's new FS Combat press is specifically built to use the solvent-based flexographic inks which are traditionally used in the flexible packaging industry.

'Solvent based inks give better adhesion to filmic materials, better shrinkability and in general no cracking effect at extreme film dimension changes,' says joint md Federico D'Annunzio. 'Furthermore they can be purchased at reduced costs against water based or UV flexo inks and remain the reference option for the flexible packaging market.'

The 530mm wide FS Combat has a

completely redesigned interstation drying system. Instead of infra red driers, over-dimensioned double flow air fans have been installed, with infinitely variable power supply and temperature control, allowing production speeds up to 150 meters per minute without solvent retention on the substrate.

The chill drums have also been over-dimensioned to give higher surface exposure to air flow and good web transportation. The tension control remains the digitally assisted DDM system included in all the F – Combat presses. Servo-driven print cylinders, infeed and outfeed, rotary die-cutting and sheeting, non-stop unwinder and rewinder are available as options.

Expanding the shrink sleeve market

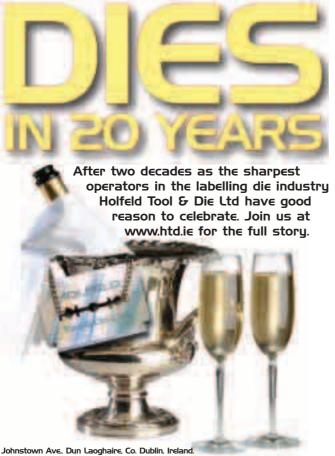
Comco, the packaging division of Mark Andy, held a successful one-day event aimed at educating flexo printers in the fast-growing application of shrink sleeve labels and their markets. More than 150 converters were shown a 16", eight colour Comco ProGlide MSP line producing a shrink label for a popular brand of yoghurt.

The Comco print technicians performed a roll-to-roll print run on Klockner high shrink PVC film using cationic UV inks supplied by Akzo Nobel. The press features a UVTechnology curing system designed for optimal curing without affecting the substrate. Flexo printing plates were 150 lpi DuPont Digital Cyrel Fast.

Jim Mullen of Klockner Films discussed the varieties of shrink materials available, while Mike Buystedt compared flexo ink technologies for these applications. Raul Matos of Karlville Development Group and Ron Ryback of R&R Consulting covered new developments in seaming and looked at what it really takes to do seaming of the printed shrink material prior to application to finished product.

Dave Niemuth of Krones took on the daunting task of reviewing shrink labelling machine technology and its role in the shrink label process. Mike Sullivan of KTI covered butt splicing and the key aspects surrounding the actual sleeving process and John Duzyk of Alliance Labeling described the labelling process, the importance of pre-work and other key issues surrounding the final label and finished package process.





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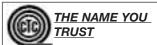


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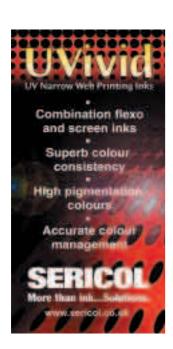
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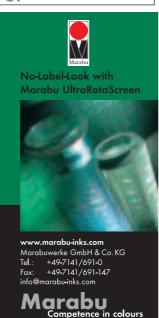
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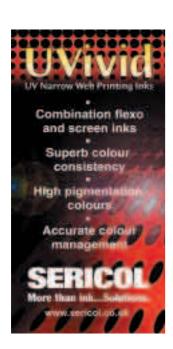
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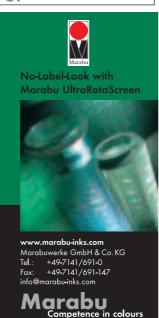
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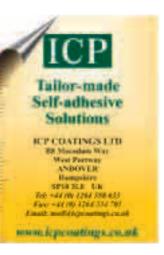
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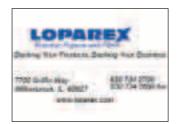
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