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MESSAGE FROM BRYAN COLLINGS

Another summer in the northern hemisphere virtually past and Europe and North America stagnating. Sounds like a recipe for gloom all round but companies are reporting that trade continues at acceptable levels with Asia and South America still providing booming markets. Many companies shed labour during the height of the recession and are now running lean with corresponding margin improvement. As a result, all is not gloom but expansion in Europe and North America would still be very welcome.

With all the new developments that will be on show, a positive mood will no doubt be very evident at the SGIA '11 event in October and we look forward to meeting readers and advertisers alike in New Orleans. Labelexpo and the Viscom series of events will also help to promote the latest technology on offer to European printers.

Our commitment to the spreading of technical know-how is to present this highly desirable magazine to a global audience of users of screen and wide format digital printing systems. We would stress that the only way to receive every issue and make sure you are up-to-date with the latest information and techniques is to subscribe for a total of only €55 / $80 / £45 per annum. See page 65 for more details. You can also find reliable information at our Process Information Centre at www.specialistprinting.com

We at Specialist Printing Worldwide are also working together with ESMA to organise the highly successful GlassPrint 2011 seminar in Germany in November - a 'must attend' event for any company considering or involved in printing on both flat or hollow glass. See page 60 for the impressive conference programme, which is 50% larger than the last event in 2009.

Bryan Collings, Publishing Director,
Specialist Printing Worldwide

DEMAND GROWS FOR SMALLER APPLICATIONS USING WIDE-FORMAT TECHNOLOGY

Checking nested output produced on Roland DG's compact VersaStudio BN-20

In this issue of Specialist Printing Worldwide, you'll see in the Events section a topic which is dear to my digital heart. In the world of wide-format print, my predicted shift to narrower fields is fast becoming reality, backed up by a noticeable increase in smaller-format solutions at FESPA Digital earlier this year. Now coming up we have SGIA Expo in New Orleans planning a special zone for this sector and LabelExpo at the Brussels Expo is also attracting manufacturers formerly more closely allied to the display and sign-making sectors.

Ink-jet print has diversified to the extent that traditional wide-format products are now commonplace amongst the label and packaging prototype fraternity. These machines are now no longer merely the province of the display producer and, with greater opportunity to meet the specific requirements of colour-matched output, there must be few companies involved in print that don't also benefit from the versatility of digital.

In logical terms, the turn to narrower production was certain to happen as the demand for short-run labels and other items has changed. Additionally, personalised book and album covers, decorated iPads and iPhones, gifts and promotional goods fall into this sector. As such, printing machines are now becoming smaller echoes of their wide-format counterparts, with manufacturers like Mimaki and Roland producing desktop units which use UV-curable and eco-solvent respectively.

VDP AND VERSIONING

Wide-format printers, too, are increasingly being used to handle the intricacies of smaller jobs, helped by the ability to incorporate variable data and versioning so that personalised elements can be incorporated into the job. Many of these narrower applications also benefit from metallic ink and clear varnish, thus leading to a value-added product which isn't feasible or practical to output using analogue methods.

It is not only the print element which has led to the rapid increase of narrower applications being produced on wide-format machines. One of the successes which has made the transition into the digital arena so much easier is computerised cutting, whether as integrated part of the overall platform or as a separate device. For some manufacturers formerly involved in the computer-cut vinyl graphics sector, it has been a logical move to incorporate this technology with print capabilities into the same system. Others, particularly in the flat-bed sector, have pursued the route of offering independent units which might previously have been used for routing.

So, the market for narrower applications is gathering pace as increasing numbers of print service providers discover the technology which is available and that the corresponding workflow isn't rocket science. Producing multiple jobs on a single sheet or roll makes perfect sense, particularly when it comes to optimising media coverage. Incorporating contour cutting and, even, creasing adds to the appeal and, now, we have a tranche of solutions based on familiar wide-format technologies that can be used for accurately produced smaller products.

THE IMPORTANCE OF SOFTWARE

However, the element which often gets forgotten in this type of circumstance is the software. Workflow options today include programs to ensure that cutting paths can be added quickly and easily to jobs. Nesting and step-and-repeat are carried out efficiently with the benefit, too, that files being RIPped are smaller because the image data only needs to be used once, no matter how many times it's going to be reproduced. Handling these tasks automatically also ensures accuracy and saves hours of tedious on-screen manual manipulation.

Software also provides the colour capabilities which many struggle to achieve and maintain across various materials using different profiles. Accuracy increasingly is at the heart of pretty much everything we do nowadays and it's played an essential role in making it easier and quicker to take a graphic and configure it for narrow-format jobs on a wide-format ink-jet machine.

Wide-format digital print continues to grow at the superwide end of production with 5m applications becoming commonplace but even these machines are being used more and more for multiple rolls of media, helped by their ability to print up to three different jobs at the same time. This also adds proof to the fact the people want to be able to use a platform that covers all bases, from its widest capacity through to smaller options.

Producing narrow-format jobs brings a far wider range of opportunities to end customers who, hitherto, haven't been able to take advantage of the luxury of high-quality, low cost applications. Not only are the short-run label and packaging sectors benefiting, so are plenty of commercial and industrial specialists and, even, the man in the street wanting a personalised iPhone cover. All these people can join those already taking advantage of digital ink-jet technologies and this will see the demand for smaller jobs continue to increase.

Sophie Matthews-Paul

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Automation makes digital cutting easy

MultiCam's Digital Express high-speed cutter and router

The MultiCam high-speed Digital Express combines high-speed digital registration with powerful routing and multiple knife-cutting technologies in a single, fast, wide-format, sheet-feed or conveyorised cutting platform. Providing digital finishing at speeds up to 177.8m/minute, it provides high productivity for digital printing, packaging, signs and graphics.

MultiCam constructs the table to maximise machine rigidity so printers can take full advantage of the routing side of the Digital Express. It can be used on heavy substrates without sacrificing productivity or cut quality. It also benefits from the high-speed servo-drive system while knife cutting on light substrates. With the wide range of cutting head attachments MultiCam offers, printers may configure machines based on their specific application and production requirements.

Digital Express utilises all-steel, stressed-relieved and precision-milled table construction. With 25mm precision bearing cars, an all-servo drive system and independent Z axes with integrated ball screws and linear sliders, it produces high accuracies with better cutting qualities.

Each system starts out in its raw form from steel plate and tube stock. A high-precision MultiCam plasma-cutting system cuts steel plates to size. Robotic welding technology streamlines production assembly of the base frame and other peripheral components. It features an in-house, custom-engineered, aircraft aluminium-grade extruded gantry. It is lightweight with the maximum amount of rigidity. This becomes extremely important when running at high speeds while making heavy cuts in rigid materials. Any loosening of rigidity creates edge quality degradation, which forces the operator to slow down the machine and reduce productivity.

Other features include 3- to 4-hp router spindle sizes and 18,000- to 50,000-rpm ranges, so that printers can choose the option that fits their production needs and budget best. The EZ Knife cartridge system performs mechanised knife-cutting, creasing and perforation operations for the digital finishing market. It supports tangential drag, oscillating and ultrasonic cutting techniques. ■

Proofing, prototyping and short run label printing from Roland

Roland DG is to show options for the label industry at the forthcoming Labelexpo Europe. Label producers increasingly are using these machines to make proofs and prototypes and to print small runs quickly and easily. All prints can feature special effects including textures, white and metallic colours, and benefit from contour cutting and creasing.

The company's UV-curable print-and-cut machines are suitable for printing on all standard label materials with their LED curing lamps able to work with heat-sensitive materials. The VersaUV LEC-330 and LEC-540 feature CMYK, plus opaque white and clear varnish. This transparent option creates matte, glossy and relief textures, including Braille.

The company will also demonstrate its popular printers/cutters with metallic ink. The VersaCAMM VS series is available in widths from 76 to 163cm, complemented by the new compact desktop VersaStudio BN-20 is 52cm wide. All these machines are able to print hundreds of metallic colours, including gold, silver, bronze and pearlescent tints. The VS machines come in a range of options which feature dual CMYK, CMYK plus LcLm, or six colours plus metallic and white ink. The VersaStudio BN-20 features CMYK and metallic ink and should appeal to the design and prototyping markets.

Roland DG works with a number of software partners. The combination of its machines with specialised software from CGS, EFI, Four Pees and GMG guarantees optimal integration of the printer in a graphical workflow. ■

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New label technologies from Gallus

Gallus says that its ECS 340 has entered its next stage. In 2009, state-of-the-art technologies and construction materials new to the label industry, such as technical granite, led to the creation of a highly productive and innovative machine concept. The new era of cost-efficient commodity label manufacture that was heralded at the time has now become an integral part of everyday operations for many Gallus ECS 340 users.

Numerous innovative further developments have resulted in a wider range of applications for the Gallus ECS 340, with key additional options such as automatic register control, hot-air drying, sheet delivery and other items.

Also new to Gallus is the EM 430 S with its high-tech shorter web path in the press and faster response times for register adjustment. This latest short-web solution significantly reduces waste, which also leads to a substantial improvement in productivity. An integrated UV drying system sets new standards in terms of energy efficiency and plays a key role in stabilising the entire printing process – another factor in increasing productivity.

This is supported by the Gallus Group's new generation of control systems. Already in use in the Gallus ECS 340, it offers Gallus customers comprehensive web-based support via the Gallus hotline and thus increases the press's overall availability.

The Gallus RCS 330/430 combines a limitless range of applications with a high level of automation to deliver maximum productivity. The ability to combine printing and finishing processes almost at will should make the Gallus RCS 330/430 a real all-rounder at the highest possible level.

Gallus also offers its EM 280 for the production of multi-web labels, plus its innovation in die-cutting with Avery Dennison's ThinStream technology. This combines an ultra-thin PET substrate with patented die-cutting that reduces waste by some 40% and doesn't require kiss cutting. With a material thickness of just 12 micrometres/0.48 mils, the new substrate can produce at least 17% more labels per reel. The modular die-cutting unit with the substrate can be operated as a standalone unit or integrated into an existing machine without changing the layout. ■

Durst announces its first high-performance digital printer for the textile industry

The new Durst Kappa 180 digital textile printer

New from Durst is the Kappa 180 which has been developed around the company's proprietary Quadro print-head technology. The intention is that the new machine meets the specific requirements of the textile industry. It incorporates its own high-grade inks which were were developed in the Durst Research Center in Lienz, Austria, whilst the system was developed at Durst's facility in Kufstein.

The Durst Kappa 180 has a printing speed of more than 600 square m/hour and a quality of 1056 x 600 dpi. The specifications include aqueous-based disperse, reactive and acid inks, and the company's Quadro Array technology has been modified for textile printing to make it possible to print on textiles via a specially hardened, fray-resistant nozzle plate with a drop size of 7 to 21 picoliters. 6,144 jets per colour produce a resolution of up to 1680 dpi, while a single automatic nozzle cleaning system ensures uninterrupted operation.

The QuadroZ Arrays print eight colours in CMYK, orange, red, blue and grey, with no modulations or density fluctuations. A key role is played by the ink delivery system with its osmosis filtering system, which eliminates the tiny gas bubbles in the inks and ensures that the printing is constant and failure-free.

The Durst Kappa 180 textile printing machine has fully automatic in-feed and guiding facilities for textiles with a maximum printing width of 195cm and a printing blanket with an integrated washing system. The drying unit is hot air powered by gas, steam or electricity.

Christoph Gamper, Segment Manager Textile at Durst Phototechnik AG, says: "In addition to the impressive technical data, the Durst Kappa 180 is also innovative economically and ecologically, since it reduces water and power consumption compared with conventional methods and at the same time offers total flexibility for customers. There are no limits as far as design and colours are concerned and every changeover is direct and immediate; set-up times and screen-making are now things of the past. We are delighted that we can offer our customers not only 'green' technology but also genuine added value." ■

Kapa claims unparalleled development, material and production

Kapa says the consistently high quality of its name means that it "stands out from the crowd", and that designers and users can depend on it. The company says that even experienced fabricators are impressed by the striking qualities of its classic 5mm thick Kapa's minimal weight, proving to be as astonishing as is its innovative technology. At the heart of the sandwich construction of all Kapa foam boards lies a polyurethane foam core where millions of diminutive, air-filled bubbles are linked in a honeycomb structure. The company connects this foam core with the two cover sheets in a continuous in-line production process. The result is a composite board of an exactly defined thickness and a light weight.

The board's strength is across its whole surface, mainly thanks to polyurethane foam's special properties. With minimal weight and high levels of stiffness, in combination with the stable cover sheets, Kapa says this is unchallenged in shape and pressure stability, and claims its foam board's core, in between the two cover sheets, is unique world-wide. ■

The 3A Composites Kapa production line at Osnabrück

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Langstane Press installs Presstek 34DI and Sorrus workflow

Langstane's Bob Bruce with the new Presstek 34DI

Presstek has announced that Langstane Press has installed a 34DI digital offset press combined with Presstek Sorrus workflow at its location in Aberdeen. The system offers printers a highly profitable solution for meeting growing demand for fast turn-round, high quality colour printing in runs from 500 to 20,000. Chemistry-free plates are imaged on press and it is able to go from file to sellable sheets in 16 minutes or less.

Established in 1947, Langstane, claimed to be the largest family-owned stationer in Scotland, chose the Presstek 34DI digital offset press as part of a three-phase plan to reinvigorate its print division and to expand its service offering. The investment has proven so successful that Bob Bruce, Langstane Press General Manager (Print), anticipates a ROI within a couple of years.

The new Presstek 34DI press and Sorrus workflow solution will be a foundation from which to implement phase two, allowing customers to order jobs easily online. "It is increasingly important to give our customers 24/7 access to our shop," states Bruce. "Many of our end users are high profile petroleum groups requiring fast turnaround print for their North Sea operations. Providing them with a customised online portal will streamline ordering and build stronger customer relationships."

Approximately 8% of Langstane's revenues are generated by the printing department. Bruce comments: "We see this as a growth area and this investment is designed to increase the print contribution to the larger group. We have many requests from offshore customers who need to print and re-print materials such as data sheets and safety manuals. Sorrus enables those repeat jobs to be handled with a minimum of human touch points, increasing productivity for both Langstane and our customers."

Capabilities are further expanded with the 34DI's ability to print on a wide range of substrates from onion skin to heavy card stock, including plastics and magnetic media. Superior quality printing is produced at up to 300 lpi and FM screening—without incurring additional time or expense.

Presstek's Sorrus workflow delivers comprehensive control over every job to increase throughput, improve quality, reduce errors, and maximise performance. Built on Adobe's PDF Print Engine (APPE), Sorrus opens the door to enhanced productivity with fully-featured JDF functionality. Tight integration with Adobe Acrobat 7 and 8 allows customers to submit jobs directly into Sorrus's job ticket module, including all customer data and source files, eliminating the need to rekey data throughout the production process. In addition, Sorrus offers the flexibility to create and store production plans for all jobs regardless of complexity. While Adobe in-RIP trapping is standard, Sorrus accepts all standard input formats. ■

The custom XD070 in production

Biggest printer build for Pad Print Machinery of Vermont

Pad Print Machinery of Vermont states it will need more space in its 2,090 square m (22,500 square ft) building to make room for a custom XD070 multi-colour digital ink-jet printer being built for a large healthcare products' manufacturer. It will feature a pre-treatment station, six colours and UV curing. Because it will be placed within a production line, a 7.63m (25ft) conveyor will be added.

This is one of the largest digital ink-jet machines ever built at PPMOV and the company says its ink-jet team is excited about the challenge.

This digital ink-jet printer versatility includes height and width capability of 30.48cm (12in) and can print fine lines and details in process colour at speeds of 40.64cm/second (16in). This product was launched last September and, according to the manufacturer, has exceeded expectations. The XD070 is designed and manufactured at Pad Print Machinery's facility in Vermont. ■

EFI continues global expansion with Prism acquisition

EFI has announced that it has acquired Prism Group Holdings, headquartered in Brisbane, Australia, with operations in New Zealand, the UK and the USA. Prism is the provider of Prism WIN MIS and Prism QTMS automated shop floor management solution. The solution is focused on general commercial printers, converters, web printers, mailers, and packaging printers around the world.

"We are dedicated to providing a portfolio of industry leading products allowing customers to choose the right solution for their environment with the consistency of delivery needed for long term success," says Marc Olin, senior VP and GM of EFI's APPS business unit. "Following in the footsteps of PrintStream, Prism is another example of our consolidation strategy."

The addition of Prism's customer base continues to allow EFI an even greater focus on providing the industry's most preferred solutions.

"We continue to actively seek out additional Print ERP/MIS solutions worldwide to consolidate," adds Olin. "By concentrating our investment and efforts on Monarch, Radius, Pace and PrintSmith, we can ensure that the largest development and support teams in the industry are delivering the best possible solutions to give our clients the best chance to succeed in today's challenging business environment."

EFI intends to continue supporting and developing Prism Win (now "EFI Prism"), but will no longer offer it to new customers. Instead, EFI will offer new clients its four ERP/MIS platforms. These are EFI Monarch for larger single and multi-plant operations looking for full workflow automation, EFI Pace for mid-market digital, offset, hybrid, wide format and specialty printing operations, EFI PrintSmith: for on-demand, copy shop and small commercial operations and EFI Radius for labels, folding cartons and flexible packaging operations.

Historically EFI has supported all of its ERP/MIS offerings for many years even after it stopped actively selling them. For example, the PSI, Logic and Covalent software systems are all legacy ERP/MIS applications that EFI continues to support. For Prism clients wishing to move to a new platform, EFI will be offering special incentives to encourage them to transition to one of our four platforms, as well as transition assistance to help make the move as seamless as possible. ■

Marabu unveils a new high-opacity and low-migration pre-print white for label printing

Marabu's low-migration silicon free ink can be used as a white base

Unveiled by Marabu is a low-migration silicon-free ink. Designated UVSF 174, it offers extreme opacity and versatility and can be used as a white base or to print text on product labels for cosmetic packaging. This ink is the latest addition to Marabu's existing UVRS and UVSF range, prioritised by the company for flat-bed and rotary screen-printing.

Drawing on 60 years of experience in developing inks, Marabu's UVSF 174 is its first low-migration screen-printing ink, produced in response to strong demand for low migration solutions. It joins its other speciality products including Ultrapack UVC and Ultrastar-M UVSM for label printing, UVSR letterpress and offset inks for overprinting, and UVLB 1 and 2 Braille varnishes for rotary and flat-bed screen-printing.

"Our new pre-print white is silicon-free, glossy and suitable for combined UV rotary screen and flexo printing. It is perfect for overprinting with UV inks, and, at machine speeds of up to around 60m/min, meets all given requirements such as drying and adhesion," says Pascal Iffland, Product Manager at Marabu.

This low-migration screen printing ink is eligible for inclusion in Group 1A of the EuPIA Photo-initiator Suitability List and complies with the Swiss Ordinance on Materials and Articles in Contact with Food (SR 817.023.21). ■

J-Teck3 announces new piezo dye sublimation ink

J-Teck3 used Fespa Digital 2011 to launch J-Next Subly JXS-65, its new dye sublimation ink for piezo print-heads. Its name has been chosen to identify a new generation ink which has been developed to be used on any type of wide format digital printers, from the economic entry level up to the fastest and most sophisticated models.

J-Teck3 states J-Next Subly has a totally new chemical formulation. Always produced in accordance with J-Teck nanodot technology and eco-friendly concepts, its main characteristic is the stability of the ink molecule even in printers equipped with difficult to handle feeding systems and/or high pressure systems. This feature generates a high dynamic fluidity of the ink system allowing it to meet the configuration requirements for all the piezo printers available on the market such as Epson, Mimaki, Mutoh, Roland and OEM printers. Furthermore, it can be used with any type of sublimation paper even with those featuring vibrant colours and wide chromatic gamut.

According to J-Teck3, the success of its new sublimation line is so promising it is encouraging the company's R&D to adopt the new formulation in a new line of direct disperse dye ink due to be announced in the next few months. ■

J-Next Subly JXS-65 ink has a new chemical formulation

Agfa Graphics outlines the potential of its high speed :M-Press Leopard

Agfa Graphics has unveiled full details of its new :M-Press Leopard which is targeted at the growing numbers of users who want the speed and quality of offset litho and screen-printing but with the convenience of a wide-format ink-jet platform. Designed on the same lines as the :M-Press Tiger, this new machine offers very fast throughput rates and the ability to produce double-sided print with precision registration.

Although the concept behind the original :M-Press's in-line screen-printing and high end digital capabilities has made it a firm favourite amongst print houses throughout the world, Agfa Graphics has acknowledged that many users want only the benefits obtained from its high quality digital technology. As a result, the company has used the same advanced components and construction found in today's :M-Press Tiger and adapted these into a new dedicated wide-format ink-jet platform called the :M-Press Leopard.

Thus, the newly introduced :M-Press Leopard is designed to target the mid-sized print service provider whose output requirements sit in the bracket of 200,000 to 500,000 square m of print per year. This productivity strategy is also based on reliability, on extremely high print quality and, although the press doesn't incorporate a screen-printing facility, on its feeding and unloading table produced using Thieme's existing technology.

The design of the :M-Press Leopard is based on a manual loading and off-loading concept. This functionality is designed to accommodate changing job types and double-sided output which cannot be handled practically with a fully or partially automated system.

A solidly designed and constructed platform, the Agfa :M-Press Leopard produces accurate registration at sizes as small as A3, thanks to the 29 lay-on pins which align the material precisely. The design of the powerful vacuum bed makes loading and off-loading fast and foolproof, with quick swapping of media and efficient and accurate recto to verso (front-to-back) turning for double-sided prints.

The design of the vacuum bed includes 55 separate zones for optimum hold-down on different sizes of sheet. Lighter media is aligned using the front pins whilst, to maintain optimum stability, a series of rear lay pins is used to hold heavier substrates firmly in place.

Agfa's advanced shuttle design is incorporated into the :M-Press Leopard and this utilises its established UPH 2 (Universal Print Head) technology that incorporates greyscale variable droplet technology which results in fewer passes being required to achieve the required quality. Its drop sizes range from ten picolitre through to a maximum of 26 picolitres.

Using Agfa's Wave Form and ink optimisation capabilities, the volume of the base sub-droplet is controlled to generate the finest and most accurate output. This feature negates the requirement for additional colours beyond CMYK, thus reducing overall ink costs, and smooth highlights, sharp text and vivid solid colours can be produced without noise or grain.

The Agfa :M-Press Leopard benefits from its :Apogee workflow which includes all necessary functions so essential to the colour accurate consistency required for wide-format applications, such as for high end retail advertising and point-of-sale. This workflow software also simplifies pre-press time; it is configured for true JDF connectivity, with the advantage of sophisticated and effective variable data printing and versioning (:Apogee Vibe) bringing much needed versatile customisation into today's jobs.

With a maximum print size of 1.6m x 2.6m, the :M-Press Leopard is geared for fast job change-over and extremely high output quality, suitable for even the closest viewing. It can work with flexible and rigid materials up to 5cm in thickness, and its low ink consumption and versatility are designed to challenge both offset and screen-printing in terms of running costs and print standards.

Maximum print speeds for the Agfa :M-Press Leopard are 483m^2/hour and, even in photographic quality mode, the machine achieves 283m^2/hour. This versatile printer is driven by the criteria needed to produce finished prints in the optimum time, not being compromised by the need for fast job change-over or the swapping of materials from one type to another.

Display producers seeking a high productivity wide-format ink-jet printer which is designed to accommodate a variety of sizes and weights of material should find that the new ruggedly constructed Agfa :M-Press Leopard matches their requirements. The benefits of fast change-over, precision accuracy on double-sided prints and a reliable and consistent engine technology has resulted in a machine which doesn't compromise any area of the production process. ■

Agfa's new :M-Press Leopard is geared for fast job change-over and recto/verso print

INX Digital debuts LD Series inks

INX Digital has introduced its new Triangle LD (low durability) series of high performance inks. This series of true solvent-based ink includes STX for the HP Scitex XL1200, XL1500 and Grandjet printers, and VUV for printers using Spectra, Hitachi Koki, Xaar 126 and Seiko 572 print-heads with 14 picolitre technology.

Both inks are designed to be outdoor durable for one year. The company says a greater colour gamut and lower costs compared with OEM inks are a few of the outstanding benefits. However, the series has much more to offer according to Alex Garcia, INX Digital's Business Development Director of the Latin American Region.

"STX and VUV are part of our flagship products and have consistently prevailed in a very competitive market," Garcia says. "They were originally available only in a two-year durability formula, so we expect the one-year formulation will be very appealing. In the superwide digital printer segment, both products are recognised as true solvent inks that consistently display a superior colour gamut and great adhesion to all types of media."

Both STX and VUV now offer a short-term outdoor durability option of 12 months. Garcia believes these products address a need printers have been asking for. Combined with a lower price point, he thinks the one-year durability formulations of STX and VUV will prove to be very effective in the marketplace.

"The short term durability will provide the end user with the same benefits at a more affordable cost. This is especially inviting for printers who do work for special events such as sporting events and concerts, and political campaigns that do not require long term durability. I expect these products to be very popular in countries that place a visual emphasis on outdoor advertising," adds Garcia, who also oversees the Caribbean market.

Triangle STX and VUV inks are now available in the Asia-Pacific (except in Australia and New Zealand), Africa, Eastern Europe, Latin America and Middle Eastern markets. ■

Atlantic Zeiser and Hugo Beck forge technology partnership for Versamail

Carl-Michael Heüveldop, Vice President of Card Systems at Atlantic Zeiser and Horst Heimann, Managing Director at Hugo Beck, have signed a comprehensive collaboration agreement on the ongoing development and production of high-end mailing solution, VERSAMAIL. Hugo Beck has been a supplier to Atlantic Zeiser for many years, and has outstanding expertise in the field of packaging machine construction. Versamail is part of the company's portfolio of products for high-quality and cost-effective card personalization, card finishing, card mailing and lifecycle management.

Carl-Michael Heüveldop states: "We are very much looking forward to strengthening our existing collaboration of many years with such experienced specialists thanks to the comprehensive technology partnership recently agreed on developing and producing complex transport units and packaging machines. This will bring together Atlantic Zeiser's sector-specific expertise with the technological expertise of Hugo Beck."

Horst Heimann reiterates: "Technology partnerships always offer significant potential for both sides. Hugo Beck is forming an extended business relationship with Atlantic Zeiser that along with the collaboration agreement concluded on VERSAMAIL, reaches a whole new level of mutual gain – a real win/win situation for everyone involved."

Versamail is simple-to-use and offers fast set-up times and a short learning curve for operators and maximum productivity for card manufacturers. ■

Carl-Michael Heüveldop, Vice President Card Systems, Atlantic Zeiser (left); Horst Heimann, Managing Director, Hugo Beck (middle); Dr. Bernhard Müller, COO, Atlantic Zeiser (right)

THE LAW OF UNINTENDED CONSEQUENCES

Kevin Lewis outlines how to get the best from screen-printing chemicals

Printers want to do the right thing – and the most inexpensive thing. Very often these two motivations are counterproductive in the extreme. This conjures up the "law on unintended consequences". Allow me to describe a few instances where this is the case with screen chemicals.

1) Press wash selection: There is always the possibility of press wash/emulsion incompatibility. When this happens (usually when press wash is chosen for its low cost), the result can be a 'lock up' or 'freezing' of the emulsion resulting in a very difficult stencil to reclaim. Once this happens and the printer cannot readily reclaim, the following sequence of events inevitably plays out. Another application of re-claimer is applied and, when that fails, a caustic haze remover is applied and scrubbed into the mesh. This adds material and labour costs and can additionally greatly reduce the mesh life. The further bad news is that it may or may not be successful in removing all of the locked-in emulsion.

Good chemical choices make screen cleaning a predicable pleasure

The way to avoid this nasty and expensive exercise is to use a high quality press wash (designed to clean the specific range of ink products used by the printer) and test it for emulsion compatibility. It's a very simple idea, with very big savings, and a huge reduction in screen room agony!

2) Under exposure of stencils: Either because they are in a hurry or have had deterioration in their light source, screen makers can cause massive issues by underexposing the emulsion. While there may or may not be a poor image caused by the underexposure, there is always the very real risk of the stencil material being left 'solvent sensitive'. In this case the emulsion reacts with the press wash and becomes highly resistant to cleaning and reclaiming. This phenomenon is not unlike the poor press wash reaction described earlier. Keep in mind that even the finest chemical cleaners and solvents will not avoid this problem. It is just something that can happen with underexposed screens.

The resulting extra effort and cost at reclaiming the screen can easily be avoided by establishing a thoughtful and regular check of stencil exposure with an exposure calculator. These are readily available from your emulsion supplier and are worth their weight in gold.

3) Use of over-aggressive solvents in screen cleaning: Human nature leads many to think (wrongly as it turns out) that faster evaporative, ink dissolving solvents deliver cleaner screens faster. The counter-intuitive truth is that this is rarely correct. More often than not, the faster the solvent evaporates the more solvent you will use (having to re-wet the rag many times during wipe down). Faster evaporation (lower vapour pressure) means more VOCs into the air quicker. This increases the percentage of the airborne solvent rather dramatically and quickly, depending upon your air make-up system. Fire and other health related considerations can be very real in these circumstances.

Slower evaporative cleaners and/or dip tank methods in particular not only clean the screens extremely well, but will greatly reduce the amount of airborne VOCs. In most cases where a proper, slower cleaner or dip tank is

used, the actual production speed is enhanced and costs per screen cleaned are dramatically reduced (fewer rags, chemistry and labour required).

4) Letting your stencil remover dry in: This is a huge 'no-no' and has been as long as screens were reclaimed though the user of oxidisers. Oxidisers, either iodine or hypochlorite based, react with emulsions in a specific way and produce, for lack of a better term, a liquefied product. When this liquid is allowed to dry, it forms crystals that are highly resistant to attack by the rather weak and specific oxidisers used to 'melt' them in the first place. In fact, it becomes resistant to removal by almost everything except razor blades! Again, this is not the chemical manufacturer's fault for making a weak reclaiming solution; this is a chemical reality that you must accept.

Sometimes such screens can be saved by the use of aggressive caustic pastes but, as in previously mentioned cases, this is expensive, time consuming and hard on the mesh used.

The proper solution is in the avoiding of the drying in problem to begin with. Either instituting a procedure that is geared towards quick screen reclamation, or using a non-time sensitive method like a dip tank, can assure this "drying-in" does not occur. This will save you time, chemicals, money, mesh and a lot of angry words.

5) Abrading mesh to enhance emulsion adhesion: This is the use of ultra-fine particles being scrubbed into the mesh to create microscopic tears in the threads. The idea was that the emulsion would better adhere to this roughened surface. This is a dated, and mesh-life reducing, practice. In the distant past, this use of 'micro-grit' was actually encouraged to help enhance the adhesion of water soluble films onto nylon and polyester meshes. Modern mesh is produced with surface treatments to accept emulsions quite readily without the abrading and shredding of its thread.

Proper screen prep (before coating) involves simple degreasing to remove lubricants on the mesh left from the weaving practice and/or oils and dirt which have come in contact with the mesh during handling. Make sure you have a good commercially produced degreaser and thoughtful procedures for its application. If you feel further steps are required to assure better coating of your emulsion, use a screen prep chemistry designed for that purpose. Ours is called Screen Perfect but I am sure others are available as well.

6) Poor chemical application methods: How you apply a chemical often has an effect on how it works and a very dramatic effect on how much it can cost you per screen (the real value).

Big splashing, mop-like brushes can apply far more wash and re-claimer than required to do the job, resulting in a clear and potentially expensive waste of product. Using sprayers can not only apply too much chemistry but, by partially atomising the chemicals under pressure, almost certainly assures the undesired inhalation of the chemicals by the operator and those around them.

Most chemical manufacturers have purpose made brushes and applicators that make proper use easy for the printer. Many manufacturers have dip tank processes and these assure a complete and virtually fool proof application of chemical products.

The world of screen print chemicals is filled with options for the printer. Printers want to do the right thing, but are often misguided by price, habit or inefficient procedures. The unintended and very expensive consequences of such misguided behaviour can be avoided by working closely with their chemical vendors in reviewing all such applications. You may very well be surprised at the improvements you realise as a result. ■

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THE IMPORTANCE OF DRYING

Anna Harris looks at some common mistakes in screen-printing practice and how these can be overcome

In today's extremely competitive marketplace, screen-printing companies often find themselves working flat out in order to stay ahead of the game. Indeed, production needs to be carried out in the fastest and most efficient manner in order to increase throughput and improve profitability. Naturally, this leaves little room for error, but as a result any process drift can be costly.

The most puzzling problems to solve are ones that don't happen all the time. Sometimes you may find that you work hard on solving a problem and it goes away, but you are not sure if you really identified the root cause. Or worse still, you try and work through it, but it gets worse.

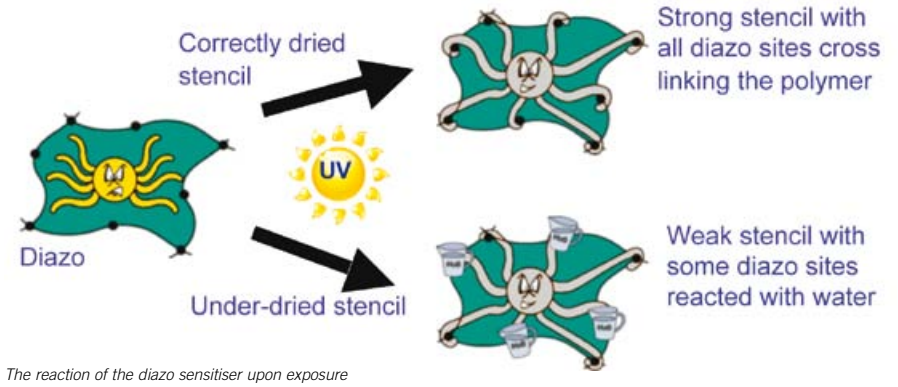
I have found that one of the most likely causes of this type of problem is stencil drying as it is one of the biggest variables in stencil preparation. It's difficult to control, difficult to measure and can have devastating knock-on effects. And quite simply, anything that affects production output is costing you money.

To understand why drying is so important, it is first necessary to understand some basic mechanics of the way the stencil hardens.

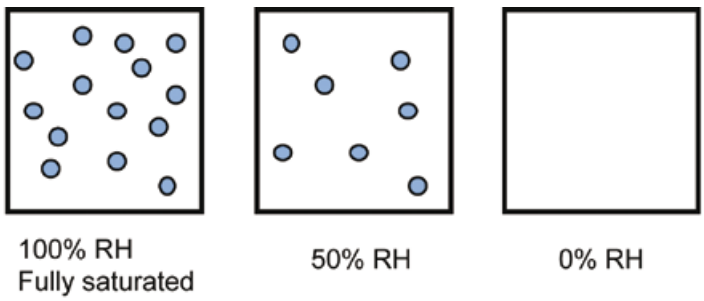
When the stencil is exposed, the diazo sensitiser in the emulsion reacts with the polymers to make a tough, durable stencil. However, diazo will also react with water. If there is moisture left in the stencil before exposure, quite simply some of the diazo will be wasted by reacting with the water and not with the polymer. This means there will be lower 'cross link density' and the stencil cannot be as tough, or as resistant as it should be. In many respects it will perform as though the stencil has been underexposed.

Some of the classic symptoms of insufficient drying are that fine detail may wash off during stencil preparation, there may be excessive pinholes, it may become sticky during printing, or it will break down on the press.

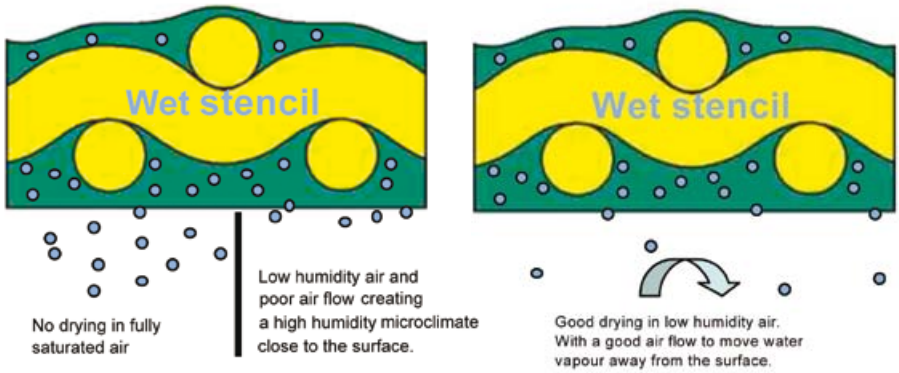
Unfortunately one of the common knock-on effects of breakdown on the press is that replacement stencils will be needed in a hurry. If under-drying were not a problem before, it certainly will be once the stencil making process starts to be rushed.



The reaction of the diazo sensitiser upon exposure



The effects of relative humidity in a drying cabinet



Low air humidity is essential for good drying

UNDERSTANDING THE PROCESS

To understand why drying is so variable we need to consider how it works. Typically we would use a drying cabinet to remove the water from the surface of the stencil to end up with a dry stencil ready for exposure.

When air is fully saturated, it is holding the maximum amount of water that it can and if we try and put any more water into the air it will condense out as dew or fog. Relative humidity (RH) is the amount of water in the air as a percentage of the maximum possible. So you can easily see that if the air in the drying cabinet is fully saturated, then no drying can take place.

Consider these typical scenarios, there are a few stencils drying in the drying cabinet but there are also a few screens which have just been reclaimed and are being dried ready for recoating. Maybe it's a rainy day, so the air being drawn into the drying cabinet is already close to saturation. Maybe stencils are coated in batches and the cabinet is jammed full of drying stencils. Maybe a lot of screens need to be reclaimed and the high pressure gun from the reclaim room is creating a localised very high humidity atmosphere.

Whatever the reason, the more water that is in the cabinet the higher the humidity will be and the slower the drying

will be. In any one of these scenarios the screens used will simply not be as tough as they should or could be.

Low air humidity is essential for good drying and yet it is incredibly difficult to control. Also, if there is no air movement to draw water vapour away from the stencil surface then the drying will be poor. This is because a thin layer of highly humid air is formed close to the stencil surface which will slow drying.

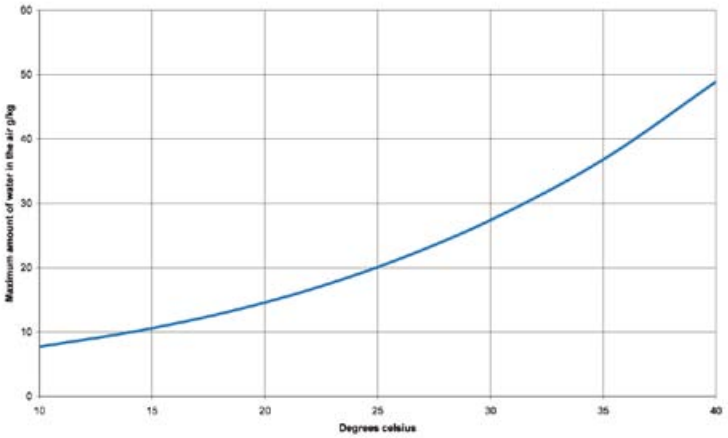
The perfect situation would be to have low humidity air with good air movement.

THE EFFECT OF TEMPERATURE

But what about heat? Surely if we increase the temperature of the drying cabinet we can speed things along? In some respects this is true. The hotter the temperature the more water the air can hold before reaching full saturation.

This graph shows how full saturation (100% RH) changes with temperature. For example, air at 31 degrees C can hold twice as much water as air at 20 degrees C.

The only problem with increasing the temperature to improve drying is that, above 35 degrees C, the polymers in the emulsion can start to fuse which can make the stencil harder to washout and reduce the stencil resolution. Even higher temperatures can cause the diazo to react and the emulsion will become completely insoluble.



How full saturation changes with temperature

The ideal scenario would be to dry very wet screens in a dedicated cabinet and have a separate stencil drying cabinet which should be set at less than 35 degrees C with dry, moving air, or at least have the wet air exhausted.

One simple, low cost way to lower the humidity in a drying cabinet or drying room is to install a dehumidifier which can dramatically speed up screen drying.

In summary, insufficient screen drying is in the top three most common reasons for stencil failure, next to mesh preparation and under-exposure; yet it is probably the least recognised. But drying a screen properly is quite straightforward and will save you significant money in the long term by reducing the number of on-press breakdowns. ■

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QUICKLY MATCHING SPOT COLOURS AND VECTOR ART ON A DIGITAL PRINTER

Digital ink-jet Pantone and special matching techniques are explained by Mike Ruff

Printing, graphics and signage created with the use of digital print devices is the newest of all technologies in the print industry. With any new technology there are methodologies for accomplishing a predefined result that are quickly adopted but later replaced with faster, better, more accurate techniques. The simulation of spot colours from vector art is one of these methodologies that has changed and improved, but many production artists are still using a manual method when automatic pre-sets fail.

In this article I address a method to produce a close simulation of an intended spot colour that is built in a file using vector art. The intended colour might be a Pantone colour (PMS), a custom colour like a corporate logo, a variation of a PMS that was produced on a different media or printer, or maybe even a previously printed spot colour on the same machine from vector art. We will not address raster image spot colours (photograph image matching).

There are two possible elements of a digital file: vector and raster. Vector files are line art developed in programs such as Adobe Illustrator, Freehand or CorelDraw. A raster element is constructed of pixels, normally a photograph or a rasterised file of any type.

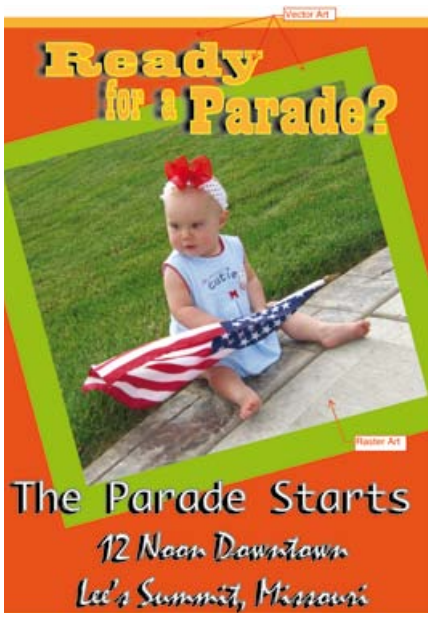


Figure 1: A typical digital graphics file

Both vector and raster elements are common in most digital files prepared for print. (See Figure 1: A typical digital graphics file) Inexpensive RIPs or printers not using a RIP will not differentiate vector from raster. Better RIPs will allow you to manage raster and vector files separately.

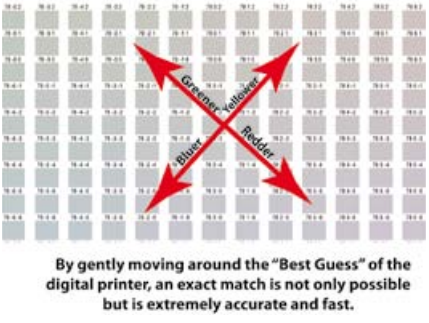
There is an advantage to leaving vector elements as vector in a typical graphics file similar to Figure 1. A more sophisticated, good quality RIP uses 'look-up tables' based on the full gamut capability of their RIP and their ink printed on a 'standard' substrate or a substrate that they provide a profile for. A PMS colour will be simulated by a predetermined 'best guess' based on the factory defaults. The gamut is normally better because the inks are not restricted to a standard CMYK colour gamut like SWOP or even sheet-fed offset's colour gamut, GRACoL 7. But the weakness of the default lookup tables is that all printers print a little differently, substrates are sometimes very different than what was used to determine the lookup tables and even inks sets may have changed. So the look-up tables normally will get good colour, but will seldom produce a satisfactory accurate colour simulation if it is needed.

Figure 2: Substrate variation

To adjust for inaccurate simulation of PMS colours, many digital printers have PMS charts so they can pick a colour that the printer has previously printed to simulate a PMS colour. It might be that PMS 293 Blue really looks closer to PMS 2945 on the chart. This is a good system if the chart is current, and if the substrate is the same and if the printer is printing the same as it was when it printed the chart. I visit more than 50 digital print facilities a year and I have only seen two this year that complied with all these 'ifs'.

Figure 3: Colour tweaks

Figure 4: Contaminants in solid CMYK



By gently moving around the "Best Guess" of the digital printer, an exact match is not only possible but is extremely accurate and fast.

Figure 5: Moving colour in colour space

WHAT HAPPENS WHEN LOOK-UP TABLES AND COLOUR CHARTS FAIL?

If a PMS Colour is not accurate enough, or a corporate colour is not a specific PMS colour, this can cost time on a digital press. Even prints of spot colours that a digital printer has previously matched can be a challenge. It seems like it would be logical that matching a colour that had previously been printed by the same printer, with the same ink, on the same substrate would be an easy simulation. Sometimes that is true, but other times it is not. There are many things that can change over time. The printer may print differently as the print-head gets worn, substrates are not the same or even temperature and humidity may be different. I regularly see different colours of substrate within a shipment of material from the same vendor in the same skid. (See Figure 2: Substrate variation.)

If a previous job is printed within a short time frame from the first job and the set-up is the same, there should be good results. The more time that goes by, the less chance that a good colour simulation will result. Adjusting and tweaking become necessary, but this time it is a rushed, stressful work environment. It may be that the boss or customer service person is now accusing the print technician of not following procedure and wasting valuable production time.

The manual adjusting and tweaking method is known as the 'Trial and Error' method. The following is a standard procedure.

a. The pre-press technician will output the standard PMS colour he has picked that is close to the corporate colour or from a colour build that has worked in the past. The production artist will name the colour (assign a PMS number) in the vector file on the native program. For example in Adobe Illustrator, a spot colour can be named any PMS colour.
b. The look-up table will produce the colour based on its 'best guess'.
c. The RIP will see the PMS number in the file and replace any build that is in the file with the 'best guess' colour mix of the RIP look-up tables to simulate the PMS Colour.
d. Then the digital printing technician looks at the colour and says: "No!"

The colour might be close but most of the time it is not. Almost all the time the digital print technician will then begin to tweak the colour by making four or five colour swatches with slightly different manual 'best guesses' and then adjusting the colour in the original file until they get an acceptable match or until they just give up and print it. (See Figure 3: Colour tweaks.)

The estimated time for doing this is far too long! I have witnessed pre-press technicians make multiple guesses for up to four or more hours and then just give up and print what they started with. The challenge is overwhelming when it is done by adding cyan, magenta, yellow or black. The worst nightmare is a light grey. I have seen 1% or 2% colour tweak adjustments of C,M,Y or K wildly shift a grey spot colour. (See Figure 3: Colour tweaks). The problem is when a single colour is added in CMY or K, the pure colour moves aren't really pure. (See Figure 4: Contaminants in solid CMYK)

Figure 4 shows the reflective density of a pure cyan on an Epson printer. Notice the cyan has a magenta density of .48 in it and a yellow density of .22 density. This means that when you make a cyan move, you are not just adding or subtracting cyan, you are also moving magenta and yellow. This is why the colour result of a small CMY 1% or 2% move in a light grey or pastel can shift unexpectedly.

The solution is: "Simulate colour moves in colour space, not CMYK adjustments." The best way to fine-tune the result of a printer's 'best guess' is to evaluate the colour space that surrounds it. (See Figure 5: Moving colour in colour space.) The only way to avoid C,M,Y and K unexpected colour shifts is to move colour based on an assigned L*a*b* value that will move C,M,Y and K as needed simultaneously to simulate the neighbouring slight colour difference.

WHY THIS IS A BETTER WAY.

In most digital print environments, keeping everything in perfect calibration on every substrate is not a reality for spot colour reproduction. Therefore an option is to accept it and plan for very quick and accurate colour adjustments when the look up tables fail.

Continued over

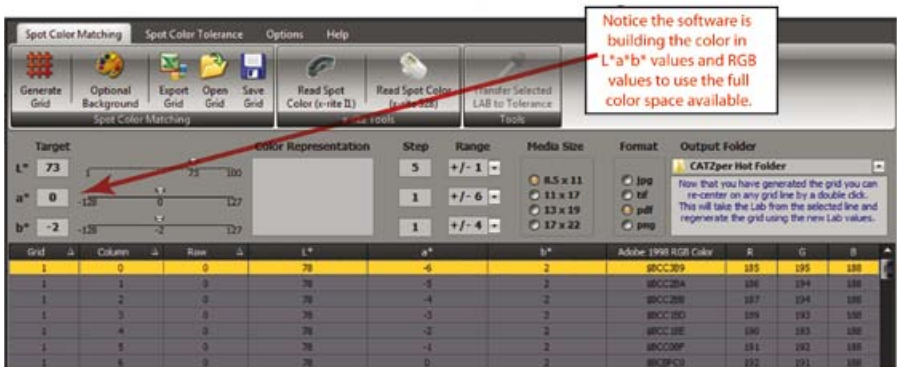


Figure 6: AGPS, Automated Grid Producing Software

Automated Grid Producing Software is the answer. (See Figure 6: AGPS, Automated Grid Producing Software.)

Automated Grid Producing Software will allow you to speed up the process of identifying the colour build needed by the original file in order to produce an accurate spot colour based on the media of the day, the printer that is not printing too well this week and a substrate the boss purchased at the freight loss warehouse. A spot colour that is within the gamut of the printer can be closely simulated even if the printer is out of calibration or not using the correct profile for the substrate, provided the colour is within the printer's colour gamut. If it is not, the print technician can quickly identify the best simulation compromise and move on with production or at least present the print choices to upper management for a high level decision.

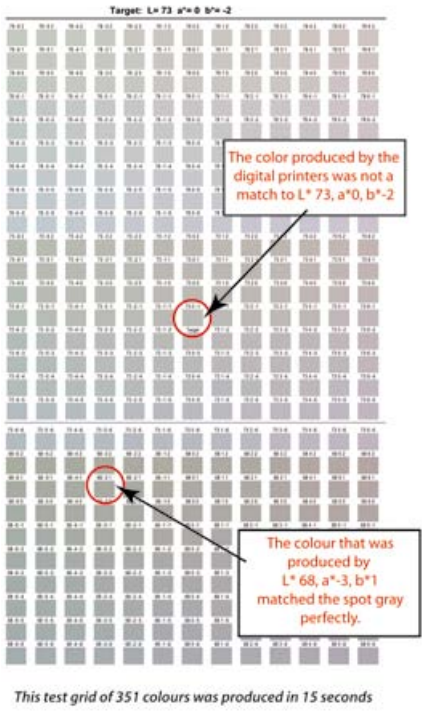


Figure 7: A screenshot of a typical AGPS grid

HOW AUTOMATED GRID PRODUCING SOFTWARE WORKS:

1. The L*a*b* value of the intended colour is identified. (This means we measure the colour we want to match with our i1 or any other spectrophotometer that reports colour in L*a*b*.) We also can look up the L*a*b* of any PMS in Photoshop.
2. Enter the L*a*b* value into the software as the intended colour. (See Figure 6, again)
3. The AGPS will create a grid of colours close to the intended colour.
4. Print the grid through the same workflow that will be used on the job on the same substrate using the same printer.
5. If the colour is within the gamut of the printer and is possible to produce it will normally be one of the samples of the grid that was just printed. A second grid can be printed to fine tune the colour but it is normally not required.

WHY IT WORKS SO WELL

More than one very competent production artist has made the comment to me that they could build the same grids that the AGPS software was doing manually. This is true, but how about making 350+ sample swatches in less than 15 seconds? Also, building it in CMYK doesn't work. Do it in L*a*b* to avoid the wild shifts caused by CMYK tweaks. The reason we use software is to eliminate as much of the manual process as possible and at the same time do more complicated and accurate colour moves without making mistakes. (See Figure 7: A screenshot of a typical AGPS grid)

In Figure 7 you can see the colour moves in the colour space, subtly shifting from green to red on the a* axis and then yellow to blue on the b* axis. This is much more effective as it automatically adds and mixes all the colours based on an attempt to simulate a colour space location. Manually, a production artist would just be adding C,M,Y or K. This builds all the potential colour samples around the intended spot colour. The physical size of any colour chart this accurate would be impossible to manage or even create.

Once the colour has been identified, the production artist then measures the colour swatch which produced the correct colour in the original grid file (that has been placed in the graphics program it was printed from) and changes the original vector colour to the new build. It will match the swatch selected exactly because it was printed through the same workflow. If the printer changes to a different substrate, no re-profiling would be needed; just reprint the same grid and apply a different build.

CONCLUSION

I hope this will assist the industry to understand the real world challenges most digital printers deal with on a daily basis. The reality is that most of the time our digital printers are not producing accurate and repeatable look-up tables due to all the elements of the process that change over time and even on a daily basis. Given that manual tweaking is too laborious and time consuming, colour charts are normally not accurate and are not really practical. Why not plan on letting automated software take care of the problem colours in a fast and effective way? ■

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AGFA GRAPHICS

ROARing print quality !

Agfa Graphics' competence in digital imaging coupled with Thieme's expertise in robust screen printing hardware, resulted in a high-speed digital screen printing press, the :M-Press.

Many customers ago the **:M-Press Tiger** was released from its cage. The Tiger has since multiplied all over the world. The Tiger is a fully automatic digital printing press. It is the perfect answer to all your high-volume large-format print jobs. It has all the advantages of the digital printing process such as variable and even personalized printing. And the quality is simply superb.

Agfa Graphics have now released the **:M-Press Leopard** into its habitat. The Leopard is a semi-automatic version for printers requiring high quality output but who do not have the volumes to justify the fully automatic Tiger installation.

:M-Press leads the market in high production digital presses and it delivers the lowest cost per square meter available today.

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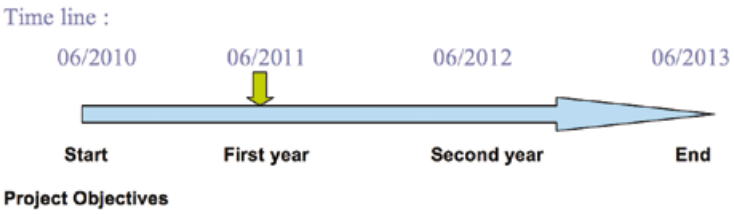
THIEME

THE FINDINGS OF CLIP

Lois Bollens, Bart van Duffel and Peter Buttiens summarise the details of their conductive low-cost ink project



Summary of the Conductive Low-cost Ink Project

Current potential applications in printed electronics need high conductive inks, but suffer from the high cost of the available printing inks. According to ODIN's 2010 RFID Tag Pricing Guide the price of an UHF-RFID tag is 11-15 $cents, depending on the purchased quantities. With prices of 2000-3000$/kg for nano silver inks and 500-1200$/kg for micro silver inks, almost the entire cost of the tag comes from the ink. The high ink cost is partly due to the current high cost of base materials (silver), but also because of expensive preparation technologies of nanoparticles and inks made of these.

Cost sensitive applications such as sensors and RFID antennas cannot break through in the market with current prices of conductive inks. Another limitation is the requirement to print on expensive high temperature resistant substrates because of high sintering temperatures. The availability of good performing low-cost inks and the possibility to use of low cost substrates (eg paper) can boost the competitivity of printed electronics' applications leading to increased implementation of electronic applications in mass markets such as packaging. The aim of the conductive low-cost ink project (in short CLIP) is to develop solutions to drastically reduce the overal cost of printed electronics.

PROJECT OBJECTIVES

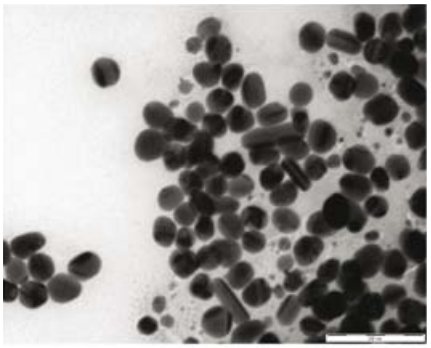
The CLIP project has four objectives. The first main objective is the development of alternatives for the high cost nano and micro silver particles that can serve as a base for the inks. Secondly, the particles will be developed into ink dispersions for printing and curing adapted to processes like screen-print, flexographic printing, aerosol-jet and ink-jet. The third main objective is to optimize the inks and the printing parameters for large area printing and towards techniques which enable lower resolutions than in screen printing (resolution target is ~50µm, potentially below 10µm). The last major objective is the realisation of the demonstrators based on these inks.

Although, currently, the material cost is a major factor in the total cost of printed electronics, we learned during the project there will be no unique solution for a low cost conductive ink as the final cost of the application will also depend on the volume and resolution of printing, the availability of specific printing and curing technology (or investment level in case of investment in new technologies) and the cost and printability of low cost substrates. As we look for specific solutions for SMEs we have to bear in mind all these parameters and this will result in a low cost total process rather than in a low cost ink alone.

DESCRIPTION OF THE WORK PERFORMED

The state-of-the-art conductive particles and inks was investigated in detail by PRA (The Paint Research Association) and Sirris in order to understand better the performance of the commercially available inks and approaches covered by the patent literature. By means of patent statistics, patent mapping and reading of selected patents we learned which are the important players in the field of conductive nano particles and inks, geographical distribution of patent filings and publications and identified possible opportunities for further research. An exhaustive list of commercial inks was created and their properties and performance compared.

Water-based and solvent-based dispersions of silver nanoparticles of diameters ranging from 45-50nm (Figure 1) to lower than 15nm (Figure 2) were produced by the Nanogap and the University of Santiago de Compostella by a wet chemical technique. By using a mixtures of different (nano) particle sizes (bimodal distribution), a more dense packing of the particles is aimed for and hence better conductivity. Sub-nano silver particles (quantum dots) are in development to decrease the sinter temperature of the dense packaging concept (trimodal



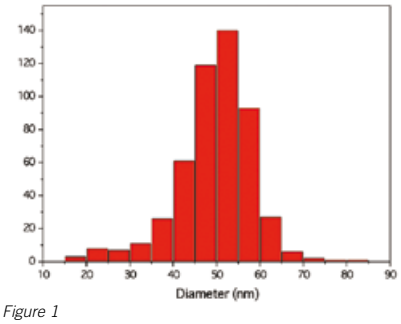
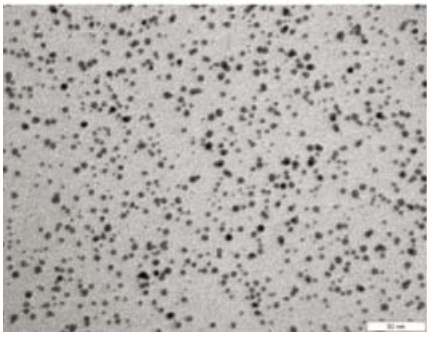


Figure 1



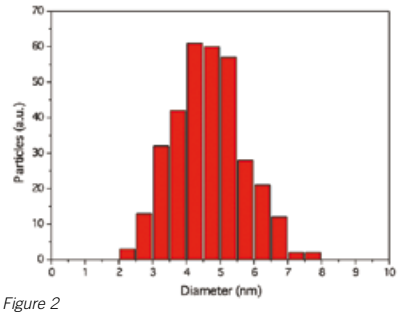


Figure 2

Water-based and solvent-based dispersions of silver nanoparticles of diameters ranging from 45-50nm (Figure 1) to lower than 15nm (Figure 2)

distribution). Sintering temperatures below 100 degrees C are aimed for. Dispersions of low-cost copper nano-particles and coated copper nano particles are planned at the beginning of 2012.

Low-cost copper nanopowders (mean diameter 40 nm) made by a plasma synthesis technique were supplied by Intrinsiq Materials Ltd (Figure 3). Unprotected copper nanoparticles can only be photonic flash cured because of rapid oxidation of copper nano particles during thermal curing. Photonic flash curing of inks based on these low cost nano-copper particles could be a straightforward solution for making lowest cost inks printable at highest curing speeds, but as the investment level of this sintering technique is rather high, we continue the development of inks that can be thermally cured with conventional ovens installed at the SMEs.

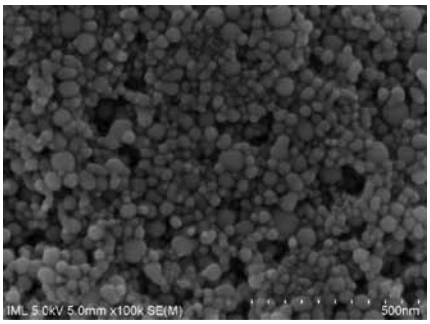
The production of nanoparticles is expensive. Even for silver inks the cost of microparticle inks can be 10 times cheaper than nanoparticle inks. AVL Metal Powders produces pure microcopper particles. Sirris worked out a cleaning and coating technique of copper micro flakes. The coating will protect the surface of the copper powders from oxidation resistance during thermal sintering. These coated copper flakes will be used as a conductive filler in nano metal based inks to reduce the cost of these inks.

PRA started with making ink formulations based on samples of low temperature sintering silver nano-particles, copper nano particles, coated copper flakes and mixtures of these components to result in the lowest cost inks for different printing and curing technologies. First samples of these inks were sent to ACREO for evaluation on screen-printing and flexographic printing. SIRRIS has installed and tested a new aerosol-jet printing unit and will also start to print the inks supplied by PRA.

EXPECTED FINAL RESULTS AND THEIR POTENTIAL IMPACT AND USE

At the end of the project we expect to offer SMEs a total low-cost process to print high conductive inks with ink-jet, aerosol jet, screen- and flexographic printing. This includes the preparation of low-cost nano and treatment of microparticles, the preparation of inks, curing and sintering technology, recommendations for the safe handling and packaging of metallic nanoparticles and the proof of this total low-cost process in a number of demonstrators. The industrialisation and implementation of a specific process at SMEs has to be worked out by the SME itself or could be subject for a follow-up project.

The CLIP is an FP7-supported project and is managed by ESMA. ■



Low-cost copper nanopowders (mean diameter 40nm) made by a plasma synthesis technique

Louis Bollens is a Printed Electronics Consultant and a Technical Writer for ESMA, Bart van Duffel is Technical Chairman of CLIP and Peter Buttiens is CEO of ESMA.

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The Rapid Label Systems X1

THE EVOLUTION OF DIGITAL INK-JET LABEL PRODUCTION

Josiah Gross describes the benefits of versatile technology in this sector of the printing industry

Ink-jet printers have been used since the 1950s when Siemens first used them to print medical strip chart recorders. This was continuous ink-jet technology and it wasn't until 1977 that Canon engineer Ichiro Endo developed thermal inkjet. The development of this technology has always been exciting. What is really exciting though is what this technology has evolved into today.

Over the years, many label producers have turned to ink-jet technology as a supplemental piece of their production. Traditionally, many label shops were equipped with flexographic or offset printing technologies. These types of presses have proven themselves for more than 100 years, but they have always been large, bulky machines that require a lengthy set-up time and are typically used for larger runs of labels, usually 10,000 up to hundreds of thousands per run. Although a proven and trusted technology, the ability to do shorter runs without the use of heavy machinery and dies has caught the attention of label producers and label buyers over the past few years.

Speed has always been a drawback to ink-jet label printers. Although traditional methods of printing may take more set-up time, the speed at which these presses can run is unmatched through today's ink-jet systems. This does not affect the demand for digital ink-jet though. Ink-jet label printers have found their place in certain niches throughout the label printing industry.

The Rapid X1 with pre-die cut media

The fact that there is no set-up before a job, and that as few as one label can be printed, has allowed the ink-jet label printing technology to supplement large label producers. The need for smaller, more custom orders of labels has increased as label buyers know that the technology is available to help them meet their needs. Many companies who do not offer the option of a small run of labels will often require their customers to purchase a minimum order of labels.

What this means for those who have no choice but to take a minimum order is that they are often left with thousands of unused labels that have to be discarded. This can be due to ingredient changes, past expiration dates or even changes to a products label design. For example, custom water bottles have become very popular recently. They are being made for everything from corporate parties to weddings to baby showers. If a water bottle manufacturer has to purchase between 5,000 and 10,000 labels minimum and they only have an order for 1,000 for a wedding, this leaves them with much waste. Or, if the labels are for a company that might reorder in the future, the water bottle manufacturer will have to inventory and store rolls of labels.

DIGITAL VERSATILITY

This is where the supplemental side of ink-jet technology comes in for large label producers. This technology gives them the ability to offer their customers an exact number of labels required. Why is this a good decision for a

Continued over

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Rapid Label Systems has harnessed Memjet technology in its roll-to-roll digital ink-jet printer

producer who can charge more for a minimum order? This is a good decision because the label producer does not have to utilise expensive dies, nor do they need to require multiple employees working on one order. This saves their company time and money and these are savings that are passed along to the customer.

Besides large label manufacturers, small label shops and end users themselves have a need for ink-jet label printing technology. Traditional modern presses and digital presses are very expensive pieces of equipment that can range from $250,000 to well over $1million and are often not an option for smaller shops or businesses looking to produce their own labels. The affordability of ink-jet technology has given these companies that ability. There is a range of very affordable ink-jet label printers that vary in quality and speed.

Another advantage to these particular users is that ink-jet label printers require no set up and can be run from usually any design program. This allows users to set up their design and simply click to print. The production run can be as little as one label, for a sample, to thousands of labels for an order.

So, how has the ink-jet technology evolved? When most people think of an ink-jet printer, they imagine a small print head moving from side to side printing unilaterally or bilaterally. This has always been the method behind ink jet technology. These printers must have a moving head, right? Wrong.

Rapid Label Systems has harnessed the Memjet technology into a roll-to-roll digital ink-jet printer that prints 1600 x 1600dpi labels at 215.9mm (8.5in) wide at 152.4mm (6in) per second. Or, 304.8mm (12in) per second at 1600 x 800dpi. This is made possible due to the stationary print head. This 210mm (8.66in) wide print-head spans the width of the media and has no moving parts. Inside this print-head are 70,400 print nozzles that lay down 755,000,000 droplets per second at 1.2 picoliters. This is the definition of ink-jet evolution.

The ability to print full colour labels at 18.29m (60ft) per minute with no set up time means that short to medium runs get done in minutes, not hours as it would with other ink-jet technologies. This evolution has brought speed, quality and affordability to everyone in need of labels. The evolution has also led to the ability of printing pre-die cut labels, synthetic material and even cut media with the matrix on due to the use of black mark sensors. The improvement in speed means that digital ink-jet printers can even be run in-line with many types of finishing equipment to laminate, foil stamp, slit or cut.

Samples of pre-die cut and continuous labels

GREENER TECHNOLOGICAL BENEFITS

Ink-jet technology is also considered green. Besides producing less waste by printing only the amount of labels needed, the aqueous based dye, which prints on a broad range of media, has no smell, no VOC concerns and requires no ducting. The Rapid Label process is not harmful to you or the environment.

The rise and evolution of ink-jet technology through Memjet and Rapid Label Systems also means that the ink-jet printers of today can be run off of any Windows design program. This also includes variable data software programs. No longer do customers have to order labels with blank spaces to allow them to add barcodes, expiration dates or batch numbers at a later time. Now, they can print everything in one pass through the click of a mouse.

Ink-jet technology has come a long way. Where some technologies have maximised their abilities, ink-jet technology can only expand. There are quite a few options out there for those looking to acquire an ink-jet label printer. Knowing the right one for your business needs will take some researching and further understanding of this technology and what it can do for your business. Speed, quality and affordability (both equipment and consumables) are the basic elements to deciding on which printer is right for you. ■

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HOW UP-TO-DATE IS YOUR HEAT PRESS?

Ulrike André takes a closer look at the most sought after features in these units

If you've been heat printing for any length of time, you already know how much time and money you can save with this alternative to screen-printing or embroidery. You also know how easy it is to print just one item and still make a great profit. You've used your heat press to make samples for customers in order to secure a big sale, or to decorate hard to screen-print items such as nylon jackets, beach chairs or umbrellas.

Yes, you know that your heat press is a valuable piece of equipment and you're not quite sure how you lived without one for so long. But, now that you own a heat press, isn't there something about that press that you would like to change, or improve upon? Let's start with a little research into some of the features most people consider important in a heat press.

WHAT'S YOUR STYLE?

At first glance, most heat presses appear to be relatively simple pieces of equipment. In general there are basically two main types from which to choose, a swinger type or a clamshell type. With the swinger type, the top platen of the press is designed to swing to the left or the right. Clamshell models, as the name suggests, open on an upward angle. The drawback to using a clamshell model is that sometimes your work surface below the platen can become hot, and people have been known to burn their knuckles while arranging graphics on garments underneath the hot upper platen.

The swing away model was invented to prevent this from happening. A few years ago, Stahls Hotronix introduced a third style of press, the industry's first draw-type heat press. The draw press allows the user to pull the lower platen towards oneself and then push it back in for printing. This design innovation was recognised as a space-saving idea, since one of the drawbacks (no pun intended) of owning a swinger-style press is that you need more counter space.

Each style has its aficionados and as they say, you can get used to pretty much anything. But if you are using your heat press to print more than 15 shirts on a daily basis, you will soon discover that there is a wide range of design differences that can truly affect your productivity and enhance the user experience.

The Stahls Hotronix Fusion press is easy to use

The Hotronix Hover press from Stahls

ACCURACY IN TIME, TEMPERATURE AND PRESSURE

In a survey of users, one of the most important features in a heat press is the ability to set the time and temperature automatically. Older heat presses that don't feature digital time and temperature controls not only offer less accuracy, but it is also cumbersome when you have to repeatedly manually reset the 'buzz' timer. Some presses don't even have timers if you can imagine that! All Stahls Hotronix heat presses feature digitally controlled time and temperature gauges and are known to be the most accurate and reliable in the world. In addition, some models feature the ability to identify the pressure setting at which the press is working. Time, temperature and pressure are the three variables that need to be under control in order to have successful heat printing results. The more advanced your press is at determining and controlling these variables, the more confident you can be when heat printing any type of garment or fabric.

So let's say that you are completely happy with the style of your press and also with the way that you can control the time, temperature and pressure, the three most

The Fusion's features include a swing-away mode

important variables of heat printing. What else are you missing in your heat printing experience? Let's move on to what might be considered by some to be 'luxury' features—automatic opening and the ability to programme your press to remember the time and temperature requirements of your most often applied graphics.

LUXURY FEATURES

If your press has an 'auto-open' feature, you will be much less likely to burn or ruin garments because you weren't there to open the press after the end of the printing cycle. There are several Hotronix models that open automatically – the main advantage of this feature is that you can be preparing the next garment while another garment is printing. Production time is made more efficient and you can produce more shirts per hour. It is also just plain fun to see the press open on its own. Make sure to be on the lookout for easy exchangeable lower platens: this can be a huge aggravation in itself if one must have an assortment of tools handy just to change one heat platen for one another.

IMPORTANT FOR DIRECT-TO-GARMENT PRINTERS

In addition to automatic opening and the ability to programme settings, yet another 'luxury' feature is found in the Hotronix Hover Press. It is the only heat press available for curing direct-to-garment inks. If you own a direct-to-garment printer, this feature is something you should know about. The upper platen is designed to hover over the garment to ensure brighter colours and a stronger bond between ink and the garment. With this breakthrough technology, you never have to worry about direct-to-garment ink residue on your platen. It also has two modes, one for contact and the second for pressure. You can combine three settings of hover, pressure or a combination of both. If you don't use direct-to-garment technology, you can still use the hover press to apply just about any type of heat printing graphic.

THE NEXT LEVEL OF HEAT PRINTING

With all these improvements in heat printing technology, you may be starting to look at your ten-year-old press in a different light. Is it time to update your heat press? If you aren't convinced yet, perhaps the very latest in heat printing innovations from Stahls Hotronix, the Hotronix Fusion, will change your mind.

The new Stahls Hotronix Fusion is designed to make heat printing as goof-proof and easy as possible. This first-of-its-kind machine can be used as a swing-away or a draw press. The press is designed to provide 360 degree access to the bottom platen, making it easier than ever before to slip on T-shirts, sweat shirts, and jackets. You no longer need a pad or pillow for bulky items or apparel with zippers or pockets. Just slide the item quickly and easily over the bottom platen. You can even turn the garment around while it is still on the press, for the fastest way ever to print both sides of the shirt.

Another unique 'luxury' feature on the Fusion is touch-screen technology. On its display you can digitally set the time, temperature, and pressure with your fingertip. It has dual time settings for two-step applications, pre-set programs, and an energy-saving four-hour sleep mode. The press will even 'talk' to you taking you through each step of the programming if you so desire, and can be programmed in eight languages.

Whether your business is completely dependent on heat printing or if you only do a small percentage of heat printing, you may find that having a press with the most modern features will save you time, money and aggravation. ■

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LOW MIGRATION INKS – A COMMITMENT TOWARDS CONSUMERS' HEALTH AND SAFETY

Dr Wolfgang Schäfer and Pascal Iffland observe the responsibilities of packaging chain stakeholders

In 2005, isopropyl thioxanthone (ITX), at that time a widely used photoinitiator in UV-curable printing inks, was detected in baby milk. Later, in 2009, benzophenone and 4-methyl benzophenone were reportedly found in breakfast cereals. These incidents created a stir among food and cosmetics' manufacturers and triggered an intensive discussion in the ink industry about the need to introduce low migration inks to ensure product safety. All stakeholders agree that inks should not contaminate packaged foods.

Printing inks and varnishes for food packaging are an important segment for most ink manufacturers. The food packaging market is divided into two categories – firstly, inks that come into direct contact with food and, secondly, inks that are used for printing the surface of primary or secondary packaging, and do not come into contact with food. This latter category accounts for a much larger share of the market.

The framework regulation (EC) No. 1935/2004 applies to materials and items intended to come in contact with food. Article 3 contains the general requirements for food packaging, stating that: "Materials and articles, including active and intelligent materials and articles, shall be manufactured in compliance with good manufacturing practice so that, under normal or foreseeable conditions of use, they do not transfer their constituents to food in quantities which could endanger human health or bring about an unacceptable change in the composition of the food or bring about a deterioration in the organoleptic characteristics thereof".

Article 17, addressing the packaging chain, requires stakeholders to ensure the traceability of materials and articles at all stages by means of an appropriate control system.

The GMP regulation (EC) No. 2023/2006 defines good manufacturing practices for materials and items. These apply to all printing inks and varnishes intended to come into contact with food. The regulation's most important articles mandate the establishment and implementation of a quality assurance and control system. Annex 1 sets out detailed rules for the formulation and application of printing inks and varnishes.

The Swiss government has passed the Ordinance on Material and Articles in Contact with Food (SR817.023.021). This introduces a series of legal requirements for food packaging inks and varnishes, including a positive list of substances allowed in the formulation of these

inks. It also specifies the permitted migration limits.

The Council of Europe (CoE) Resolution AP (89)1 addresses the use of colorants in plastic materials coming into contact with food. It recommends that colorants meet a set of purity criteria.

To date, there is no specific EU legislation concerning printing inks or varnishes for food packaging. EUPIA has published several information sheets to support members. The EUPIA Exclusion List for Printing Inks and Related Products provides information on selection criteria, and lists substances that may not be used as raw materials in the manufacture of printing inks and related products.

In addition, the EUPIA Guideline on Printing Inks applies to the non-food contact surface of food packaging material and products. The guideline is based on current European legislation and provides detailed recommendations as to how to formulate printing inks. EUPIA also offers Good Manufacturing Practices for the Production of Packaging Inks Formulated for Use on the Non-Food Contact Surfaces of Food Packaging and Articles Intended to Come in Contact with Food and an informative leaflet entitled Printing Inks for Food Packaging. All of these can be found at www.eupia.org.

The packaging supply chain is very complex, starting with raw materials from the chemical industry such as binders and pigments. It also includes substrate manufacturers (paper, board, PE films and PP containers), ink and varnish suppliers, converters, co-packers, brand owners, retailers and finally consumers.

During the manufacturing process, there is a potential risk of contaminating the product. All stakeholders in the supply chain have to co-operate closely, as the ink manufacturer cannot guarantee compliance with requested migration limits acting on its own. Many sources can affect the final packed food.

MIGRATION OF INKS AND VARNISHES

Migration is the transfer of substances from the print on the outer side of the packaging, or the packaging substrate itself, to the packed food. Inks and varnishes may pose a migration risk if there is no effective barrier between the packaging and the content. All types of migration are heavily influenced by processing conditions.

Types of migration

Food may be contaminated by different kinds of physical migration:

- Diffusion migration – Due to their chemical characteristics and molecular size (molecular weight < 1000 daltons), some substances, known as migrants, are able to migrate from the printed side through the substrate onto the unprinted side.
- Set-off migration – Migration of substances from the printed side to the unprinted side of another sheet in a stack, roll or stacked container.
- Gas phase migration – Migration due to the evaporation of volatile materials by heating food in its original packaging or by steam distillation during cooking, baking or sterilisation.

POTENTIAL MIGRANTS

In fact, any substance in an ink or varnish with a molecular weight of less than 1000 daltons is a potential migration risk. Molecules that weigh more than 1000 daltons may still migrate, but pose little danger to human health. Typical migrants include:

- residual monomers from substrates and ink or varnishes
- photoinitiators or break-down products from curing
- non-reacted substances due to insufficient curing
- additives such as flow agents, flexibilisers, plasticisers, surfactant treatment on pigments and dispersing agents
- residual solvents from inks and cleaners

Official toxicologists perform toxicological evaluations of relevant substances. The results of these evaluations are used to compile positive lists of approved substances. Some of these are given a specific migration limit (SML), based on extensive evaluation. The SML (expressed in milligrams/dm^2) defines the maximum acceptable amount that may migrate into the packaged food. In respect to substances that

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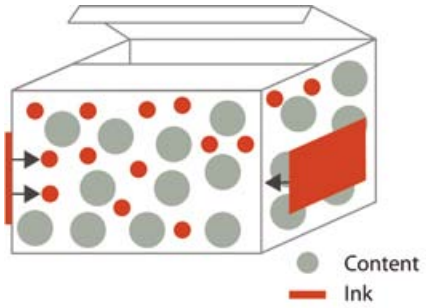


Migration from the printed side through the substrate

Migration of substances from the printed to the unprinted side

do not have an SML, food packaging regulations specify an overall migration limit (OML). This is the maximum amount of all substances (added together) that may migrate into the packaged food. All non-evaluated substances should not be detectable – this means less than 10ppb (parts per billion).

PREVENTATIVE MEASURES

Converters and brand owners can comply with existing food packaging regulations by:

- Introducing appropriate packaging (such as adding an effective barrier)
- Controlling the composition of the raw materials
- Testing the finished product
- Monitoring hygiene during the manufacturing process.

Requirements for UV-curable screen-printing inks

INK FILM THICKNESS CURING/TYPE OF SUBSTRATE

The level of migration depends on a variety of parameters such as curing conditions, ink film thickness and type of substrate. For this reason, the ink manufacturer Marabu recommends conducting a migration test on the printed product.

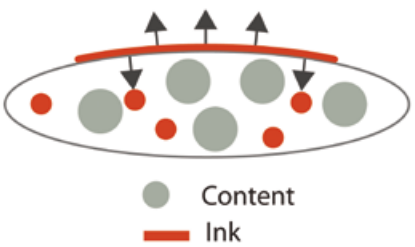
INK FILM THICKNESS

The thickness of the ink film on the substrate reflects the type of mesh. The mesh manufacturer provides information about the theoretical ink deposit. Generally, the ink film thickness should not exceed 10µm (micron).

CURING CONDITIONS

The following factors increase migration:

- UV inks not fully cured
- Insufficient UV power under UV lamps if processed too quickly
- Old UV lamps
- Dirty UV lamps and reflectors



Migration due to the evaporation of volatile materials

TYPE OF SUBSTRATE

Packaging can safely be printed with UV-curable inks if aluminium foil is used as a barrier.

LOW MIGRATION INKS FROM MARABU

External analysis of inks by accredited laboratories has demonstrated that, when the ink is correctly applied onto the right packaging material, the legal migration limits can be met. Marabu has developed low migration inks for different applications:

For container printing UltraPack UVFP is a UV curable low migration ink, formerly tested on the market as 5035. UVFP is mainly used for printing on food, cosmetic and beverage packaging.

For rotary screen printing UltraRotaScreen UVSF 174 is a new high-opacity and low-migration pre-print white for label printing, and is UV-curable and silicon free for printing on self adhesive foils. UVSF 174 is high-gloss, highly reactive and suitable for printing in combination with low migration flexographic inks. This makes it suitable for overprinting with UV-curable inks, and, at machine speeds of up to around 60m/minute, meets all given requirements such as drying and adhesion.

Low migration is a hot topic that has drawn the attention of three stakeholders. First, food and cosmetics' manufacturers have been demanding better solutions, to avoid products that are harmful to consumers' health. Second, ink manufacturers have reacted quickly, bringing low migration inks to the market. Finally, legislators have to drive, and in some cases to force, the launch of low migration inks, as a commitment to consumer safety. ■

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MANUFACTURING TRANSDERMAL PATCHES

Mike Bacon provides an explanation of screen-printing requirements in this specialist industry sector

Automatic dispensing of medications, also known as transdermal or medical patches, has been around since 1979 in the USA when the Food and Drug Administration approved patches for commercial production. From nicotine to pain medications, the process helps to keep users medicated and regulated while they recover from injuries or addictions. Millions of these patches are produced every year and drug companies are always pushing manufacturers to develop new means of production to create more profit for their shareholders.

The main components to a transdermal patch are:

- Liner - Protects the patch during storage.
- Drug - Drug solution in direct contact with release liner
- Adhesive - Serves to adhere the components of the patch together along with adhering the patch to the skin
- Membrane - Controls the release of the drug from the reservoir and multi-layer patches
- Backing - Protects the patch from the outer environment

While all of the components are important, the production of the membrane that controls release of the drug into the system has evolved over the last several years through advanced screen-printing and laser cutting technologies.

Cylinder or flat-bed screen-printing systems are two ways to print, or coat, a high level of conductive ink evenly across thin material substrates. A significant characteristic of the screen process is that a greater amount of ink can be applied to the substrate in a specific area. Repeatability measurements of +/- 0.05mm or +/-0.1mm are common for many systems.

EFFECTIVENESS OF SCREEN-PRINTING

Due to the simplicity of the screen-printing process (components include the screen or image carrier, squeegee and ink) a wider range of conductive inks are available for use. Sophisticated systems allow for multiple pass operations while automatically compensating for material stretch or shrinkage. The goal is to make it more of a science than an art form and equipment manufacturers are doing their best to make this a possibility.

Different screen types are used for membrane switches. From porous nylon to stainless steel mesh the diameter of the threads and the thread count of the mesh determine the amount of ink that is deposited onto the substrate. Screen-printing also gives a manufacturer the ability to through-hole print onto a backing filter paper for membrane switches that require back-to-back construction. The conductive ink is pushed through a tiny hole to the back of the substrate therefore providing conductivity on the rear side of the switch.

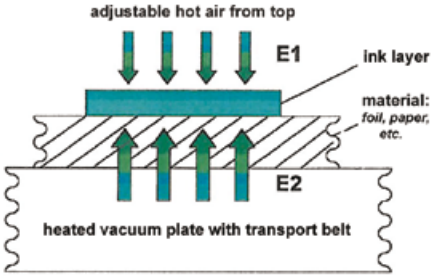
Production rates have long been dictated by the drying rate of conductive inks. The longer the dry cycle the larger the floor space required and less efficient the screen-printing process. Drying the inks consistently to provide the best resistance measurements can be the difference between a profitable job and an unprofitable job requiring a reprint. Certain inks and applications require UV curable inks and curing devices. Developments in both areas continue to push into the marketplace. In the transdermal patch example when UV inks are not required hot air dryers are commonplace.

Hot air dryers are typically relatively inexpensive but may require significant floor space because drying times are longer. Hot air pushes over the top of the substrate and cools from the top down resulting in a lot of inefficiencies in the drying process. The heat escapes into the surrounding area and more heat is needed over a longer period of time to reach the optimal drying temperature. Recent developments in contact dryers provide a more efficient solution for these applications. The printed substrate moves over a vacuum plate system and dries the ink from the bottom. This reduces the overall drying time and floor space required for the screen-printing system.

Concentrated heat across a vacuum plate that does not escape into the atmosphere can give the ink more conductive properties and create a more thorough drying process. Skin effect commonly seen during the hot air drying process is eliminated. Rather than drying from the top surface down to the carrier substrate like the hot air dryer, the contact dryer introduces heat from the bottom. Screen-printing systems using contact dryers have been measured as high as 70% more efficient than conventional hot air dryers.

LASER CUTTING BENEFITS

Converting parts into useable products can be done by rotary die-cutting, flat-bed die-cutting or laser cutting. Laser cutting using a galvo laser system has taken on new interest within the transdermal market because of the cut quality, speed and precision that laser cutting has achieved in recent years.



A detailed schematic of a drying system

Traditional rotary and flat-bed die-cutting have been effective in the past; however, concerns over metal debris and oils contaminating parts continue to push manufacturers to seek out other technologies. Laser cutting removes these concerns because it is a tool-free converting solution that offers quality and flexibility. With job runs shrinking, and part designs becoming more elaborate, laser cutting is making a splash in the converting world. Many screen-printing systems have the ability to run in-line with laser cutting systems, as well as traditional die-cutting systems, so the equipment becomes a complete turn-key solution. Many laser cutting systems take vector based files and convert them automatically into a cutting file. Within minutes the system has changed the cutting specification and is running a new job. Most materials are able to be laser cut without any visible distortion or speed reductions as some laser cutting systems reach speeds up to 100m per minute.

The combination of screen-printing accuracies and ink coverage, along with developments in drying systems and laser cutting technologies, have many manufacturers breathing a sigh of relief when tougher specifications are required from their customers. ■

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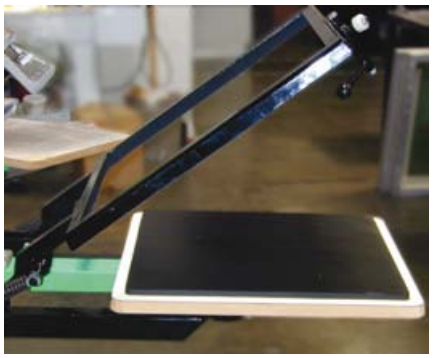
THE BEHAVIOUR OF NYLON

The idiosyncrasies of this material during printing are outlined by Ed Branigan

There are several issues printers will come up against when printing on nylon that will require patience and, in the case of lined jackets especially, a lot of practice. As mentioned previously, regular nylon shrinks when it is heated, a major factor that must be taken into account when printing.

These days most nylon fabrics only require one preshrink after which the fabric stays shrunk. Some others are extremely heat sensitive, in particular those that may have blends of other types of material in there. It is also very important to heat-test a sample of the production fabric to determine the threshold at which it begins to pucker or scorch.



A nylon jacket clamp in the open position

Pre-shrinking of a nylon jacket in the dryer

A nylon jacket being clamped down

This threshold can vary a lot, particularly with blended nylon fabrics. If this heat threshold for the nylon fabric is lower than the level of heat that it takes to cure plastisol then you are in trouble.

LACK OF ABSORPTION CAPABILITIES

Another complicating factor is the nature of the nylon material itself. It is synthetic with little or no absorption capabilities. Add to this the fact that is very tightly woven, so tight in some cases that it is like printing on a drum.

This poses two problems for the printer. One is getting the ink to stay on the material if it can't at least be partially absorbed. The second is the necessity to flash every colour. It is easier to print wet on wet on cotton jersey because the ink soaks into the fabric somewhat.

This helps in two ways. The ink soaking into the shirt fibres gives them what is called a mechanical bond which helps with washfastness after the ink is cured. It also makes wet-on-wet printing easier because the ink is not sitting on top of the garment waiting to be smeared or picked up.

With nylon, the ink cannot get a mechanical bond. It sits on top of the garment, unable to penetrate the fibres. The ink can be cured, but it will scrape off the garment unless given a little help. To do this we add a catalyst or bonding agent. This gives the ink a chemical bond to the surface of the garment and ensures that it stays on there.

Every colour needs to be flashed simply because the ink is sitting on top of instead of penetrating the fabric. There's too much ink there to avoid smearing and pick-up.

The only way to ensure quality is to flash in-between colours.

'PURER' INKS

The inks used for nylon printing differ from regular plastisol only in the sense that nylon inks are 'purer' inks. They typically don't contain any of the fillers or other additives that most plastisols will. They can be printed on other materials besides nylon as well. One example besides cotton, are the reusable bags that most retail stores are carrying. These are usually made from polypropylene, which melt at the higher temperatures required to cure plastisol.

However, we have created an additive that will help the nylon ink fuse at a low enough temperature (275 degrees F/135 degrees C versus 320 degrees F/160 degrees C) that allows you to print the bags. Of course it is important always to test the bag material first to determine whether it can withstand the 275 degrees F/135 degrees C temperatures required for the curing of the ink, but generally the combination of the nylon inks with the low cure additive works quite well.

Application of the third colour

The final full-colour nylon jacket

In conclusion, all of the challenges faced when printing on nylon will come from the material itself. The print application of nylon inks is the same as any other with the exception that the flash after every colour is required, which is due of the nature of the fabric. ■

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THE ART OF CHOOSING THE RIGHT INK

Jon Kail looks at the key trends in the screen-printing market for producing point-of-purchase displays

SunPromo Universal ink range is designed for adjustment free running

Choosing the right product or service to meet a myriad of needs in today's consumer driven society can be a challenge. Across the board consumers are overwhelmed with options and variety, so achieving stand-out that will impact the customer is key to success.

Achieving this stand-out is not only important for on-shelf goods, but also for in-store and short-term advertising displays that promote these goods. The mediums and substrates through which these promotions are carried are varied, but this doesn't need to impact negatively on brand and colour consistency.

Take for example, how in-store and short-term advertising increasingly use substrates that are perceived to be recyclable (due to the lower environmental impact). This has resulted in a shift away from PVC to polypropylene. Promotional campaigns also often involve printing similar graphics on to a range of different materials such as paper, display board and sheet polypropylene. The ability to print on to all these different substrates and get a good match for colour and appearance is crucial. Printers who benefit from using only one ink system find that they minimise the amount of colour matching and ink adjustment work required which, in turn, helps to reduce overall costs.

Another challenge to consider is the increasing use of large-format offset to produce point-of-purchase graphics. Due to this, screen-printing is being used more for rigid plastic displays, since these materials cannot always be decorated by offset. To maximise the future utility of large-format screen presses, the ability to decorate a very wide range of plastics using a single ink system is also beneficial.

ISO 12647 COMPLIANCE

At Sun Chemical, we are also seeing an increasing requirement for screen-printed four-colour process work, which closely matches ISO 12647 compliant contract proofs and offset prints. Selecting an ink that has highly transparent process colours which are matched for shade to the ISO 12647 colour co-ordinates, and which prints consistently sharp images with minimal dot gain, is essential to achieving this standard.

Efficient recovery and re-use of stretched screens is also important for the large-format screen-printing process. For printing UV-curable inks, fine screen-printing fabrics with a relatively low open surface area are used in conjunction with relatively hard and rigid squeegee blades. Colour staining of the mesh is a common problem and stain removal requires the use of an extra processing step.

Due to the aggressive nature of the chemicals used, this tends to increase surface damage to the mesh fibres which, in turn, makes the fabric more susceptible to future staining. In this situation, printers will benefit from using an ink that is designed to have a relatively low mesh staining potential and therefore allow them to better maintain the quality of stretched screens, extending the operating life.

Sun Chemical's SunPromo Universal ink range is designed for adjustment free running on large-format multi-station UV presses, delivering efficient drying and adhesion at the relatively low lamp power output experienced on many machines.

This UV-curable screen ink system is a dedicated solution for printing indoor and short term outdoor displays, particularly large-format in-store point-of-sale promotions. It is designed to optimise colour consistency across a wide range of substrates, including pre-treated sheet polypropylenes, delivering high quality graphics with maximum efficiency in use. This also allows compliance to process printing standards now widely requested by print buyers. ■

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Sun Chemical offers a complete range of screen-printing inks

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SCREEN-PRINTING ENTERS THE DIGITAL ERA

Don Copeland outlines the benefits of direct-to-garment production

During the last decade and a half or so we have witnessed the emergence of digital imaging as a viable option for most forms of printing – be it signage, vehicle graphics, commercial printing, advertising, billboards – you name it – you can get it printed digitally. Digital printing for the textile industry has been a reality for almost a decade now, starting with roll-to-roll printers that imaged directly onto fabric that would later be cut and sewn.

The garment market presented another challenge – how to handle preassembled items and decorate them with digital technology. The major breakthrough in direct-to-garment imaging came in late 2004 at the SGIA show in Minneapolis when the first commercially viable printers were exhibited. The machines were slow and limited to only printing on light garments for the most part, but the revolution had begun.

Fast forward seven years to where we are now. There are at least ten or more viable direct-to-garment printer manufacturers on the market today with virtually all of them offering the ability to image on both light and dark garments. It is now possible to offer full colour, short run digital graphics to your customers quickly and without the traditional set-up costs and large minimum requirements. Welcome to the ability to offer mass customisation to your customer base.

Applying pre-treatment with a special machine

Pre-treatment can also be applied by hand

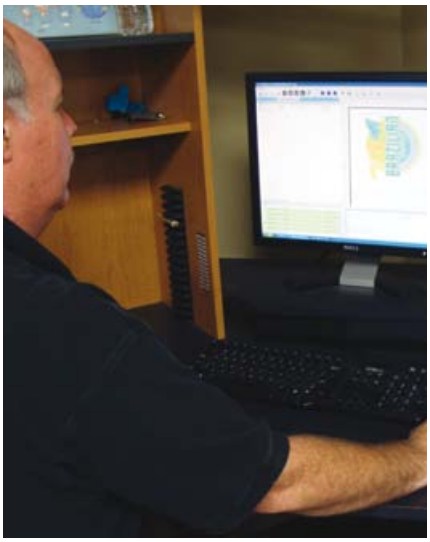
BEING GOOD WITH GRAPHICS

So, what is digital direct-to-garment printing? In not so many words, it is exactly what it says it is – digital (meaning no screens, separations, films involved) direct (no intermediary steps like creation of screens, films or transfers) to garment (the image is printed directly to the garment).

Why is this beneficial? Number one, it is no longer about being skilled in apparel decoration – it is more about being good with graphics and using those graphics to get a message across. This is really what it is all about – T-shirts are simply another medium where people get a message across. It could be advertising for a business, support of a given cause, an attitude, personal belief or one of hundreds of other types of messages. When you think about it, this is what virtually all printing is; direct-to-garment printing allows you to commute this to a wearable medium.

The next logical question would be what is involved in the process? In virtually all direct-to-garment printing you will need a computer with graphics' software, a heat press and some method for the application of pre-treatment (more on this later) along with a direct-to-garment printer. Your printer will usually be supplied with a RIP (raster image processor) that will create your underbase (think of this as a primer layer) for dark garments, control colour matching and other features ranging from ink volume control to job costing. Most printers will interface with your computer via a USB cable, though some also support Ethernet connectivity.

A direct-to-garment printer outputting two white garments



Specialised RIP software is used to drive the direct-to-garment printer

A dark shirt printed direct-to-garment

Direct-to-garment printing allows easy production of variable images

ARTWORK GENERATION

The artwork is generated in the graphics' software of your choice and the image is loaded into the RIP (either through your software's print command or by opening the image directly in the RIP). You select the settings required – things like the colour of garment you are printing to, the amount of white ink required for your underbase (if any) and the number of garments you want to print. You then release the job to the printer; it is printed and then it is cured with either a heat press or a belt dryer. You have just printed your first direct-to-garment shirt.

Sounds pretty simple, right? Well, it still depends on good artwork, but what type of printing doesn't? There are some other factors to understand when imaging onto garments. If printing on a white shirt, the process is pretty much print, press (cure) and you are done. If the garment is not white you need to know when to use an underbase. But first, it's best to clarify what an underbase actually is. Direct-to-garment printing utilises process inks to create the colours in your graphic. As all printers know, process inks are translucent and rely on a white background to generate the proper colour.

When printing direct to garment you will often be faced with garments of many different colours; actually only a small percentage will be white shirts. Thus we have to deal with how to get consistent colour on these non-white garments. For lighter shades like pastels, ash and natural you can often get away with simply over-saturating the image to 'overcome' the shirt. This is very practical, especially when dealing with darker coloured images on lighter coloured shirts. Your colours will often shift toward the shade of the garment in these cases but, by simply removing some of the core colour of the shirt (the process colour it is closest to), you can achieve very acceptable results.

UNDERBASE IMPORTANCE

If you are printing the same image on different coloured shirts, or are printing on dark shirts, it is necessary to print an underbase of white ink. Your RIP software will generate this base for you based on the mix of colours (basically laying white ink under each cyan, magenta and yellow drop of ink; there is no need to underbase black as it is not translucent). The RIP will also allow you to adjust the amount (density) of white ink laid down based on the colour of the shirt (darker coloured garments require more white ink to give sufficient white to cover the fabric shade).

Since garments, especially cotton which is the most common digitally printed fabric, are absorbent it is important that the white ink stays on top of the fabric in order to create a base for the other colours to sit on top. This is achieved by a process called pre-treatment that is applied to the garment and reacts with the white ink, causing it to set-up (a process often referred to as 'crashing'" in direct-to-garment circles) on top of the shirt. Pre-treatment can be applied by a hand sprayer, a machine specially designed to apply the process or, in a few instances, by the printer itself. Regardless of how it is applied to the job the pretreatment performs the same function.

Once the garment has been printed the final step is to cure the inks on the shirt. This can be done with a conventional heat press, a belt dryer or a specially designed dryer box.

That is direct-to-garment printing in a nutshell.

Deciding which garment printer best fits your needs is a subject for another article. Suffice to say that image area, speed and cost are all factors to consider. Adding direct-to-garment printing to an existing printing business can expand market reach and add profits to your bottom line – and who isn't looking to do that these days. ■

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THE SCREEN CLEANING BOXING RING

Jason Davenport investigates the differences between petroleum based and green ink removers

Can newer, safer, greener cleaning technology really knock out tried and true older, petroleum and caustic based cleaners? So, without further delay ladies and gentlemen, in this corner, the current champ, weighing in with an impressive record, holding the titles of Earth Pollutant and Ozone Puncher, is Petroleum Pete. And in this corner, the contender, seeking to displace the champ, weighing in at an incredibly growing rate, holding the titles of Renewable Resource and Green Earth is Enviro-Friendly Ernest.

Even though this is a battle you are not likely to see on your TiVo or Sky system, screen-printing shops across the globe are coming to this fight. They are faced with having to decide which, if any, green cleaning products can be cost effective, can work and, in the end, get the job done with the least amount of fuss possible.

Let's be honest, of all the operations screen-printers perform to keep their business strong and growing, most shops probably give the least thought to their cleaning operation. Cleaning areas are tucked back in a corner and generally look like World War III has begun.

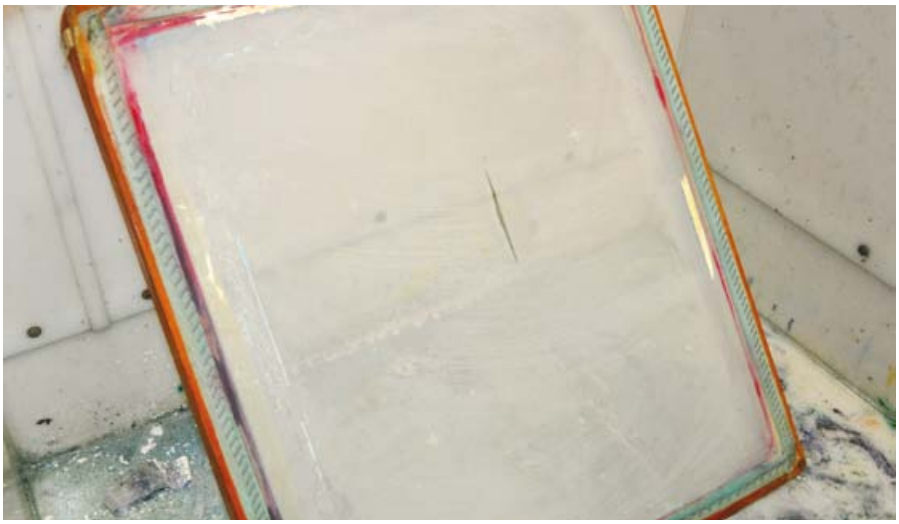
I believe cost effective, good screen cleaning means better printing performance, longer lasting screens and more money in screen printers' pockets. I have worked with both Petroleum Pete and Enviro-Friendly Ernest, and I am writing this article because I also believe that Enviro-Friendly Ernest should, and can, be a screen printer's cleaning Champ.

ROUND 1: INK CLEANERS AND DEGRADERS

There are hundreds of ink cleaners on the market to clean numerous different inks used in screen printing today. They generally will fall into three categories of petroleum, green, or a blend I call petro-green. Petroleum cleaners are usually highly volatile, often dangerous, not earth friendly and made from the by-products of the refining process of crude oil. Green cleaners generally are not volatile, seldom dangerous, earth friendly and are made from renewable resources such as soybeans, corn, and oranges. Petro-green products are a blend of petroleum and green products that generally are less volatile and provide manufacturers of petroleum products with a method to make their product less dangerous to use. Ideally, screen-printers just want a cleaner that is affordable and works well. It's an easy ideal, but sometimes not an easy pick when searching for the right cleaner.

As the previous undisputed Champ, petroleum cleaners have been used for many, many years. They have been viewed as working well, being cheap and easy to get. But in today's world we have learned that petroleum cleaners come with heavy baggage and possible problems that can cause you to pull your hair out. Ever had an emulsion that would not clean out of the screen or came out in pieces? If so, you are probably one of many screen-printers using a petroleum or petro-green cleaner (sometimes referred to as hot solvents) in your shop.

In their day, there is no question that hot solvents were the best cleaning option available. But, that was before there were alternatives, other contenders. Petroleum and petro-green cleaners can have devastating effects on certain types of emulsions causing you headaches and the added cost of new screens. In addition to possible production or cleaning problems, hot solvents also bring a variety of hazards that shop owners must be cautious about. High VOCs (volatile organic compounds, aka 'the terrible smell'), high flash points that can easily start fires, worker health and safety issues and environmental impacts are among the top of the list. The bottom line is that petroleum and petro-green



Example of a caustic acid based haze remover that was left on slightly to long. After only 55 seconds, the screen mesh tore in the middle making the screen unusable

Even after leaving this green haze remover on for more than ten minutes, the mesh has no damage.

cleaners clean well and appear to be cost effective, cause avoidable production problems, safety issues, increased health concerns, and impact the environment in ways many of our customers want us to avoid.

Green ink removers have gained more popularity in recent years, but have been around for decades. Although often viewed as more expensive and not as effective (technological advances make this presumption untrue in today's world), green ink cleaners have been the underdog for many years. But green ink cleaners can be that hidden gem that has a big payoff when used properly. Green cleaners require a different mindset when used to clean screens and cannot be used exactly like their petroleum counterparts.

Have you ever had a situation where you wanted to do a colour change and the tape will not stick after the ink is cleaned out? This is a common situation when a green cleaner is used. Where hot solvents have low flash points and quickly evaporate from the screen, green cleaners generally require a damp, water wipe to remove the last of the solvent residue. The best green ink cleaners do not bring safety and health baggage with them. Since most green cleaning products clean the same way as non-green cleaning products, printing or cleaning problems typically do not occur. When problems do occur, they are generally solved by completely following the product's direction for use.

So what about the cost, you ask? In many cases green ink cleaners can be cheaper to use than their petroleum and petro-green competitors. They are usually more expensive up front, but cheaper in the long run. I call it the 'sticker shock' effect. In today's market you can always buy a gallon of mineral spirits or xylene for less than a gallon of a green cleaning product. But the proof is in how many screens you can clean with each of those gallons. I know of one green cleaning product that only requires 7 grams (1/4 ounce) of product to clean a standard sized screen. If used correctly, that's 512 screens per gallon! How many gallons of mineral spirits would it take to do the same number of screens? I talk to hundreds of screen-printers each year and they can tell you what they tell me: "A green ink cleaner can be more cost effective to use than your standard mineral spirits."

ROUND 2: EMULSION AND STENCIL REMOVERS

Even with today's multitude of blue, pink, green, purple, single part, diazo, and dual-cure emulsions, one thing remains the same – there are not a lot of new chemistries for reclaiming an emulsion. Back in the days of my grandfather walking to and from school, up hill both ways in three feet of snow, screen-printers used bleach to remove emulsions. Bleach worked, but had far too many disadvantages that outweighed the advantages. If not careful, one could find themself disorientated, or worse, from the bleach vapours, not to mention it took a long time for the emulsion to be removed.

Believe it or not, there are only two environmentally friendly primary chemistries on the market that will remove emulsions and stencils. They come as a liquid and in crystal or powder form. The trick is how you use them. Every emulsion or stencil requires a unique dilution rate of one of these two chemistries to remove a properly cured emulsion. Some manufacturers make a one-size-fits-all emulsion reclaimer, while other manufacturers tailor their emulsion reclaimers to specific emulsions.

For example, product XYZ remover has been specially tailored to remove BlueDew Emulsion (not a real emulsion). If you were to purchase BlueDew and found a cheaper emulsion remover, you might find that the cheaper emulsion remover might not work nearly as well. So not all emulsion removers are the same. Even though most manufacturers use one of the two same chemistries, the trick is finding the one that removes your brand and type of emulsion effectively. A tip: if your emulsion remover does not remove your emulsion with minimal effort in less than a minute, you should look to replace your emulsion remover.

ROUND 2.5: DECREASE YOUR ECO-FOOTPRINT EVEN MORE WITH RECLAIMING

For many years, the screen-printing world had asked for a product that could remove ink and emulsions in one step. Nearly five years ago, the manufacturing world met that request. Interestingly enough, the chemistry used relies heavily on the same chemistries used in current, environmentally friendly emulsion removers. The process works by dipping your screen into a tank and soaking the screen for a short period of time. Then, using a low PSI power washer to clean the screen out, you are combining two steps into one step. The tank traps and contains most of the emulsion and inks, keeping them from entering the water discharge system. When it comes to the time to empty the tank and start with a fresh batch, shops use a filter system to remove much of the trapped emulsion and ink, further reducing their eco-footprint.

There is something to remember when using these systems; they do not degrade the ink from the screen, they only soften the ink.

Continued over

Any type of chemistry that degrades ink can also remove the adhesives from around the frame edge. There is nothing like pulling the screen out of the tank only to find the mesh floating away from the frame. These systems simply use emulsion remover chemistry with blends of degreasers. The emulsion remover removes the emulsion and the degreasers loosen the ink, enabling it to fall off the screen or easily blow out of the screen.

ROUND 3: HAZE AND GHOST REMOVERS

It's unbelievable to me the number of screen-printers I talk to each year that never remove the ghost/haze from their screens when reclaiming. It's such an important step that takes very little time, makes your screens last years longer and keeps you from having pin holes and other problems down the road. With a good quality mesh, you can never 'stain' the mesh. Essentially, a haze image is ink that is trapped in the 'knuckles' of the mesh creating a light visual image of the artwork that was printed.

Most of the the time the reasons given for not de-hazing are because the caustic products on the market are incredibly hazardous and would ruin your screen if not watched like a new puppy roaming around on your new living room carpet.

Thus, many screen-printers choose to de-haze once or twice a year, or not at all. Caustic de-hazers do work extremely well to take a haze or ghost image out of a screen mesh, making the screen look new and pretty again. But they work primarily by eating away a small bit of the surface of the mesh helping to release the trapped ink between the 'knuckles' of the mesh.

There are disadvantages to using these products, however. Continually eating away at the mesh eventually will weaken it causing future printing registration problems. In the most severe cases, if you left the de-hazer on too long, you would find a major tear right across the mesh, causing you to purchase a new screen. In addition to possible damage to the screen, there are environmental and health concerns with these caustic de-hazers. If using a caustic de-hazer, be sure to follow all the instructions properly and have proper disposal methods to decrease your cleaning and disposal impact on the environment.

Green dehazers work differently and therefore must be used differently to effectively clean the same haze image that a caustic haze remover eats away. If you picked up a green de-hazer today and used it exactly like its caustic counterpart, you would find yourself wondering if you should return the product. If used properly a green dehazer will remove a ghost/haze image just as well as a caustic dehazer. Where caustic dehazers will eat away at the mesh, green de-hazers go to work on the ink without harming the mesh or the individual who is cleaning the haze image.

To keep from being frustrated, follow some basic principles that apply to most green de-hazers. First, remove your haze images each and every time you reclaim your screen. There are lots of variables to what can occur but, in most cases when haze images are left in the screen with the intent to clean them out every three or four reclaimings later, they become very difficult, if not impossible, to remove. Secondly, the drier the screen, the more effective the dehazer will work. Water that is left on the screen can dilute the dehazer making it less effective. Lastly, green dehazers take a little longer. Be patient and let the product you are using go to work. In some cases you can be looking at a minute to two minutes longer than a caustic dehazer.

Example of what happens when a hot solvent has been used for cleaning the ink from the screen

When proper ink cleaners have been used and the correct emulsion remover is used to reclaim, the emulsion will cleans easily

CONCLUSION OR CONCUSSION

Although the fight still goes on, the champ is weakening and the contender is getting stronger. Clearly, petroleum, petro-green, and green products all have their advantages and disadvantages. It is up to the shop owner to evaluate these and choose the best products that are cost effective, work well and are safer to use. For my money, and for yours, I encourage shop owners to take a look at the growing number of green cleaning chemistries. Ask your supplier questions for which you may feel you need answers. Choosing the wrong product can leave you and your staff feeling frustrated, tired, and simply unhappy doing his or her job.

Every writer is told to always close their article with a strong punch line (pun intended)! My line is to go with the contender. Environmentally friendly, green products have come on strong. Today they might not claim the title with a TKO, but they are on the fight card to stay, and have the potential to claim the Cleaning Title with a clear knock-out. So, if you feel like you have been knocked out after cleaning screens, maybe it's time to try something new, better, and safer. Go green. ■

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Printed displays with unusual geometries

Contour cut illuminated acrylic signs


Even with small radii: flame polished cut edges

Laser cut and back-lit dimensional letters


Flame polished cut edges


Intricate-finish book binding and cover


Printed and cut cardboard displays

Engraved and cut wedding invitations and greetings cards

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ISO 14001 trotec Taking Responsibility

ENHANCING SURFACE FINISHES USING FLOCK

Holger Walter provides an overview of the revival of this process

Flock has come a long way from its humble beginnings centuries ago. It's not a question of whether to print or flock, but to combine the best of both technologies.

It's not just the look of flock – from gentle pastel tones to bright glossy colours, but also the feel – from velvety smoothness to brush-like surfaces, which we encounter with pleasant surprise on common and not so common objects in our everyday lives. The optical and haptic properties of flock go even beyond mere decoration and have enabled the flocking process to find a solid position in technical applications as well. This surface finishing technique is not a product of modern times, but goes back many centuries.

The birthplace of flock was in Asia, where for hundreds of years, natural fibres had been bonded onto textiles using resins. From this relatively humble beginning, the current electrostatic flocking process has evolved over the years, conquering even wider fields of application on the way.

As unconventional as this technology initially appears, flock can be found everywhere. It is used to improve the feel of a garment, for its positive effect in noise reduction and its ability to equalise tolerance between objects or provide thermal insulation and to provide a better grip on tool handles, to name just a few examples. All these applications can be done on many different types of substrate, such as textiles, plastics, metals, glass, wood, foil and paper.

Book jackets and covers with a flocked finish

Special raised effects created with flock

Effective flocking onto fabric gives a raised finish

FLOCK TECHNOLOGY

What is flock? Flock can be defined as short fibres, which have been cut from monofilament yarn, made from polyester, polyamide or viscose. In electrostatic flocking, millions of these short-cut fibres are fired in an electromagnetic field into a substrate coated with adhesive. The electrical charge causes the fibre to embed itself more or less vertically into the adhesive and thus provide a uniform textile-like surface.

Depending on the area of application and choice of adhesive, the flocked surface can be highly durable and very resistant to abrasion.

Flock fibres are available in various lengths and thicknesses, which are classified both in mm (for the length) and the so-called decitex (dtex) value (for the diameter). Simply put, the longer and thinner the fibre, the softer the surface; the shorter and thicker the fibre, the more brush-like. The choice of the flock length and thickness determines the primary optical and tactile effects.

AREAS OF FLOCKING

There are two distinct areas of flocking and we differentiate between all-over and partial flocking.

In the so called all-over flocking, the substrate surface is completely covered with adhesive and, using automatic flocking units, a uniform flock surface is achieved. This is typically used for manufacturing high-quality and durable upholstery fabrics.

Partial flocking can be done using a masking process, but this is usually costly and difficult and therefore is only economical for one-off items. For larger quantities, the process of choice is screen-printing, which offers the advantage that it can be used both for flat substrates and three-dimensional parts as the adhesive can be selectively printed, thus allowing unique designs to be created.

ADHESIVES AND SYSTEMS

There are several different adhesive systems for processing flock. These range from solvent-based and water-based, to single and two-component adhesives. The selection of an adhesive depends on the type of substrate to be flocked and which effects are required to be achieved.

The systems for applying flock range from simple to advanced and automated systems. There are simple manual flocking units, which are suitable for small and medium size runs. For advanced use, there are modules which can be integrated into fully automated systems. These latter systems enable even long runs to be produced economically and reasonably priced.

DESIGN AND CREATIVITY

The mesh fineness of the screen-printing fabric presents limitations in the design when partial flocking is to be carried out. The coarse mesh which must be used restricts the fineness of the design. Furthermore, the length and thickness of the fibres is ultimately decisive for the contour sharpness and, thus, for the design selection.

Fine half-tones and very thin lines are almost impossible to achieve and, with small size fonts, the result leaves a lot to be desired. Nevertheless, using flock as a surface finishing method does open up a wide field for creativity, in which many unique effects can be achieved.

In recent years, flocking on paper, cardboard and packaging surfaces has grown considerably. For example, book jackets, covers, greeting, invitation and gift cards can be printed on a large scale and ultimately enhanced by flocking.

We have found that, in many cases, the issue is not simply a question of whether to flock or to print, but to find creative ideas using a combination of both technologies. Thus, a printed substrate can be significantly enhanced by additional flocking. Once more, we are finding renewed interest and demand for high quality wallpaper, which has been made even more attractive by the application of flock.

When we take a surface which has already been flocked, it can be additionally finished by screen-printing or embossing. Also, flocking on three-dimensional parts is on the increase. Take for example the glove box in a car or the inside of a spectacle case; both have been flocked. More and more we are finding that glass and porcelain are being screen-printed and flocked. Their flocked surfaces can even be made dishwasher-safe, thanks to the development of a special adhesive. Gift boxes made of wood or metal can be screen-printed with adhesives and then flocked.

In summary, flocking is a process that can be used both in one-off as well as in industrial production. Its application is universal, as we have seen in everyday objects. Unique effects can be achieved, presenting constant challenges to the creativity of both producers and screen-printers. ■

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Flocking can enhance packaging products

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LASER CUTTING AND DIGITAL PRINTING – A LOVE STORY

Alexander Jauker discusses new business opportunities for a competitive environment

Without a doubt, the business model in the printing industry has changed enormously in the past years. With runs becoming shorter and tight deadlines being a daily business requirement, print service providers need to identify new areas where they can distinguish themselves from the crowd.

Unusual shapes for displays, signs or paper products make an end result more interesting and of higher quality. Print service providers and sign and display companies, who offer the contour cutting of printed materials and laser engraving as a service, are able to expand their businesses. Finishing jobs are nowadays already very common for conventional knife cutters and milling machines. But, in the last few years, sign and display companies have also expanded into contour cutting of printed materials such as acrylic, paper, card, MDF, polystyrene and foam boards using laser systems.

The laser opens new business opportunities and enables the small and medium print service providers to get new income streams. By offering the contour cut of valuable materials, it is possible to generate new products and services with higher margins. Therefore, a laser system is the ideal tool for expanding the fields of application and providing the most possible flexibility.

Laser cutting of an intricate finish book binding and cover

INTRICACY IN CUTTING

Most of the sign and display companies that invest in a laser cutter expand into the field of acrylic fabrication because unusual shapes and detailed cuts are not feasible with a router. The shapes are too complicated, manual flame polishing is quite expensive and, in many cases, there is a lack of application knowledge. As a result, such tasks or applications are often outsourced.

But with the outsourcing, loss of control can be linked. You need to pay the sub-company and you need to plan for using more time. Therefore you lose the just created higher margin and control over the whole process, you lose flexibility and, all in all, you become less competitive. The beauty of laser finishing is the differentiation it provides from the crowd. A laser cutting and engraving machine is a very valuable tool for providing quality on high value substrates.

Another driver in the enormously fast development within the printing industry is UV-curable technology and this type of printed production opens up a variety of suitable materials. Now you need a tool to process and contour cut these new materials and this results in a vast field of applications ideal for using a laser cutter.

Laser finishing opens doors to the generation of higher margins and the ability to achieve greater profit. What are the main advantages of this technology compared with others?

This type of cutting is unbeatable on acrylics as no post-processing of the material is required. Flame polished cut edges on transparent acrylic for signs or displays render cost- and time-intensive manual flame polishing unnecessary. Milled edges, which must be polished by machine in a second process step, can be given a crystal clear finish by a laser in half the time and in only one process step.

Paper finishing can also be redefined. Thanks to laser technology you can produce your own very detailed geometric shapes to a high level of precision and quality. Unbelievable attention to detail is possible with a laser. A cutting plotter is unable to meet such standards. Customers can be delighted with new opportunities for design, and you can differentiate yourself from the competition. Not only can you cut the most delicate paper shapes without difficulty, it is also possible to engrave logos or pictures.

Continued over

Flame polished laser cut edges produced without polishing

A typical example of foam cutting and engraving

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A comparison of the cutting edges of laser cutting and CNC routing

Only one tool for all materials is needed. The laser beam is the universal 'tool' for all geometric shapes and strengths and thicknesses of the material. No matter whether the substrate is rigid or flexible, hard or soft, all that's needed is one tool to optimally process a wide range of materials. Acrylics and paper are prime examples, but laser technology also scores when it comes to processing other materials such as card, MDF, foam boards, polystyrene, films and textiles. Additionally, the heat of the laser beam seals the synthetic material of the textile in a controlled manner giving a nice, clean edge.

ADDITIONAL ADVICE

We know a lot about the processing of printed materials now, but how should I start? Is there special advice when finishing printed materials? The answer is "yes" because finishing starts before the job is printed.

Printed signs, displays or point-of-purchase materials can be cut on an individual basis using laser technology and vision registration. With other methods, such as manual or laser pointer registration, slight distortions of the printed design create unsatisfactory results. However, a camera system recognises any distortions in the printed design. No matter whether it is a linear or non-linear distortion or a rotation, the cutting path is adjusted automatically and dynamically. The cutting lines, therefore, always perfectly match the printed design on both flexible and rigid materials.

Vision registration works by printing registration marks along the image. The camera is mounted on the processing head of the laser and registers the dimensions of the printed design by reading these marks prior to the cutting process. By comparing the read registration marks on the printed design and the target positions in the original cutting file, the vision registration algorithm is able to recognise and compensate for any discrepancies. The software not only corrects rotations but it also adjusts the cutting path if the printed design is distorted or skewed. This guarantees a perfectly cut end product.

A good starter is the Speedy 500 with EskoArtwork's *i*-cut Vision registration system. Knowing that laser technology can open doors for new income streams, print service providers have to identify the most suitable laser system. Trotec's Speedy 500 is proving to be a good partner for manufacturing more products, adding new services and value. It provides enough space for most standard material formats in use today. When users want to go to bigger sizes, the machine offers a pass-through for processing larger sheets. With its countless hardware options including different working tables, lenses, a rotary engraving device or the *i*-cut system, the Speedy 500 is well equipped for every application, with flexibility guaranteed.

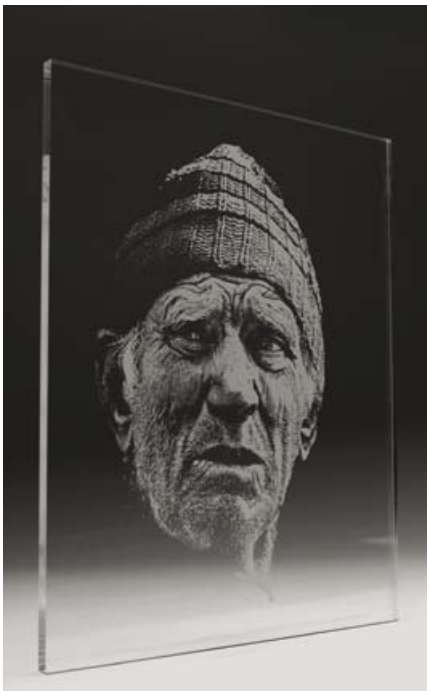
The *i*-cut camera system enables the precise contour cutting of printed materials. Even flexible materials such as banners and flags can be worked with great precision. There is no need for elaborate positioning because distortions in the printed design are identified and the cutting path is adjusted dynamically. The combination of the optical registration mark recognition system and a Trotec laser can generate process cost savings of up to 30%.

This fits into the environment of every print service provider as *i*-cut supports all common file formats including .AI, .EPS, .PDF, .PS, .DXF, .DWG and .PSD. And, with the *i*-script interface the vision software is seamlessly compatible with every major RIP, with Caldera, Colorgate and Ergosoft being typical examples.

NEW SERVICE POTENTIAL

From simple rectangular signs to complex contours and markings, everything is now possible:

- UV-printed, contour cut signs of high quality acrylic
- Intricate gift cards made from paper: printed, laser cut and engraved
- Printed displays with unusual geometries
- Contour-cut illuminated acrylic signs
- Laser cut and back-lit dimensional letters
- Printed and cut cardboard displays
- Intricate-finish book-binding and covers
- Pop-ups for impressive direct mails
- Engraved and cut wedding invitations and greetings cards



Laser engraving of an unusual type of display

- Printed acrylic advertising material, illuminated lettering and logos
- Polyester flags, appliqués and banners

In summary, digital finishing is a non-saturated market with room for growth, ensuring a competitive edge and a high degree of added value. Only one tool is needed for all applications across a wide range of materials, and this system is particularly strong with acrylics as the market demands a flame-polished cut for acrylic point-of-purchase displays and signs. Consequently, this type of cutting provides a high margin service for print shops.

Paper finishing is also redefined as knife plotters can be outperformed with the ability to produce intricate cuts, speed and paper engraving. Flexible materials also benefit, with heat-sealed, clean edges for banners, flags and appliqués.

Finally, acrylic processing with laser technology is up to 88% more economical than CNC routing, due to considerably lower processing costs such as work time for material clamping and finishing. This is complemented by the need for fewer tools so that, overall, the combination of Trotec laser cutting and EskoArtwork's *i*-cut leads to a workflow saving of 30%. ■

Alexander Jauker is Product Manager SBS Cutting at Trotec

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EUROPEAN COMMISSION UNDERTAKES EXTENSIVE REACH REGULATION REVIEW

Elaine Campling reports on the implications of this latest survey

The European Commission is undertaking what is being described as an 'extensive' review of the REACH Regulation[1].
A summary of the survey results and study report will be made publicly available.
A report of the 'lessons learnt' will especially focus on the 'costs, administration burden and other impacts on competiveness and innovation' of the REACH Regulation.
Unfortunately, by the time this issue goes to press, the deadline in which to complete the survey will have expired.

To complete the survey, respondents were asked to choose from a list of REACH roles that best describes the activities of their organisation, eg formulator (mixer) of chemical substances. Trade organisations and other industry representatives were not able to participate in the survey, due to the nature of the questions, which were designed/structured to be answered by organisations producing or using chemicals. A section of the survey focuses on communication and specifically addresses the extended safety data sheet requirements (ext-SDS)[2], which is causing a number of difficulties for downstream users (DU) that are formulators of mixtures.

Many DU will have received some sort of ext-SDS, comprising the safety data sheet (SDS) itself and the much discussed exposure scenario (ES). The REACH Regulation requires manufacturers and importers to provide an ES for REACH registered substances that are classified as dangerous, or persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB), that are manufactured or imported in quantities of 10 tonnes or more per annum. The purpose of the ES is to describe recommended operational conditions and risk management measures for DU to control human and environmental exposure throughout the life cycle of the substance. The ext-SDS must be provided in the language of the Member State in which it is supplied.

DOCUMENT HANDLING

To survey opinion on the ext-SDS requirements, respondents were asked to identify the problems associated with the handling of these documents. A number of negative statements were provided for evaluation, with a seven point response scale (don't know/no opinion, irrelevant and from strongly disagree to strongly agree). It is hoped that the survey will have been extensively undertaken by DU, strongly agreeing with the negative statements to present a unified voice in outlining the many difficulties, such as the lack of standardised format, extensive time and resource required to fulfil their duties and complexity of the requirements.

Many of the ES received by ESMA[3] member companies are very lengthy; 100 plus pages are not uncommon and some are much lengthier. The text of the REACH Regulation does not define the format, layout or content of the ES, though a suggested layout is presented in European Chemical Agency (ECHA) Guidance[4] and ECHA's Chesar system is a tool that can be used to produce an ES format[5]. However, substances' suppliers may be required to work within the constraints of their software.

On receipt of an ES, the first requirement of the DU is to ensure that their use and the known uses of their customers are covered (if relevant) and that these uses are not identified as non recommended uses. The recommended operational conditions and risk management measures related to the use(s) must be put in place. Providing the uses are covered, the measures must be implemented within 12 months, which includes updating safety data sheets for supply to customers.

There are a number of avenues available in the case that the use is not covered by the ext-SDS, including the option to adapt the conditions of use to those described, or select an alternative supplier that has the relevant uses covered. DU can also prepare their own chemical safety reports (CSR), developing an ES as part of the chemical safety assessment. A CSR is not required if the concentration is below the thresholds, specified in Article 14 (2) of the

REACH Regulation, or less than 1 tonne of the substance is used per annum, or the substance is used solely in product and process orientated research. ECHA must be informed within six months, either of the intention to submit a CSR, or that an exemption exists.

For formulators of mixtures, the information contained within the ES must be communicated to customers, unless the substance is present in the mixture below REACH thresholds (Article 14.2), or the identified exposure route(s) is not relevant to the use. The basic requirement is simply to pass on the received ES for the substance(s) with the SDS for the mixture. Alternatively, it is possible to integrate all relevant information for the substances within the appropriate sections of the SDS, or to create an ES for the mixture based on the most important, risk-determining substances. In helping to alleviate the customer burden, mixture manufacturers may decide to produce several ES to cover the various customer uses of their products.

COMPLEX FORMULATIONS

However, many mixtures are complex formulations containing many ingredients. A typical solvent ink formulation (for example) will contain around 15 ingredients, some of which may be mixtures themselves, and a number of the substances will be supplied with an ES. Moreover, an ES will be received from each supplier of the substance requiring one, in the case that the substance is purchased from multiple suppliers. In this instance, it will be necessary to check the consistency of the information provided. If there are relevant differences, then all variations will need to be communicated, or relevant data selected on the basis of 'expert judgement', which may have legal implications. If formulators follow the basic requirement of REACH to pass the ES down the supply chain, this is likely to result in their customers receiving unmanageable documents, which could be in excess of 500 pages per product! Some ES contain supplier

details, the source of which the DU may wish to protect; re-producing the information would be time consuming and may be subject to error.

It is also difficult to see what benefit the receipt of several ES will provide for some professional users, eg printers and, on face value, it would seem a better option to either incorporate the information within the main body of the SDS, or create an ES for the mixture. However, ext-SDS are being received from substance suppliers in a variety of formats; some have the ES for each use as a separate chapter, while others provide the information for all uses together, contributing to the scale and complexity of the documents. It is, therefore, a virtually unmanageable and extremely time consuming task for DUs to disseminate the information, notwithstanding the legal implications in interpreting the information provided by substances suppliers.

Due to the individual nature of ES and the requirement to provide the ext-SDS in the language of the Member State(s) in which the products are supplied, it is likely that many ext-SDS will have to be translated separately. For many DU, this will be a completely unfeasible proposition and hugely expensive process, if the option to pass on the ES for each individual substance is chosen and substance suppliers are unable to provide the DU with the documents in multiple languages. There may be software difficulties or additional translation requirements, even if the option to include the information within the main body of the SDS is preferred, or particularly if an ES is created for the mixture.

RESPONSE FROM ESMA MEMBERS

Many ESMA members have responded to the European Commission survey, taking the opportunity to identify the difficulties for DU. Several ESMA member companies have also written to their MEPs, expressing concern with the ext-SDS requirements, and ESMA has sent a letter outlining the difficulties to ECHA.

Whereas industry and industry trade organisations, such as ESMA, support regulation to protect human health and the environment, the legal requirements must be properly developed to avoid unnecessary burden and ensure that the communication requirements are effective and meaningful. Industry representatives are trying to pick up the pieces by developing a variety of solutions, including electronic tools (ESCom, for example)[6] to facilitate for harmonised communication processes. The ext-SDS is by no means the only problematic area of the REACH Regulation (costs, administrative burden, impacts on competiveness and innovation, for example), but is another feature of where the practical application has not been properly thought out and industry must bear the burden. It is hoped that the crucial REACH issues are addressed by the review of the REACH Regulation. ■

Elaine Campling is Chairman of ESMA's Health, Safety and Environmental Protection Committee and Product Safety Manager for Fujifilm Speciality Ink Systems

1 Regulation (EC) No. 1907/2006 on the Registration, Evaluation, Authorisation and restriction of Chemicals
2 The European Chemicals Agency acronym, eSDS is not being used to describe the extended safety data sheet, since this has caused some confusion in the market place, suggesting an electronic version of the SDS.
3 www.esma.com
4 http://guidance.echa.europa.eu/docs/guidance_document/information_requirements_ESformat_en.pdf?vers=27_05_10
5 http://chesar.echa.europa.eu/
6 http://www.cefic.org

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BRINGING DIGITAL QUALITY TO SPECIALIST PRINTING

Sylvia Muhr explains the need for high precision in commercial and industrial printing markets

Sylvia Muhr is Polytype's sales and marketing director for the Virtu business unit, and has more than two decades' experience in digital printing systems

Formerly known in digital printing circles as WP Digital, Polytype was formed 50 years ago as a subsidiary of Wifag, which was founded back in 1904. Concentrating on the manufacture of printing machinery, the company has grown to the position it is in today by producing bespoke high-end specialist equipment for the newspaper, converting and finishing industries. The company has never been involved in run-of-the-mill production; its extensive production facility in Fribourg, Switzerland is designed to manufacture wide-format equipment to order for a range of industrial digital printing applications on a practically unlimited choice of substrates.

POLYTYPE: THE BUSINESS

Polytype's growth comes down to a carefully considered plan for development and expansion, and the technical excellence of its machinery. Virtu, the digital printing business unit of the company, was purchased from Swiss manufacturer Spühl in 2008 when it realised the high value of digitally printing high quality graphics to industrial substrates, including glass, aluminium and Dibond. Today, this unit embodies Polytype's characteristic attention to detail and precision engineering, applying both to its relentless pursuit of exceptional quality of output.

The Virtu business unit is led by Frédéric Pavesi and is headquartered at Fribourg, Switzerland on the German-French language border, with an expected turnover for 2011 of CHR450m (£352million). Polytype's divisions in Switzerland, Germany, USA, Thailand and Brazil complement a network of distribution partners based around the world, including the UK, India and Australia. Its strategy with Virtu is simple: it seeks to work with customers as partners, recommending the best solution for their business, and always striving to exceed expectations of quality for both the equipment and its output.

Polytype's experience in markets where consistent quality is paramount has prepared it well for specialist industrial printing environments, but the company's approach differs significantly from other digital ink-jet manufacturers. Even though the superior print quality of the Virtu range makes the machines particularly suitable for display production, that's not what the company sees as their best asset. It's the versatility of the system that is most important, and this combines with the approach as a supplier. Polytype spends time understanding the business's proposition and take specific requirements into account, tailoring the machine to their company's needs before delivery.

NEW POTENTIAL FOR DIGITAL INK-JET

Committing to a change to digital ink-jet technologies has been a multi-faceted question for those in the screen, offset and web markets since the process came to maturity. In order to answer questions from industrial producers of all flavours, Polytype's engineers have incorporated into the Virtu range their research into and knowledge of material behaviour, ink adhesion, colour management and workflow. Digital offers a vast reduction in expenditure on consumables, such as screens and plates, but the Virtu RS25, RS35 and RR50 go further; ink use is kept to an absolute minimum, both in the printing process itself and during maintenance and cleaning functions.

Digital UV-curable machines have a number of inherent advantages over competing ink types. Born a decade ago as a response to the environmental concerns regarding the use of solvent-based systems, which emit VOCs (volatile organic compounds), this formulation comprises monomers, oligomers, colorants and an initiator which, when printed, is cured by exposure to UV light. This drying is completed simultaneously as it is printed and the output is immediately ready for its end use.

The ability to send a printed piece to finishing immediately is crucial in modern businesses which demand the power to accept and complete jobs in quick succession. These conditions mean that materials printed on UV-curable systems adhere more easily to green concept requirements in architecture and other public settings, as well as global demands for sustainability, and an improved environment for the operator. Polytype

Continued over

Engineered to be both robust and versatile, Polytype's Virtu machines are available in a choice of printing widths.

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manufactures its own ink range, developed specifically for excellent compatibility, durability and colour vivacity on a wealth of materials, including various types of glass.

UNDER THE HOOD

Polytype's Virtu printers are available in 2.5 and 3.5m widths as the Virtu RS25 and RS35 respectively. These hybrid machines feature an ultra-stable print table and can produce onto both flexible and rigid media of an unlimited theoretical length, allowing for oversized applications. The table, which can support material weights of up to 50kg/square m at thicknesses of up to 95mm, contains a dual-power vacuum pump system which secures very dense substrates, such as glass, as easily as very stretchable or thin materials, such as textile or mesh. It also includes an ink collection tray, meaning that porous media and fabrics can be printed.

A key demand in industrial printing for any output purpose is reliability. The Virtu RS25 and RS35 are true hybrid machines, as they are the only printers that can support incredibly heavy materials or roll media as well as oversized substrates. Thanks to their robustly engineered feed mechanism and heavyweight handling options, the Virtu range is built to be an integral part of a display production business, the heart of a glass decoration line, or to handle standard or unusual materials for a variety of end purposes.

Virtu's robust build and low maintenance are not compromised by the exceptional quality that the machine is able to produce. Printing at a photographic quality of 1,200dpi, flood-, over- and under-coating are as achievable as extremely small text sizes (down to 4pt) and fine graduations, such as skin tones, at speeds of up to 80 square m/hour. This detail stands to become even more evident with the Virtu Quantum, which will become commercially available later this year, which extends the current 30-80pl range to 10pl, generating even smaller ink droplet sizes and, therefore, even finer quality.

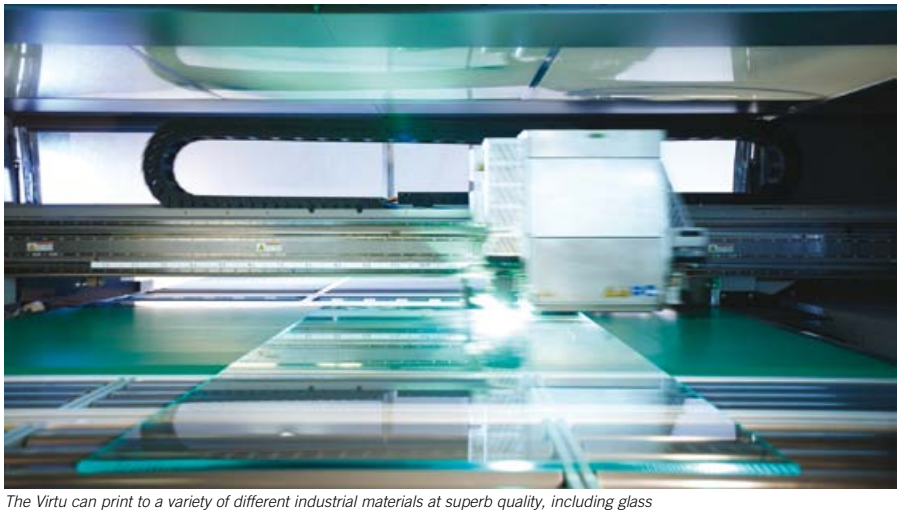
Polytype's 5m roll-to-roll machine, the Virtu RR50, offers these advantages for production onto flexible substrates, such as mesh and banner. Increasing the maximum roll weight from 500kg (on its sibling Virtu RR25 and RR35 engines) to 750kg allows for easy printing of batches and incredibly long applications, such as building or stadium wraps. The Virtu RR50 also allows three 1.6m rolls to be printed simultaneously, thereby increasing productivity and minimising machine downtime when superwide jobs aren't on the menu.

MACHINES BUILT FOR PURPOSE

Although this host of quality and productivity options comes as standard across the Virtu brand, Polytype customises every machine leaving its factory to the precise specification of its destination company. A recent example shows a customer choosing Polytype for two reasons: adhesion was one, but the other was because the company could delivered a well-researched, start-to-finish production system which integrated all his requirements.

We performed a number of ink tests, worked with third-party suppliers to integrate all different modules, used colour specialists to assess exactly what the eventual output had to look like, and built a software workflow to manage transport. In the end, the customer received a fully integrated, customised glass line that was exactly what he needed – but also built a relationship with a supplier who understands exactly how his system performs to fulfil his business needs.

This customisation ethic extends through the company, from engineering to service and support, and its Swiss approach to service is a key element in Polytype's portfolio; even with no contract an engineer will be on site to resolve issues within 24 hours, and all support agreements are tailored to the user's needs, with response time reducing to between six and 12 hours. This complements the machines' outstanding reliability with the pragmatic recognition that technical issues must be resolved in the shortest possible time to allow businesses to operate successfully.



The Virtu can print to a variety of different industrial materials at superb quality, including glass

The exceptional output quality of the Virtu range extends to the faithful reproduction of tricky images, such as skin tones and small text sizes

WHERE QUALITY MEETS INDUSTRY

Wide-format digital printing shouldn't be seen as limited to the production of displays. High quality reproduction is required for a number of end purposes, and industrial printing jobs are high amongst them. 'Industrial printing' itself is a phrase that sees a lot of use, but not a lot of definition. Safety displays, product marking, membrane switch panels, and other identification and control interfaces are the kind of job that a fast-throughput machine like the Virtu can handle without a problem. In the neighbouring glass market, too, decoration for aesthetic purposes, such as architecture and retail, sits alongside specialist applications, such as television sets, PDAs, aircraft and vending machines.

Most importantly, digital technologies allow for greater inclusion of creative designs as a cohesive part of a house, office, retail space, gallery or other building, and their component elements. We are more aware in building our products, spaces and cities that we must capitalise on the great design heritage that is now an integral part of modern life. Digital print allows for design to capitalise on these factors without the encumbrance and expense of analogue printing processes. Designs, logos, protective coatings, decorative graphics and even visual illusions can be created and applied freely, adding value and providing more possibilities for new applications.

With this trend in mind, Polytype has built its Virtu systems around the principle that quality and stability are the cornerstones of modern printing businesses, but can provide notable cost savings and ecological benefits when compared with alternative processes. As a company, we are also excited by the potential for digital print to reach new specialist areas, and are certain that the Virtu system has only scratched the surface of the ideas being brought to reality in our ever-changing industry. ■

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SUCCESSFUL COMBINATION OF INNOVATION AND COMMITMENT

Currently celebrating its tenth anniversary, Inkcups Now Corp provides comprehensive solutions for the speciality printing of promotional products and label-free apparel, as well as for a wide range of industrial and automotive parts, sporting goods, electronic and medical devices. The company offers equipment, consumables and expertise in pad printing, laser plate-making, ink-jet printing and screen-printing.

Businesses of all sizes are counted among the customers of Inkcups Now Corp, from custom shops to multi-national corporations. It is the leading supplier to major North American promotional product companies and a key global player in the developing printed apparel tag market.

"Our philosophy is to provide great products at a fair price and support customers with the best technical service in the marketplace," says ICN founder and President, Benjamin Adner. "If we do a good job with installing equipment or supplies and are able to solve a customer's problem, then we can earn a customer for life. We view all of our relationships with customers as long-term partnerships."

COMPANY ORIGINS

Many of ICN's key personnel – including Benjamin Adner (founder and President), Michael Bissel (Vice President) and Robert Taylor (Production Manager) – worked for many years at Autoroll Machine Corp, when the business was managed and owned by William Karlyn and was one of the largest manufacturers of automatic and semi-automatic pad and screen-printing equipment in the USA.

Ben Adner joined Autoroll with a mechanical engineering degree from the University of Vermont, working as a product manager under Bill Karlyn, who Ben characterises as a smart businessman and gifted innovator. For five of these years, Ben also studied at Babson for an MBA in entrepreneurial studies. He believes this experience, combining real-life business and school, was crucial for him and the success of his future company.

While at Autoroll, Ben Adner redesigned the entire pad printing product line, introduced the first ink cup into the USA pad printing market, developed the first servo-driven pad printing machine in the USA and rebuilt the reputation of Autoroll's pad printing equipment. In the end, he ran both the pad printing and supply divisions and also married the boss's daughter!

"My father-in-law, Bill Karlyn, the founder of the original Autoroll Machine Corp, is also one of the founders of this industry and an industry innovator," Ben Adner suggests. "And I was very lucky to work under him for ten years. He taught me everything I needed to know to be successful in this business and is one of the key reasons for the rapid success of Inkcups Now."

Michael Bissel, Vice President, working on the ICN-150 pad printer.

CUTTING EDGE PRODUCTS AND COMMITMENT

Continuous innovation and readily available expert technical support are said to set ICN apart from its competitors, the company's motto being 'Cutting edge products delivered with old-fashioned commitment'. This philosophy has helped the business to grow at an impressive 20% annually since its foundation in 2001.

Ben Adner believes that Inkcups' main asset is its team of talented, experienced and motivated people in every department. "Specialty printing is challenging, with a significant learning curve for newcomers," he suggests. "If all we did for customers was ship machines to them, very few would be successful, so we invest in service and support."

Employees are hired with years of hands-on experience, able to diagnose and solve customer problems. In addition, Inkcups uses direct sales people, all of whom can print, so the customer has someone responsive nearby who can service and support them. ICN is believed to have more direct salesmen in North and Central America than competitive suppliers, in addition to which technical support is provided in Italy, China and Hong Kong, Honduras, the Dominican Republic and Columbia, as well as a host of representatives in South America.

"It starts with something very uncommon in this industry," says Ben Adner. "Someone is always available to pick up the phone and provide qualified help, regardless of whether

the customer bought a can of ink, one machine or several hundred. And it goes all the way to creating and supporting new solutions to help customers succeed."

The emphasis on innovation has been embedded in this company from the beginning. Inkcups Now derived its name from its first product – the ink cup that Ben Adner designed and patented under the VersaCup brand. Adaptable to most existing models of seal cup pad printers, the VersaCup simplifies production and maintenance and often reduces inventory costs. It continues to be one of the company's best-selling items in the USA and a signature product, paving ICN's way in the European, Asian and Australian markets.

PAD PRINTING

Pad printing technology remains the optimal solution for a wide range of applications on irregular-shaped objects, especially where fine detail or superior adhesion is a must. It is used for the marking of promotional products (pens, mugs, stress balls etc), label-free apparel (t-shirts, lingerie, sportswear), sporting goods (golf balls, baseballs), medical devices (catheters, instruments), automotive parts (dashboard elements and switches), electronics (remote controls, flexible keyboards) and a variety of industrial printing applications.

Inkcups Now offers a complete line of machines, inks, supplies, plate-making equipment, custom parts and auxiliaries. ICN sells to companies in all of these industries but has special ties with the promotional product marketplace. "The market is fun, fast paced and I like the people in it a lot," says Ben. "And Inkcups is well-suited to support this marketplace. Promotional companies come out with new products all the time and have different substrates to print, they need to ship their orders on the same day and they need a supplier to match this pace. At Inkcups, we understand the pressures our customers are under so we try to solve problems, respond quickly, have a great deal of flexibility, have inventory, ship ink on the same day and are able to handle last minute urgent orders."

ICN also developed the Cobalt laser plate-maker for the promotional products market, a product that reduced plate-making times from 30 to just two minutes.

Inkcups Now converted the major players in the USA to computer-to-plate technology via its introduction of the Cobalt 1000 laser system – the first fibre YAG laser for making pad printing plates, a versatile, compact and virtually maintenance-free system. The other part of the solution that Inkcups engineers came up with was the Imperial laser plate material - the first material with variable depth, which provided more freedom working with the graphics and enabled variable end applications.

APPAREL TAG PRINTING

As a different application of pad printing technology, tag printing inherently called for an innovative approach. When apparel manufacturers were looking to move from traditional sewn-in tags to printing brand and care information directly onto T-shirts, lingerie and sportswear etc, pad printing emerged as an alternative to screen-printing and heat transfer. In fact, pad printing contained the promise of the highest cost-effectiveness, on-demand image customisation, quality and durability for tags compared to the other two techniques. The challenge was to realise this promise in a comprehensive solution that would convince and convert the market.

The Inkcups Now team was up to the task. After months of research, testing and adjustments, ICN fine tuned the pad printing process to mass apparel production, with its requirements for high speed, simplification and standardisation of the process, applicability to a wide range of fabrics and colours, as well as strict certification requirements.

The company came up with industrial grade printer models, capable of up to 1500 impressions per hour, a specialised ink system and extra durable Everflex print pad material. It designed speciality fixtures, reformulated the ink and custom-designed the hardener for

Continued over

T-shirts with tags, pad printed with Sapphire SB inks for garments.

Peter Baxer, Ink Manager, in the ink lab.

textile printing, added standard colours such as Cool Gray 6 and established the best ink mixing ratios and plate etch settings for cotton, polyester, spandex and nylon blends. The Sapphire SB series ink underwent a detailed testing and certification to demonstrate the absence of skin irritants, heavy metals, restricted phthalates, PVC and AZO dies, as well as the ability to withstand 50 industrial type washings without fading or cracking.

Currently, ICN has installations throughout the world, typical customers printing T-shirts, sweat shirts, lingerie and intimate apparel, trouser pockets, uniforms, sportswear, swimwear, as well as highly stretchy fabrics and leather. The company is now in the process of introducing similar solutions to such markets as footwear, leather and medical supplies.

Following the proven strategy, Inkcups keeps perfecting the offerings and adding options, including SuperWhite ink for dark and absorbent fabrics, SuperSilver ink for wicking synthetics, BLink311 ink for hidden tags and a proprietary process for printing on fleece materials. Tag printing represents an area of significant growth for ICN and the company is focused on expanding in this market.

INKJET PRINTING

"We look ahead to make sure we develop the technology that people are going to use in two or three years," says Ben Adner. "If a new process would be better than an existing one, ICN would rather introduce the new technology because it is better for the customer, even if it cannibalises existing business. In the long run, we would rather take our customers in a different direction than have someone else take the lead. Plus, developing new products is what makes this business fun."

It was with this premise that the company diversified into ink-jet printing, providing solutions for three-dimensional products. Inkcups has been in the solvent-based ink-jet industry for five years and has installed hundreds of machines. It originated a solution for ink-jet printing of cylinders such as stainless steel water bottles and added an integrated heating system to the equipment for better print quality and ink adhesion. Also available is an edible ink printer for bakery products, a concept that is proving popular with small and mid-size businesses.

Inkcups has been involved in UV-curable Ink-jet printing for several years. Having partnered with Mimaki Engineering, ICN has sold and installed many machines in the promotional product market. "This is a rapidly developing technology and we are becoming experts in the field for specialty printing," says Ben. "We will continue to focus on UV inkjet because we believe this is part of our future."

SCREEN-PRINTING

In addition to a full pad printing product line, screen-printing machines, inks, supplies and fixtures are offered, aimed at decorating bottles, mugs and promotional items of various materials and shapes.

Of particular note is the Sapphire ink product line, with dedicated series for plastics, metals, ceramics, untreated polypropylene, silicone etc. Sapphire is a highly pigmented ink, which makes it excel in both pad printing and screen-printing applications. The ink is manufactured in Italy and is approved for toys and medical devices and is free of harmful chemicals.

TEAMWORK

Employing more than 40 people, Inkcups Now Corp is located at Danvers, Massachusetts, occupying 2323 square metres (25,000 square feet) of production and office space. In just ten years, the company has grown organically to the point where it is looking to acquire additional space in the near future.

Teamwork and collaboration are strongly encouraged within the organisation, with its open office plan, company-wide instant messaging system as well as employee recognition and incentive schemes. The company regularly organises sports games, boat trips and other social activities, which are enthusiastically attended by employees. "First and foremost, ICN is a great team" Ben Adner confirms. "And as a team, we are looking forward to the next ten years of developing new products and keeping customers happy." ■

Silicone wristbands printed with Sapphire SI ink for silicone.

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web: www.inkcups.com

MESSE STUTTGART ONE DAY CONFERENCE

With 12 high end technological presentations, keynote speakers and a series of educational presentations cover market trends, ecological solutions, current technologies and future opportunities.

SPORTSWEAR, FASHION T-SHIRT PRINTING CONFERENCE

FEB 3 2012

Stay in touch with the latest techniques in DIGITAL and SCREEN printing for the applications Sportswear & T-shirt.

The conference will offer printers a series of presentations from industry experts covering best practices, as well as insight into the latest technologies available. The revival of the sportswear and high end T-shirt printing did not stay unnoticed in Europe and support the future development of this niche market throughout the European market. The conference program is supporting all kinds of information to further develop these opportunities.

SUBJECTS TO BE COVERED

- Latest hardware and consumables for T-shirt, sportswear and swimwear printing (screen and digital)
- Ecological products for textile printing (screen and digital)
- Latest changes in screen printing for T-shirt and sportswear
- Latest technology in direct and transfer (reactive dyes) sublimation printing for sportswear and swimwear
- Flock and special effects technology for printing on T-shirts
- Marketing and creativity for T-shirt and sportswear printing products
- Customized textile printing
- Design of small volume productions (sportswear: ladies team, small cycle team)
- Tips & tricks for printing production
- Colour management and software for T-shirt and sportswear printing
- Trends in T-shirts and sportswear printing (smart textiles and coatings)
- Serializing for sportswear printing

TARGET AUDIENCE

Printers (screen, digital and pad), brand owners, managers, designers, OEMs and suppliers from throughout the world will also be given advice on best practices in operation and production for lean manufacturers.

PRESENTATION OPPORTUNITIES STILL OPEN

PRICING

Early Bird*:

Non- members	€ 295
ESMA members	€ 235

Normal Pricing:

Non- members	€ 385
ESMA members	€ 310

This includes access to all presentations, one day free entrance to the TecStyle Vision exhibition, refreshments, lunch and free use of simultaneous translations (English/ German)

*For a limited time, attendees can take advantage of an early bird delegate fee.

Several promotional packages for products and companies are available. Contact pb@esma.com

ORGANISERS AND PARTNERS

Sportswear & Fashion T-shirt Printing Conference will be staged by ESMA, an association of European manufacturers of machinery and consumables for the special printing industry and in cooperation with TVP, the leading German magazine for textile Finishing and Promotion. Also supported by Specialist Printing Worldwide.

ESMA Driving Print Excellence

TecStyle Visions TV

SPECIALIST printing worldwide

TVP

REGISTER YOUR INTEREST AT WWW.TEXTILE-PRINTING.ORG

GLASSPRINT 2011 – ADVANCED TECHNOLOGIES FOR GLASS DECORATION

Conference and exhibition to showcase latest digital and screen technology for decorating flat and hollow glass.

GlassPrint 2011, Europe's leading event for the decoration of glass, takes place at the Radisson Blu Scandinavia Hotel in Düsseldorf, Germany on 23-24 November.

Decoration is a key process in the manufacture of architectural, automotive and hollow glass, adding considerably more value to the end product. Attendance of the two day GlassPrint 2011 conference and exhibition will assist glass decorators to cut production costs, while optimising the efficiency of their processes.

In recognition of this expanding and developing sector, GlassPrint 2011 will present delegates with 50% more presentations than the 2009 event, which was deemed an outstanding success by an international audience of over 130 glass professionals from 37 different countries.

CONFERENCE SCHEDULE

In addition to 15 English language technical presentations covering the latest advanced technologies in digital, screen and pad printing applications, GlassPrint 2011 delegates will be offered three keynote presentations from industry experts representing the flat and hollow sectors.

At the time of going to press, the packed conference programme is as presented opposite (subject to change).

Examples of innovative hollow glass decoration (image courtesy of Sun Chemical).

EXHIBITORS

The conference will once again be accompanied by an exhibition of specialist suppliers of equipment, consumables, technology and services, promoting the latest developments in inks, pre-press technology, printing equipment and supplies. Participants include: ColorGATE / Epson, DIP-Tech, Durst, Fermac, FERRO, Glass Global, glasstec / Messe Düsseldorf, Global Inkjet Systems, Grünig-Interscreen, ISIMAT, ISRA Vision, KIWO (Kissel + Wolf), Machines Dubuit, Marabu, Natgraph, Plottersolution, Polytype, RUCO, Saati, Sefar, SIAK Transfers, Sun Chemical, Tecno 5, THIEME and Tiflex.

DAY 1: 23 NOVEMBER

TIME	PRESENTATION	PRESENTER
10:00	Arrival, registration and table top exhibition	
11:00	Introduction and welcome	Chameleon/ESMA
11:15	KEYNOTE PRESENTATION: Container glass industry: Current and future challenges and opportunities	Niall Wall, Group Chief Executive of the Ardagh Glass Group & President of FEVE
11:45	Digital printing with ceramic inks	Dip Tech
12:15	New trends in architectural screen printing	THIEME
12:45	Lunch and table top exhibition	
14:00	Hollow glass decoration - From craft-based to engineering-based industrial production	ISIMAT
14:30	Innovative glass facades with functionality	Sefar
15:00	Ink validation in glass printing	Polytype
15:30	Coffee and table top exhibition	
16:00	Stencil technology for successful glass printing - Selection and application	KIWO (Kissel+Wolf)
16:30	Flock - the surface treatment: Flocking on hollow and other types of glass	Maag
17:00	How to utilise a digital proofing device for glass printing applications	Colorgate
17:30	JOINT KEYNOTE PRESENTATION: glasstec 2012 - current status and future outlook + 'German glass industry (hollow) - situation and trends!'	Birgit Horn, glasstec Project Director and Dr Johann Overath, Director of Bundesverband Glasindustrie eV
18:00	Table top exhibition	
19:30	Close	
20:00	Evening dinner	

DAY 2: 24 NOVEMBER

TIME	PRESENTATION	PRESENTER
8:00	Table top exhibition	
8:55	Welcome to Day 2	Chameleon / ESMA
9:00	KEYNOTE PRESENTATION: Producing flat glass: Providing nega-watts for a low-carbon economy	A representative of Glass for Europe (speaker to be confirmed)
9:30	Glass decoration by roller coating, including UV-curable primer, colours and special effects	Marabu
10:00	Thermoplastic holloware organic inks see the light	Ferro
10:30	Coffee and table top exhibition	
11:00	Controlled drying of decorated flat glass	Natgraph
11:30	Inkjet printing on glass - Scope and limitations	Durst
12:00	Lunch and table top exhibition	
13:15	Automation and cost reduction for stencil production	Grünig
13:45	Mesh and stencil for glass decoration	Saati
14:15	100% in-line silk-screen print inspection	ISRA
14:45	Summing up	ESMA/Chameleon
15:00	Table top exhibition	
16:00	Close	

Recent ESMA / Chameleon event at the Düsseldorf Radisson Blu Scandinavia Hotel, venue for GlassPrint 2011.

Printed architectural glass façade.

REGISTRATION

Currently, more than twice as many delegates have registered for GlassPrint 2011 than at the equivalent time for the 2009 event, including glassmakers and decorators from Austria, Costa Rica, France, Germany, India, Italy, Lithuania, Poland, South Africa, Spain, Switzerland and the USA.

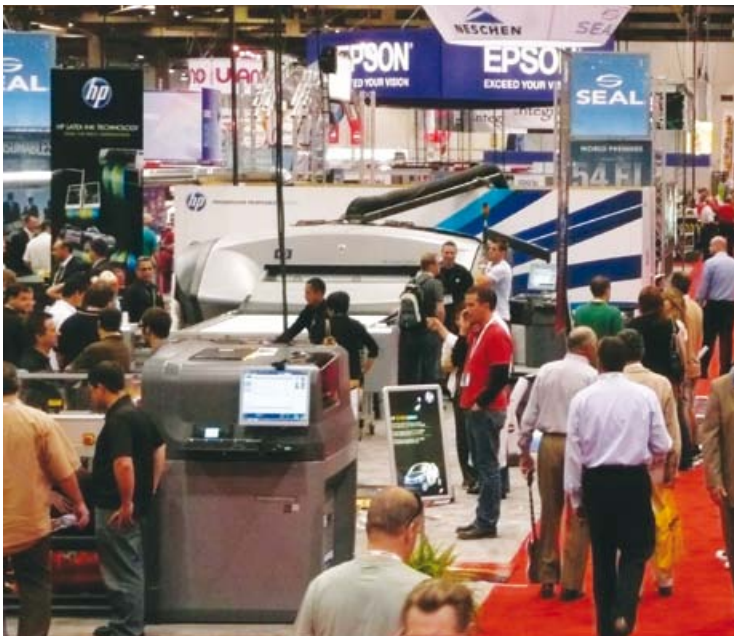
With space limited, delegates can still register for €495 (approximately $710 / £435) by visiting the website (www.glassprint.org), emailing Samantha Dunmore at samdunmore@glassworldwide.co.uk or calling +44 (0)1342 315032; registration includes lunch on both days, dinner during the networking evening reception, refreshments at the coffee breaks and access to the conference and exhibition areas.

ORGANISERS AND SUPPORTERS

GlassPrint is jointly organised by ESMA and Chameleon Business Media, publishers of *Specialist Printing Worldwide* and the sister magazine, *Glass Worldwide*. In recognition of its importance on the global glass and printing events calendar, GlassPrint is powered by glasstec – the world's largest and most international glass trade fair – and is sponsored by the DGG, glassglobal.com, SGCDpro and the SGIA. ■

GLASSPrint2011 CONFERENCE

Further information:
web: www.glassprint.org



SPONSORS SHOW SUPPORT FOR SGIA 2011

This year's SGIA Expo covers all bases and is once again sponsored by many of the community's leading suppliers and manufacturers. Taking place in New Orleans from 19 to 21 October, SGIA is looking forward to hosting the North American gateway to the global imaging marketplace. The event will also host a series of zones which concentrate on specific applications and markets.

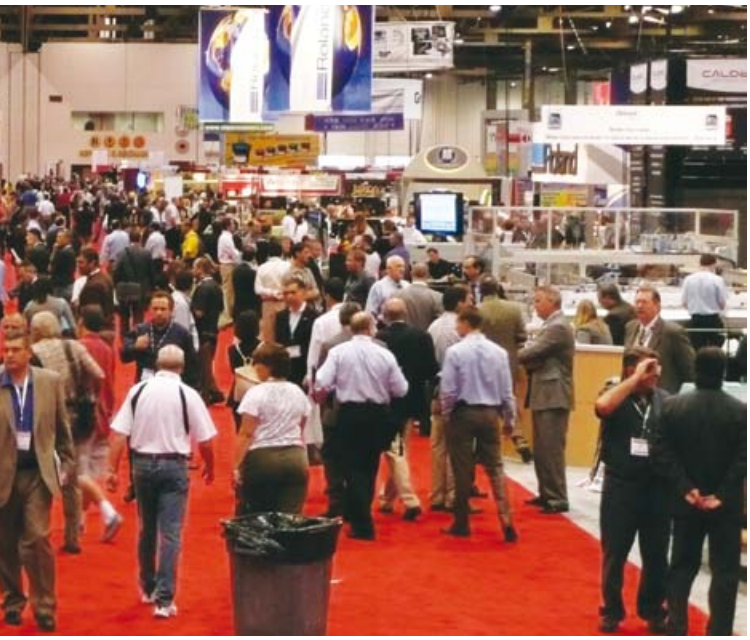
This year's platinum sponsors include Durst, EFI, HP, Agfa Graphics and Fujifilm. Gold sponsors include INX Digital, Roland and Epson. Their comments sum up the importance of SGIA to the digital community.

When asked about SGIA Expo, Christopher Howard, senior vice president of sales and marketing, Durst Image Technology US. "It has proven to be a great source of information for the imaging community and its focus on bringing the latest innovations and market trends to the members from a broad spectrum of printing segments is invaluable for the industry."

"The SGIA Expo is a primary gathering point and marketplace for EFI to demonstrate its unique end-to-end workflow innovations, including web-to-print solutions, browser-based print MIS solutions, professional-level RIP solutions, and several wide- and super wide-format digital inkjet printers," comments Frank Tueckmantel, vice president of corporate marketing at EFI.

"HP is honoured to continue its long-standing partnership with SGIA, with whom we share a dedication to growing and developing the sign and display industry," adds Claudia Barbiero, Americas sign and display segment marketing manager, HP, and SGIA board of directors' member.

"We value our relationship with SGIA because our membership is so much more than a trade show experience," says Deborah Hutcheson, director of marketing for Agfa Graphics North America. "From trend information, valuable news, educational sessions and comprehensive publications, SGIA provides the resources that get exposure for Agfa and our customers."



"We are looking forward to this year's show where we will present new print solutions that will help print providers meet the demanding needs of their customers and increase the profitability of their businesses," are the words of Mitch Bode, general manager of Fujifilm North America Corporation, Graphic Systems Division, Sericol Unit.

This is reiterated by Ken Kisner, President, INX Digital Americas. "With the many changes now affecting the industry including digital printing, the SGIA Expo will be a key place to learn about the many technological innovations."

"Every year, SGIA shines as one of the industry's largest and best international events," enthuses Andrew Oransky, director of marketing and product management for Roland. Whilst, finally, Reed Hecht, product manager at Epson America, claims: "The SGIA Expo has been an excellent venue for Epson when it comes to unveiling and demonstrating our newest printing technologies and solutions for the specialty graphics industry."

SPECIAL ZONES INCLUDE NARROW-FORMAT IMAGING

As well as concentrating on the wide-format sector, the all-new Narrow Format Zone reflects on the fact that more customers are investigating the smaller-format market. SGIA Expo attendees also can learn how to leverage their existing equipment to develop narrow-format products by attending a one-day conference the day before the Expo floor opens.

Other educational sales-free zones at this year's Expo include the Digital Signage Zone, PDAA Graphics Application Zone, Digital Apparel Production Zone, Industrial Imaging Zone, Printed Electronics Zone and the Screen Printed Apparel Training Zone. SGIA is also bringing back the Digital Apparel Production Zone this year where garment decorators can see cut-and-sew workflow demonstrations, a new element. ■

Specialty Printing & Imaging Technology

SGIA EXPO

New Orleans, LA • October 19–21, 2011

Further information:
web: www.sgia.org/events/current_expo/sgia11/

SCREENPRINTING – THE FUTURE: THREE-DAY EVENT COMES TO NOTTINGHAM

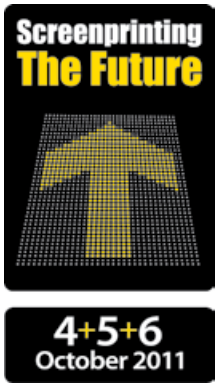
One of the print/drying lines that will be running live demonstrations

A free to attend, informative three-day event, showcasing the latest developments in the world of screen-printing, will be staged in the UK in October 2011. The showcase will be hosted by two of the biggest names in the sector and supported by many other major suppliers of ancillary equipment and consumables.

Natgraph, the world's largest manufacturer of conveyorised drying technology, will partner with Sakurai Graphic Systems Corporation of Japan, the leading international screen press manufacturer. Together they will present 'Screenprinting – The Future' on 4, 5 and 6 October at Natgraph's headquarters in Nottingham.

'Screenprinting – The Future' will feature live printing and drying demonstrations of both industrial and print finishing products, using two high specification Sakurai/Natgraph cylinder lines. The event will also include technical presentations and exhibits by Marabu, Grünig-Interscreen, CST, KIWO/Kissel + Wolf, MacDermid Autotype, Screen X and others.

Natgraph's commercial director, Alan Shaw, states: "These are changing times, but Natgraph continues to achieve great success, installing highly efficient drying solutions for screen-printing applications on a global basis. We therefore decided to join with Sakurai to stage an event which will demonstrate the continued viability and versatility of this great process."



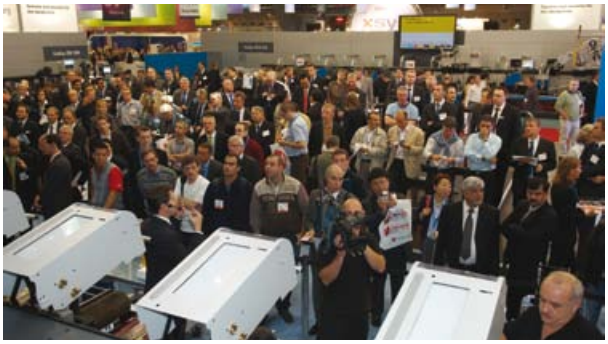
The specially designed logo promoting the event

David Ryan, UK Branch Manager of Sakurai UK, continues: "We have lined up various applications and several live screen-printing demonstrations that will show the important advances that have been made in this technology. There will also be many interesting presentations on how to improve print quality, efficiency and yield, so this is a must-attend event for any company using screen-printing in their production process."

Natgraph and Sakurai are already reporting a strong demand for places and are recommending that delegates make an early reservation. ■

Further information:
web: www.natgraph.co.uk

EUROPEAN LABEL EVENT SET TO BE THE BIGGEST EVER



A Gallus demonstration at a previous Labelexpo

Labelexpo Europe will introduce two new major feature areas at this year's show, taking place from 28 September to 1 October at Brussels Expo Belgium. As predicted some months ago, the exhibition is already larger than the previous event and organisers say this makes the show the largest ever label event.

New on the agenda at the popular Digital Print Workshops, first introduced at last year's Labelexpo Americas, and now due to make their debut in Europe. Three printing technologies (dry toner, liquid toner and ink-jet) will be compared against each other during live machine demonstrations run by an independent moderator. The technologies will be represented by Xeikon, HP and EFI Jetrion respectively. There will be four sessions per day, three of which will see the different companies printing the same job on the same material – a food, pharmaceutical or personal care label. The fourth session will allow participants to print a label of their own choice.

For the first time at any Labelexpo show, there will also be a new feature dedicated to package printing. The Package Printing Zone will consist of seminar sessions and working machinery demonstrations. The aim of this feature is to introduce label printers to opportunities in short-run package printing (including flexible packaging, folding cartons, pouches and sachets). Many of these jobs can be printed on narrow- to mid-web presses and there will be package printing systems on display at the show. Both the Technology Workshops and the Package Printing Zone will be free to attend for visitors to the show.

Roger Pellow, Labelexpo managing director states: "Labelexpo Europe is set to be the largest edition yet and this will mean more working machinery and more opportunities for label converters and brand owners. The Technology Workshops are our most popular feature ever and will allow visitors to evaluate the different printing technologies in detail. Similarly the Package Printing Zone will demonstrate how converters can expand their business beyond labels, often using the same equipment. This all makes Labelexpo Europe an absolutely unmissable event." ■

Further information:
web: www.labelexpo-europe.com

CREATIVITY DRIVES TECHNOLOGY; TECHNOLOGY DRIVES CREATIVITY

Michael E Robertson outlines the need for providing added value with new opportunities

Michael Robertson

It wasn't that long ago when the majority of graphic imagers in the SGIA community followed a clearly defined business model: selling printing. These imagers were focused on being very good at completing one step in the product development and manufacturing process, while other companies were responsible for creative development, fulfilment, implementation and other steps required to complete the project.

Today, the marketplace is very different and the role of the graphic imager has expanded. Successful graphic imagers are providing services and support before and after the print, many of which were formerly handled by other companies such as creative development (before the print) or implementation support (after the print). Today, producing the actual graphics has become only one component in a diverse service set provided by graphic imagers.

The advent of digital imaging has been the driving force behind these opportunities for the SGIA community. Graphic imagers, with their first-hand experience using digital imaging, are the best resource for maximising the capabilities of the new technologies. And, in many cases, their understanding of the technology gives them an advantage in managing the products they produce. Graphics' producers are using this knowledge to increase their value to the customer.

For example, I recently met with a SGIA member who has created a new market for his company by focusing on the needs of architects and space planners. He's developed relationships with his clients that allow his company to participate in the initial creative process of each new project. This not only adds to his company's value to the customer, but it opens doors for him to provide a wider range of support as the project unfolds. Several of the completed projects in his company portfolio would never have been produced if he had not participated in the initial creative development stage and sold the architect on his company's creative ideas.

Another SGIA member, working primarily in the retail sector, is focused on environment restoration. They have created a 'one-stop shop' for brand managers with sites that, in addition to graphics, need renovation efforts short of architectural modifications. Painting, wall-covering and contractor co-ordination are examples of actions that are often included in their service set. Their focus on quick, easy completion of a project is paying dividends for them and their customers.

As digital imaging continues to be refined, high-quality images will be the norm. The ability to produce high-quality images will be expected of graphic imagers competing in the market-place. This is a major change that is affecting the business model and profitability of many companies in the community, especially those with a long history of employing traditional technologies where the craft of creating a quality image is a competitive advantage. But it's a change the community is successfully making by using the versatility of speciality imaging technologies to create new opportunities. The SGIA community is striving to maximise today's technology in order to bring creative, efficient and exciting value to their customers. ■

Michael E Robertson is President & CEO of Specialty Graphic Imaging Association (SGIA)

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CAUTIOUS OPTIMISM FROM AMERICAN MANUFACTURERS

Steve W Kahane reports on activities in the North American market

Executives from NASMA member companies met in Chicago in May for their spring executive forum meeting. This meeting, hosted by Nazdar, attracted 22 senior executives and managers from the major printing industry manufacturers in North America.

The optimism from the autumn 2010 meeting regarding the North American business environment and print market carried over into 2011. A quick (and non-scientific) survey showed that most attendees are expecting to see their businesses grow in the coming year. This year's sales are expected to be ahead of last year and hiring, marketing spending and investments in capital equipment are also expected to increase. With that said, member companies remain cautious in their optimism, given the recent recession and the uneven recovery in the North American economy.

Two keynote speakers spoke to the group.

The first was Dr Gordon Smith, Chief Technology Officer for GSI Technologies, a leading speciality manufacturing service provider in the printed electronics market. The second was Dr Andrew McAfee, Principal Research Scientist at the Center for Digital Business in the MIT Sloan School of Management and a fellow at Harvard's Berkman Center for Internet and Society. Dr Gordon provided a customer's perspective on functional printing and the printed electronics market whilst Dr McAfee updated the group on the latest developments in information technology and social media, and their impacts on our businesses. Both talks focused on the cutting edge of our businesses and reminded the group that our markets and technologies are changing at ever greater speed.

Planning for NASMA's autumn meeting is already well underway. This is to be hosted by Dynamesh and, once again, will be in Chicago on 26 and 27 October. NASMA welcomes new companies to participate in our twice-yearly executive forum meetings. There are no costs, just a nominal meeting registration fee to cover expenses. To be eligible, companies must be manufacturers and suppliers to the printing industry and be either North American based or have a significant operating presence in North America.

Companies that have participated previously in NASMA are welcome to send senior managers/executives. Those that haven't participated should be referred by an existing member company to a member of the Executive Committee for consideration and approval. Members of the executive committee are Mitch Bode (Sericol, MitchBode@FujifilmSericol.com) , Richard Bowles (Nazdar, rbowles@nazdar.com), Steve Duccilli (ST Media, steve.duccilli@stmediagroup.com), Dave Koebcke (Sefar, David.Koebcke@sefar.us), Parnell Thill (Ikonics, pthill@ikonics.com) and Steve Kahane (International Coatings, skahane@iccink.com). ■

Stephen W Kahane is Chairman of NASMA

Stephen Kahane, Chairman of NASMA, with Specialist Printing Worldwide's Frazer Campbell (left) and Bryan Collings (right).

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Cerritos, CA, USA
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DRIVING PRINT TECHONOLOGIES INTO NEW APPLICATION AREAS

Peter Buttiens previews some of the diverse events covering new market sectors

Peter Buttiens

Printing technology is challenging more and more specialised applications which traditionally were non-printing applications. This has been an ongoing development for screen-printing – to find its way to new types of work. Digital printing has turned into a mature printing solution, due to higher speeds, reliability and repeatability. Screen is introducing itself more and more into industrial solutions and examples have been seen in printed electronics, glass and plastics (IMD). Digital solutions are typically expanding towards applications which require high resolution graphics in small quantities or, even, as one-offs.

This message was translated by ESMA in more application-driven conferences for both printing technologies. A recent expansion has been made towards textile and some of its specialities which are being addressed at the Sportswear & Fashion T-shirt printing conference. This conference will be held on 3 February 2012 in Stuttgart alongside the TV TecStyle Visions Exhibition and in co-operation with TVP and Specialist Printing Worldwide.

This one day conference will highlight the latest developments for sportswear, beachwear, and high-end T-shirt printing for screen-printing and digital. Topics will include technology, ecology and sustainability and also the latest developments in applications and markets for this niche market. More information can be found on the website at textile-printing.org

Another interesting market that needs attention is the interior decoration market. ESMA is developing a new website called Printed Interior Decoration (PID) that will introduce all the possibilities of interior decoration using digital or screen-printing for offices, hotels and homes. This website will introduce all different materials such as textile, glass, ceramics, wooden floors and the possibilities of personalising the look and feel of an interior. There will also be a focus on introducing printing shops that can deliver such applications in Europe. We will keep you informed about the website and its introduction. There is a possibility for a new conference by 2013 and platform meetings (workgroup meetings) will be introduced in the near future with members, printers and also the press.

Don't forget the upcoming GlassPrint 2011 event in Düsseldorf on 23 and 24 November. There will be 16 presentations about screen- and digital printing on glass (hollow and flat). This extensive program and the interesting table top exhibition will be an ideal place to get acquainted with applications on glass. More information can be found on the website www.glassprint.org and on page 60.

Any readers with new ideas about new and interesting subjects on applications for digital and screen printing or potential websites and conferences, can always write to pb@esma.com ■

Peter Buttiens is CEO of ESMA.

ESMA
Driving Print Excellence

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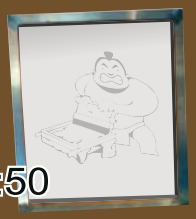

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