ISSUE 1
2012

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MESSAGE FROM BRYAN COLLINGS

With the festive season behind us, we are all now honing our businesses to deliver maximum returns possible in 2012. With the financial turmoil in Europe, lack of further quantitive easing in the USA and China slowing, it is so very encouraging to read about the optimism reported in FESPA's latest Economy Survey (see page 8). The key will be to keep efficiencies high and marketing targeted to higher margin business. It is important to remember in all the gloom that there are a lot of customers who are still spending and we must ensure we get more than our fair share of that spend.

We at *Specialist Printing Worldwide* remain committed to doing our bit by spreading the latest technical information to a global audience. Some fascinating technology was also on show at our hugely successful GlassPrint seminar last November. See page 46 for full information. Further technological updates will be available from ESMA members at a special conference during DRUPA 2012 – see page 14 with more details to follow in our next issue!

Now it's a new year and we still have a number of non-subscribers who only receive *Specialist Printing Worldwide* on a spasmodic basis. If you are one of those readers, do please go to www.specialistprinting.com to subscribe or telephone +44 (0)1342 322133 with your credit card ready. If you value this magazine and want to continue receiving it, we need you to subscribe. PLEASE ACT NOW!

Finally, one of our important sponsors, NASMA, has a new chairman. Mike Fox of Nazdar has been in our industry more years than he cares to remember and will do a great job; we wish him all the very best in his new role.

Bryan Collings, Publishing Director, *Specialist Printing Worldwide*

THE STUFF THAT DREAMS ARE MADE OF...

It's been an interesting year in the realm of specialist ink-jet and digital production but it's not been a period where we've seen vast changes or additions to technology. Instead, there has been encouraging consolidation relating to products already available on the market, with growing diversity and niche segments continuing to manifest themselves.

Now that we have all witnessed and experienced the continuing maturity in the wide-format ink-jet sector, most of us have grown to view it as strong complement to screen-printing rather than as the predicted replacement. For longer runs and special finishes, the screen process continues to score strongly, but this doesn't mean that there is an 'either/or' scenario. Both digital and analogue continue with their strengths in graphics, industrial and specialist printing.

But, as ink-jet technology has grown up, so we are seeing specialist areas manifest themselves more strongly with some interesting areas coming to the boil. During October I was fortunate to attend the IMI conference in Lisbon and this provided an excellent and fascinating platform for technologies that are one step removed from the mainstream and show what we can expect more of in the future.

Production of a wide-format Virtu printer at Polytype's Fribourg factory

From a commercial perspective, digital technology is still on an upward curve even though the era for dramatic introductions and show-stopping equipment has now passed. Ink-jet developments have spread their wings to bring diversification into more diverse areas, some of them away from the obvious. In graphic terms, wide- and narrow-format systems have extended into packaging and labelling to complement display and general short-run print. Similarly, niche and growing segments are beginning to make the headlines, including solutions for ceramics and glass and, of course, textiles.

Developments haven't happened overnight. For example, MEMS technology has been discussed for several years but is now starting to make its presence felt in production printers. Likewise, water-based resin heat cured inks are being discussed more widely and should start to make a cogent appearance in the near future, and the use of LED lamps for UV curing is increasing in industrial and graphics platforms.

The acceptance of ink-jet technology during the past few years has been interesting, with the original non-believers back in the early days having little option but to change their minds and learn to work with the potential that digital versatility brings to different production areas. Now that it has become an established methodology, it is proving itself in segments away from the mainstream in which it was first established. It's probable no-one would have dreamed even a decade ago that its potential could be realised in additive modelling machines, for fashion prints onto textiles or, even, for interior décor and wall coverings.

Thus, 2011 didn't herald very many introductions, lavish or otherwise, which could be considered truly as new. What it did see was a strong consolidation of the processes involved in a digital work-flow from software, through colour management to final output and finishing. Machines making their first appearance have tended to be developed on the legacy of their forerunners and those with a strong and workable ink-jet pedigree have found it straightforward to be accepted in their respective market-places.

In many ways 2011 was the year of the refinement, with existing engines, print-heads, inks and materials being honed to bring about the improvements required by end users. Canny manufacturers are those who've listened to their own and their competitors' customer bases and striven to incorporate practical enhancements. Unlike many manufacturing industries, there is commonality in components, such as print-heads and inks, but the trick is to fine-tune these to suit the engines in which they reside and, thus, result in a workable and reliable solution.

Considering how swiftly digital technology has grown to become an accepted printing process, it is remarkable that so many different platforms and variations have evolved in such a short space of time. At the IMI conference, there were valuable glimpses into the future to show the continued potential of ink-jet and its association with outside influences, such as the cloud and tougher environmental requirements.

Encompassing a variety of process combinations, specialist printing techniques will continue to evolve as new ideas emerge and existing production methodologies become more exacting. We can also expect to see greater influence exerted on the importance of efficient work-flow, greener working practices and the continued drive to become more cost efficient. But many of these principles, although we accept them readily, weren't reality a decade and a half ago. What we have today was, back then, the stuff that dreams are made of. We're extremely fortunate to be working in a world which, thanks to the technology and the people behind it, has given us solutions which are increasingly versatile and practical.

Sophie Matthews-Paul
Editorial Consultant –
Specialist Printing Worldwide

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Antibacterial ink developed by Sun Innovations

Russian company Sun Innovations has invented an ink containing nanoparticles of silver that claim to kill malignant bacteria. It has been developed with an antibacterial effect which is suitable for printing multi-colour images on any surface or material, such as on tiles used for bathroom or wall panels for a school's interior design.

This step towards a healthier future was carried out by Sun Innovations. The ink's composition contains nanoparticles of silver, known for its antibacterial properties, which historically has been associated with improving health.

"There are lots of options about how to apply our invention," says the founder of Sun Innovations, Vladislav Mirchev. "It can be used for decorating the walls in public places. We believe that the chance to catch a cold in such places will be less in that case. Or you could print image on the surface of a notebook (our printers can do it) to protect users from bacteria, accumulated there – and make it creative."

Sun Innovations decided to confirm the antibacterial properties of its invention and asked the Institute of Hygiene (The Russian Agency over Federal Service for Supervision of Consumer Rights Protection and Human Welfare) to explore the ink. The company says scientists were amazed by the effect of the ink, confirming it inhibits the growth of malignant bacteria, fungus and mould. Additionally, developers confirm that these inks are also environmentally friendly. ■

Freidrich Klein has joined Lüscher

Klein widens flexo support for Lüscher

Friedrich Klein has joined Lüscher as Sales Manager Flexo, responsible for attracting, advising and supporting customers investing in flexographic systems. He has solid expertise and years of experience in the field, enabling him to widen his support to the sales teams throughout Europe.

Lüscher AG Maschinenbau is a global manufacturer of technologically advanced computer-to-plate systems for different printing technologies. Its new hybrid systems MultiDX! and XPose! Flex have been highly successful, and the company is continuing to invest in this market segment.

These versatile CtP systems are mainly used in the imaging of flexo plates and letterpress plates for packaging and label printing, and can also handle screen-printing forms. Lüscher also offers expert product advice and all aspects of technical support to its international customers and prospects. ■

New GraffiTee digital garment printers from Brother

Brother is set to introduce a new GraffiTee series of systems, priced to be extremely affordable. Stated to be the only digital garment printer manufacturer that manufactures not only its own hardware, Brother also produces print-heads and inks. The new print heads used in the upcoming GraffiTee Series of garment printers deliver more efficient and higher quality printing than their current generation.

The GraffiTee series incorporates new print-heads and comprises an initial line-up of three models. The machines have a modular, providing buyers a path to upgrade rather than one of obsolescence. This series of three machines offers a CMYK only printer, CMYK with two white print-heads, and CMYK with four white print heads for higher speed and performance. The GraffiTee Series will be priced competitively, starting at less than $20,000.

Brother has had great success in the digital garment printing industry with the GT-541 and GT-782. Pete Holland, Senior Director of Industrial Products Division at Brother, comments: "Brother integrates its core technology of printing into the new GraffiTee series of garment printers by manufacturing the printer, the print-heads, the ink, and also the controller to ensure a fully integrated system versus many competitors who are 'assemblers' of garment printers." ■

Three new members inducted to ASPT

The Academy of Screen Printing Technology (ASPT) has welcomed three new members, with all being inducted at the 2011 SGIA Expo. James Ortolani of HIX Corporation, SGIA's Johnny Shell and Ad Versteeg of Evident bring between them more than 68 years of speciality imaging and screen-printing experience to ASPT. Ortolani has dedicated his career to exploring and researching the latest technologies to develop new products for the speciality imaging industry. Shell is SGIA's Vice President of Technical Services, and directs and co-ordinates the activities as well as teaching SGIA work-shops and writing technical articles. Versteeg has been active in the screen-printing industry since 1968, as a screen-printer in the graphics industry in Holland and New Zealand. Also a teacher of screen-printing techniques, he was the general editor of a related magazine for almost 18 years. ■

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Larger premises for Dynamesh allow for expansion

New move for Dynamesh

Dynamesh, a subsidiary of Japan's NBC Meshtec (part of Nisshin Seifun Group), is relocating in January 2012. The move to a larger building will accommodate expanded production facilities, more inventory storage area, and room for more staff to meet growing customer requirements. In anticipation of the move, Dynamesh didn't close during the holidays, but maintained a staggered schedule to ensure continuous customer support. The Batavia, Illinois company is acknowledged as a top-tier producer of the highest quality screen-printing meshes. The address of Dynamesh's new office and production facility is 512 Kingsland Drive, Batavia, IL 60510 USA. Phone numbers remain the same: +1 800 235 5056 or +1 630 293 5454. ■

Atlantic Zeiser and Xproma establish sales partnership for card systems

Persomail, Persoline and Versamail card personalisation and mailing solutions, as well as the card management software platform PMP from Atlantic Zeiser, are now available from Xproma GmbH in Germany and the Benelux States. Atlantic Zeiser Group has formed a partnership with Xproma GmbH which includes the sale of these card personalisation and mailing solutions as well as the card management software platform PMP from Atlantic Zeiser in Germany and the three Benelux States.

The objective is to achieve faster market penetration in the card sector by implementing additional sales activities. Xproma, based in Salzhausen near Hamburg, is a sales and service company with core competence in the professional mailroom and dispatch sector.

"We are delighted to welcome Xproma as a new sales partner with its in-depth knowledge of the card personalisation, processing and dispatch sector. Specifically, we will be serving the fields of ID, finance, SIM and gift cards with greater strength and intensity via this channel," confirms Carl-Michael Heüveldop, Vice President of Card Systems at Atlantic Zeiser.

Ralf Kolsen, Managing Director of Xproma GmbH, adds: "Card personalisation and mailing solutions from Atlantic Zeiser are the ideal adjunct to our product portfolio which we have consistently aligned with existing and anticipated future market requirements. We view our ability to offer the customer a tailor-made solution with the optimum cost/benefit ratio with a cross-process product range as the key task in achieving this."

Stefan Öing, Director Secure Card Systems, Atlantic Zeiser Paderborn (left) with Ralf Kolsen, Managing Director, Xproma (centre) and Carl-Michael Heüveldop, Vice President Card Systems, Atlantic Zeiser

Persomail, Persoline, Versamail and PMP card management software form part of the Atlantic Zeiser product range. The modular systems deliver secure, high quality and cost-effective personalisation of complex cards, including card finishing, card mailing and lifecycle management. ■

Lüscher and MacDermid collaborate on Accent coating plate

Lüscher AG Maschinenbau and MacDermid Printing Solutions Limited have jointly announced Accent, a high quality coating plate for packaging and commercial offset printers. Both companies have entered an agreement to market the new coating plate for Lüscher's range of XPose! UV CtP.

Lüscher as a global Computer-to-Plate manufacturer and MacDermid as a plate manufacturer have recognised that print enhancement is of growing relevance for offset printers. They see greater demand for spot coating plates to accent a portion of the printed product for added value. To address this need they have collaborated in the development of Accent coating plates, which offset printers can make themselves in the pre-press department of their printing plants.

This innovative coating plate solution for offset printers is made possible due to the composition of the new coating plate and the availability of CtP imaging systems using high power industrial UV lasers operating at 405 nm. These CtP systems, which have been used to image offset plates, are also able to image the MacDermid Accent coating plate.

The new coating plate can be imaged in-house on the XPose! UV CtP with only a modest additional investment in plate processing equipment, and developed into a relief plate with water processing. This produces coating plates with the same means and accuracy as for the offset plates and in perfect registration. It also brings coating plate production into the printer's plant. ■

Management change at Wifag Polytype

The board of directors of the Wifag Polytype has prepared the management of the group for the future. Battista Corti continues acting as Chairman of the Board but has handed over the role of CEO to Peter Ruth as of the beginning of January. Ruth has been responsible for the Systems Division and will now also be responsible for the Division Trading and New Business sectors of the company.

With its Division Systems, the Wifag Polytype Group is active in the field of metal and plastic packaging, coating and converting for flexibles, newspaper printing and digital wide-format printing. This division distributes supplies and consumables, equipment, service and support for the printing industry.

Wifag Polytype Group has around 1,000 employees worldwide with local market presence via own subsidiaries in Germany, Italy, USA, Thailand, China/Hongkong, India and Brazil. ■

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Digital ink testing offered by PPMOV

With so many different types of UV-curable inks available, successfully matching the right combination to the substrate can be daunting. Pad Print Machinery of Vermont's digital ink-jet programme has been expanded to include a multi-head UV ink test printer. The printer's ink management array includes quick change 'blades' (ink storage containers) for sampling multiple ink types.

Ben Lessard, lead engineer on the project states: "This new system allows us to evaluate different UV ink sets quickly and efficiently by trying different approaches for our customers, based on their needs and substrates. From there our engineering group can tweak the ink management and pre- and post-treatment systems for maximum results."

Pad Print Machinery of Vermont has a dedicated digital ink-jet team compromising software and mechanical engineers, technicians and tech support staff ready to design a digital printer to meet specific manufacturing requirements. The company claims it is in a unique position as it offers both traditional pad printing solutions as well as custom designed digital ink-jet printers.

For the past six years, PPMOVT has focused attention, time and resources in developing a versatile digital ink-jet product. These printers can be fully integrated into existing systems including pre- and post treatment options, conveyors, vision sensing and other material handling on- and off-loading devices. ■

A technician checks adhesion from different UV ink combinations

Agfa Graphics launches latest :Fortuna security printing software

Agfa Graphics has released version 6 of :Fortuna, its widely used security printing software which protects more than 75% of world banknotes, including against ID theft and brand assets. :Fortuna version 6 includes new modules, an easy-to-use rainbow tool and guilloche wizard that increase the software's high security capabilities. Module upgrades include special raster improvements, improved UV preview, better scaling and path definitions, advanced crystal patterns and an improved line-generator which also increase security options and ease of use.

Designed for the highest security applications, such as banknotes, :Fortuna is also used for ID card security, brand protection, document security, tax labelling and packaging to prevent counterfeiting and theft.

"This new version of :Fortuna is a confirmation of Agfa Graphics's investment in security printing. It provides more combinations to increase the level of security," says Koen Heyndrickx, Business Manager Security Software Solutions. "It makes the creation of security documents simple, yet highly secured. With the :Fortuna 6 release, anti-counterfeiting is brought to the next level."

Also known as split-duct printing, rainbow printing is a colouring process used to protect against colour separation and copying by subtly merging colours. :Fortuna's new Rainbow module is an interactive tool that lets the user define inks, the number of transitions as well as the width and the position of the separators. Generating natural blending of colours digitally, the Rainbow Tool adds extra complexity to the design, yet is very easy to control, resulting in a significant time reduction during the design phase and clear communication to production.

The new Guilloche Wizard module enhances the creation of standard guilloches. Combined with the Guilloche library and the Generator, this lets the user control and edit guilloches individually, based on predefined characteristics. This enables an unlimited variety of guilloches.

:Fortuna v6 has 24 (optional) modules in total. These provide a wide assortment of state-of-the art tools, the new modules and improvements give designers a new level of security, while increasing the ease of use. ■

FESPA's Economy Survey 5 shows printers looking to diversify

The latest FESPA Economy Survey has revealed that 70% of respondents are looking to diversify their business to improve business growth. The top areas in which print service providers (PSPs) plan to develop into are interiors (17.4%), label printing (16.67%) and signage (15.53%).

More than half believe that the market has not fully recovered (52.44%) but the outlook of printers remains optimistic despite the challenging environment, with three quarters of respondents believing that the market will grow in 2012, with an average expected growth of 14.5% across the year for their business.

Reflecting on 2011 end of year sales, 20.4% of respondents said they were better than expected, one fifth said they were better than 2010, and 40% reported that they have done as expected.

The Economy Survey was commissioned by FESPA and carried out by its research partner InfoTrends on behalf of its global wide format community. The information was gathered from 225 respondents who are engaged in wide format printing from across the world.

In excess of half those who took part in the survey were printers (52.9%), one fifth were resellers and 10.2% manufacturers. Europe dominated the survey's geographical split with more than half of respondents (57.3%) located in the region, followed by North America, Asia, Africa, South America and Middle East respectively.

According to FESPA's Economy Survey 5, a third (33.3%) of respondents said that the primary reason for investing in a new wide format printer would be to accommodate different media and/or a wider range of applications with output quality and running costs being the other top criteria. A UV-curable inkjet printer was the highest area of investment (50%), followed by latex or another durable aqueous inkjet printer (31.6%).

62.7% of respondents indicated that 'green' printing, or printing using more environmentally friendly practices has seen an increase in demand as a service, with over one fifth planning to invest in an eco-or light solvent printer. More than a third (36.9%) also cited seeing a rise in customer demand in applications requiring white ink printing, 35.6% in versioning/variable data printing and 23.1% in printing QR codes or other interactive elements.

Printers believe that there are some challenges within the area of digital signage, with 80% of respondents believing that digital displays has, is or will impact on wide format digital print applications. Of the 80%, impact on point-of-purchase graphics was deemed to be greatest (23.3%), followed by billboards, backlit, and vehicle graphics respectively. ■

New photoemulsion meets global Öko-Tex Standard 100 criteria

KIWO's new Texsol 600 Eco meets Öko-Tex Standard 100

The globally valid Eco Passport awarded to Texsol Eco 600 Eco

Introduced by KIWO is its Texsol 600 Eco, a water-resistant two-component photoemulsion for textile printing screens with a globally valid Eco Passport (Certificate No: 11.0.95539). It has been developed for producers of branded T-shirts, imprinted sportswear and fashion textiles that require both products and production equipment free from all contaminants and therefore harmless for the user, whether they are buyers or wearers. During the printing process textiles come into physical contact with the screen-printing stencil and, thus, directly with the emulsion which is an integral part of the printing screen.

The aim of KIWO, Kissel + Wolf GmbH, was to develop an emulsion free from harmful environmentally damaging chemicals and toxic substances. The company's development team successfully formulated Texsol 600 Eco, a textile printing emulsion free from heavy metals, carcinogens, questionable dyes and plasticizers. It meets the Öko-Tex Standard 100, a recognized global standard that ensures that the products used are safe and suitable for the production of human-ecological optimized textiles.

Texsol 600 Eco is characterised by excellent resistance to aqueous textile print media and plastisol inks with good decoatability, as well as very good imaging and resolution quality. Its colour unsensitised is purple, and sensitised is brown-violet, with a viscosity of approximately 9000 mPas (Rheomat RM 180, MS 33, D = 100 s-1, 23 degrees C) and a solids' content of approximately 40%.

KIWO anticipates that the textile printing market will be eager to accept this new product. The properties of this newly developed emulsion meets the quality and technical standards of conventional emulsions, with the added bonus of being harmless. ■

HP confirms support as headline partner for EcoPrint Europe

EcoPrint Europe Live 2012, which takes place in Berlin on 26 and 27 September, has confirmed that HP is its headline partner for the event, signalling the market leader's strong support for sustainability in print.

Marcus Timson, Director of EcoPrint, comments: "We are absolutely delighted to have the support of HP as a headline partner for EcoPrint Europe 2012. To have such a prestigious technology leader as HP declaring its support for the event is a great endorsement of the concept and vision of EcoPrint. HP is clearly committed to a sustainable strategy and therefore has plenty of expertise to contribute to the content and profile of EcoPrint and we are excited to be working in partnership with them."

Ronen Zioni, Marketing Director, HP, GSB EMEA, adds: "Once again HP is recognised in News Week's Top 25 US Sustainable Brands, and also features within the world's top 100 sustainable brands. So it should come as no surprise that HP recognises that the EcoPrint event is both a great idea and the perfect platform for HP to communicate the message of sustainable print business to an audience of printers, agencies, marketers and brands. The reality is that the leading brands of the world are aligning their supply chains to their goals for carbon neutrality, and print must fall into line.

EcoPrint will provide a focused attendance of professionals with guidance, support and inspiration for sustainability. The event has already received excellent support from potential exhibitors and visitors from around the world, suggesting that the industry is ready to embrace both the show and its vision of a profitable, sustainable future. ■

SCREEN-PRINTING GOES DIGITAL

Jared Shutt explains the benefits of using thermal technology to expose screens

Have you ever sat back and thought about technology, where it came from to where we are today, and wondered about what new technologies are just around the corner? Ever thought about the technologies contained within your given business in the same fashion? Digital technologies have forever had an impact on the world. This is evident by something as simple as the watch you may wear on your wrist or your mobile phone signal. Digital is everywhere and is definitely making it presence felt in the screen-printing industry.

Riso Kagaku's new Goccopro 100 is a digital screen maker which uses thermal technology to expose a specialised heat-sensitive screen mesh for screen-printing. More importantly, the Goccopro 100 does not have nor use any chemicals, emulsions, or wash-out in printing with the screens. The process of exposing a screen on the Goccopro 100 is as simple as the following six steps.

STEP 1: CREATE ARTWORK

Artwork production is the most tedious of all steps in printing. Create the wrong artwork and the job is already worthless. There are many options on the market, depending on specific industry, for graphic design software. Depending on the machine you are outputting the artwork to could play a factor to the type of design software used. The Goccopro 100's print driver allows the user to create artwork in any software program containing a print function. Vectored artwork creates the best results (up to 600dpi); however, there are halftone and grey-scale applications where bitmaps and rasterised images can be of benefit.

STEP 2: 'PRINT' YOUR ARTWORK

Once the artwork is completed with any separations, the next step is to 'print' it. The Goccopro 100 print driver will be an option within the design software's print window. Contained within the Goccopro 100 print driver are options to change screen angle and frequency when using half-tones. Once all preferences are set, the artwork is then 'printed' directly to the Goccopro 100 by way of USB cable. As the information is sent, the Goccopro 100 stores the digital information into its self-contained 128MB memory.

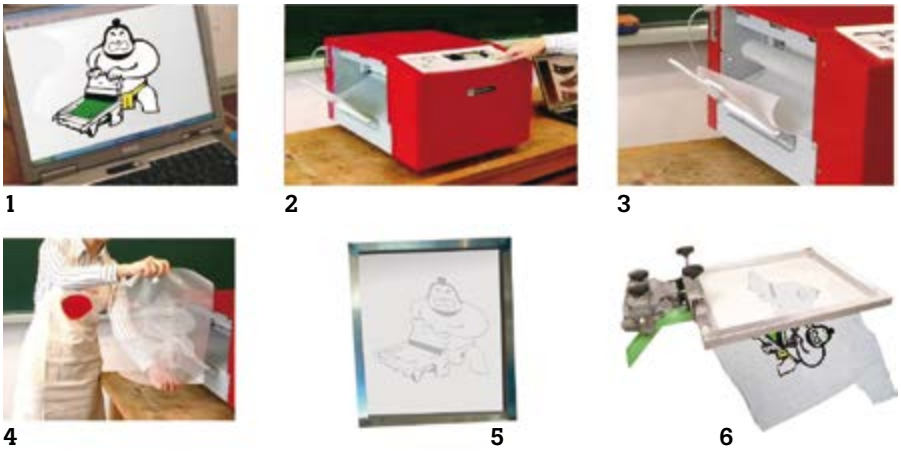
STEP 3: PRESS START

By pressing the green 'start' button located on the control panel of the Goccopro 100, the digital information stored in the memory is sent to the thermal print-head unit to expose the heat-sensitive screen mesh. There are three mesh counts available for various printing needs. Each of the mesh counts comes in 12m (40ft) rolls by 32cm (13 inch) widths.

The '70 mesh' count is used for most textile applications because it allows f13" or the largest amount of ink to pass through the screen. The '200 mesh' count would be needed when using very finely detailed artwork, air-dry non-solvent inks, or non-garment substrates (woods, plastics, metals, rubber). When using solvent-based inks the '180 mesh' is used. Each screen mesh has a specific heat-sensitive coating on one side. This specialised coating is what comes in contact with the thermal print-head and exposes the image directly onto the mesh.

STEP 4: SCREEN CREATED

Thermal print-head technology has already made an impact in everyday life. Take a look at some receipt printers in convenience stores and gas stations. Most are being printed by



1 2 3 4 5 6

Easy screen-making with the help of the Goccopro 100

The Goccopro 100 uses thermal print-head technology

use of thermal paper and a thermal print-head. Before the days of single sheet facsimiles printed using inks and toners, there were thermal facsimile paper and 11 inch thermal print-heads.

The Goccopro 100 uses its 12 inch (image area: 297mm/11.69 inch) wide thermal print-head to image the screen mesh specific to the artwork created and sent in just a matter of seconds. The screen mesh roll is placed inside the Goccopro 100, with the start of the roll placed under the print-head. The Goccopro 100 will automatically adjust the mesh to the proper starting position. Once the artwork has been created onto the screen mesh the Goccopro 100 rolls the mesh to the specified customisable frame size and cuts the piece off the mesh roll.

STEP 5: CREATE FRAME

The imaged screen can then be placed in framing system where tension is added. With multi-colour work, each screen for each given colour will all have roughly the same tension and therefore have very little deviation or registration issues. If possible, a small trap in the artwork can be very useful. Once the screen mesh is securely tensioned in the framing system, tape may be added to the inside of the frame where the squeegee is pulled to assist in cleanliness.

STEP 6: PRINT

Some may find it easier to place the tensioned frame in the press prior to taping so the press can hold the frame, but again, taping is optional. With the frame in the press the job is ready to be completed.

SCREEN MESH: DISPOSABLE

Accounting for the time spent cleaning, degreasing, de-hazing, and washing-out used screens can increase the time spent on the job incredibly. A huge benefit to screen-printing with the Goccopro 100 mesh is that upon completion of your job and removing any excess ink from the screen, simply disassemble frames, cure ink left in screen mesh, and dispose. Any damp ink will become a solid non-toxic waste once cured (check your ink to ensure), which can then be disposed into ordinary trash cans. No wash-out, no chemicals. This saves both labour time and the use of environmentally damaging screen cleaners and wash-out chemicals.

With the use of older and newer technologies the Goccopro 100 offers screen-printers an opportunity to 'clean up' their production area while saving time and money in production costs with the ease of 'printing' your artwork. ■

Jared Shutt specialises in Equipment Sales at XpresScreen

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GARMENT PRINTING MADE EASY

Roy Burton outlines the benefits that lie in bespoke machines

Garment printing has been around, in one form or another, for just about as long as garments have. Various techniques have been discovered and developed over the centuries but, in essence, whatever method we look at it will still involve putting some kind of coloured liquid onto an absorbent surface and this is what is fascinating about printing. Natural fabrics such as cotton, have similar absorption qualities to blotting paper so it follows that when you add a liquid to the surface it will soak into the fabric and spread but, as we all know (simply by looking in our wardrobe), this does not happen.

The new M2 is designed to show DTG's commitment to continual improvement.

This stack of printed hoodies shows that the M2 can print on awkward items such as those with zips

Screen-printing is one of the oldest methods of adding a printed design to fabric and is generally achieved by squeegeeing ink through a pattern or design imaged onto a fine mesh screen. So why doesn't it 'soak in'? There are numerous technical reasons for this but that discussion is for another day. The fact is, this method of decorating works and is reasonably efficient but has always presented cost and design/production limitations where small numbers of full colour prints are required.

In the past few years, though, another method of garment printing has slowly developed that can easily satisfy this growing market. Direct-to-garment printing using modified ink-jet systems offers a flexible and cost effective process that will allow small orders to be printed economically to a high standard in full colour. One of the great proponents of this style of printing is the company DTG who, over the past few years, has been responsible for some of the major developments in this process.

PRINT ENGINES

Most of the machines available for this type of work are based on a recognised print engine, usually from Epson, but recently DTG has developed its first bespoke machine designed and developed (as opposed to being adapted) for this particular purpose. We will look at this new design a little later but let us first look at some history.

The first DTG machines were, in reality, redesigned ink-jet printers and the actual print engine was as it appeared in the desktop printer from which it originated. The two main differences between what printed the invoices and what printed the garments were the transport system and the ink. The former was satisfied by designing a system that allowed the garment to remain flat and for the latter, a new pigment based ink was developed. This was quite a difficult area as this type of ink has solid particles in it and these had to be small enough to pass through the nozzles of a print-head that had originally been designed to handle dye-based ink. A further problem with this occurred later when white ink was developed for printing onto non-white garments. This has denser particles which can settle if not agitated.

Needless to say, DTG solved all of these problems producing some of the leading machines in their class culminating a few years ago in the Kiosk and Viper ranges. Apart from solving many of the mechanical problems that could easily have grounded this style of printing the company also developed what are now accepted techniques ensuring the print is fixed and proofed for laundering and general wear and tear.

DTG was, for instance, amongst the first to offer white and CMYK printing at the same time thus halving the print cycle time. The company was the first to offer a white ink handling system (WIMS) which avoids the settling problems mentioned earlier. It pioneered twin CMYK printing thus shortening the print time for white shirts. The fact is though that the machine's engine, and the firmware that drove it, had been adapted from a machine that was originally built to print onto paper and thus inherited some of the associated limitations. For instance, ink-jet printers when printing at low resolutions can suffer from 'banding' – okay for proofing documents but no good for printing t-shirts. The new machine from DTG, designated the M2, provides solutions to many of these problems.

THE M2 AND ITS DESIGN

The approach to designing the M2 was very different from the earlier models as the company started with a completely blank canvas. Although DTG still uses a standard print-head for this model everything else about the machine has been designed from the ground up. From the chassis to the firmware everything has been designed with textile and garment printing in mind. The firmware is particularly important as it represents a major step forward in production utilising the newly developed 'iQ Interweave'. This prints in a wave formation as opposed to the standard straight-line printing used by ink-jet printers. The importance of this can be seen when printing at low resolutions as the 'banding' effect normally associated with low resolution printing is eliminated. This means that faster low resolution settings can be used, increasing the output of the machine. The M2 also makes use of a newly developed chassis and transport system which is wide enough to accommodate two platens. This, for instance, allows two T-shirts to be printed at the same time with only a 12 second increase in the print cycle time. This increased print area also means that larger items such as jeans or garment panels can be printed. The machine even has a sensor that will adjust the printing height so to accommodate zips, buttons etc.

All in all the M2 represents another major step forward from this market leading company. Yet again the company has looked at the existing boundaries and then pushed them beyond extreme to ensure that DTG stays at the forefront of direct-to-garment ink jet technology. ■

Roy Burton is Managing Director of Impression Technology Europe

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DRUPA CUBE : 13 MAY 2012
Future of Print: Functional Printing

Following its successful start in 2008, the drupa cube will continue to be featured at drupa 2012. Achieve closer involvement of the print buyer, and offer manifold opportunities of the manufacturing side of the printing industry; in short drupa cube is a touchstone for current trends in specialist printing.

"a touchstone for current trends in communications..."

Central theme of the presentations will be the prevailing trends and developments of functional printing, driving different industries such as automotive and electronics - with technology all the while taking a backseat to application.

Drupa cube 2012 will have a decidedly **international flavour**, i.e. all lectures are going to be simultaneously translated into English and/or German. In addition, international speakers, associations and media partners will participate in the drupa cube.

Symposiums featuring up to six speakers will be conducted around midday (10:00 to 14:00). The various topics of the day are going to be sponsored by interest groups and will be individually organised. Generous catering during the presentations is assured.

TIME	TITLE	SPEAKER
10.15	BUSINESS CASE: Opportunities for Functional printing in Smart Packaging, Advertising and Health and Safety applications	Pavel Benes, Managing Director, ELON Technologies, s.r.o.
10.45	The Role of the stencil in screen printing high specification functional inks	David Parker, Global Strategic Marketing Manager, MacDermid Autotype
11.15	Functional Printing – New Opportunities with R2R High-End Screen Printing	Dr. Christian Maas, Managing Director, Kammann Maschinenbau GmbH
11.45	**Coffee break**	
12.00	Up to date Surface Refinement: New trends in print + flock technology. Application on paper-textiles-metal-plastic-glass	Holger Walter, KISSEL + WOLF GmbH
12.30	Innovating with Screen Printing	Russel Schwartz, Chief Technical Officer, Sun Chemical SAS
13.00	Fine line - short time. How to combine quick make-ready and high precision on cylinder screen printing lines.	Axel Kaiser, Gesellschafter, SPS® TechnoScreen GmbH
13.30	**Lunch & Networking**	

For Further information about the Drupa Cube 13 May 2012

ESMA members shall have the opportunity to participate for €169. Non-members pay €199. (Both prices include VAT. This fee includes an entry ticket for drupa.)

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NEW APPROACH FOR SMALL VOLUME TEXTILE HEAT TRANSFERS

Rick W Hess offers an effective way to produce printed T-shirts

When producing transfers that are applied by commercial heat press to textiles (such as to T-shirts), the conventional means has been to print them with plastisol inks onto a specially coated release paper, using a screen-printing press. In terms of the number of transfers required to be printed each time, this method has mandated a rather large production run for each design because of the time and complexity requirements of 'burning' a screen for the printing process.

Further issues that need to be addressed in the screen-printing process are choosing the correct plastisol ink so that it is fully compatible with the transfer paper coating, choosing the correct mesh screen to optimise printing and transfer results, controlling register when using transfer paper that is inherently prone to shrinkage and growth with temperature changes, managing heat parameters within the screen press drying unit to reduce the propensity for the transfer paper to curl or suffer from dimensional stability problems … and the list goes on and on.

Screen-printing presses are extremely expensive, labour intensive, and require a tremendous amount of knowledge and experience to function properly. What about the small businessman or businesswoman who desires to print just a few T-shirt transfers at a time, rather than print 1,000 or even 10,000 transfers? Or what about the small business person who wants to print a single copy or two of a custom design – perhaps a T-shirt for a special occasion like Tommy's fifth birthday? Or perhaps a large textile transfer screen-printing business wants to develop a means to print a few small production runs from time to time.

Until now, the solution to this problem would have been to use one of the digital laser printer textile transfer papers available on the market, or perhaps use an inkjet printer textile transfer paper. These types of papers work fine, and they have their purpose, but they do exhibit one common drawback: the entire coating transfers from the paper along with the image to the T-shirt, leaving a 'ghosting' effect, or a block of coating that outlines the image.

SINGLE-SHEET PROCESS

One Step Papers now offers a revolutionary new digital colour laser textile transfer paper that has solved the problem of the ghosting effect once and for all. One Step HiTemp Plus No Weed utilises a high-tech smart coating that transfers just the image … nothing else! This paper uses a single-sheet process to transfer a

Continued over

Artwork ready for printing onto One Step HiTemp Plus No Weed

Foils can be used to decorate dark fabrics

A finished print produced with One Step HiTemp Plus No Weed

solid image, without the entire coating background transferring along with it. Toner with colours that are 30% or darker on the greyscale (the image) transfers to the textile. As suggested by the paper's name, unprinted coating does not need to be weeded from the non-image areas of the transfer. This makes the image appear as if it were screen-printed onto the textile. This paper can be utilised on most colour laser copiers or colour laser printers … both the older low temperature colour laser copiers/printers that use fuser oil and the newer high temperature colour laser copiers/printers that do not use fuser oil.

To print One Step HiTemp Plus No Weed, it is recommend that one sheet at a time be fed through the colour laser copier or printer. The equipment default settings should be checked to determine which settings work best (usually it will be Label, Transparency or Extra Heavy Paper mode). The back side of each sheet is printed with a logo, and the image is to be printed on the other (front) side, using the mirror image setting on the printer. No Weed transfer paper has been tested in the most popular copiers and printers on the market, and One Step Papers reports that it works well in most.

Transfers printed on One Step HiTemp Plus No Weed may be transferred onto cotton, cotton/polyester blend, and polyester T-shirts or fabrics. Transferring should be done with a conventional heat press (do not use a home iron). The heat press should be set at 165.5 degrees C (330 degrees F), and the platens closed for 25 seconds at a pressure of approximately 80 psi (heavy). Upon removing the T-shirt from the heat press, wait about ten seconds and then peel the paper from the T-shirt.

For increased washability and durability, it is recommended that the T-shirt be placed back into the heat press, the transfer be covered with a sheet of siliconised kraft cover paper, and the T-shirt be repressed for another 25 seconds (same temperature, platen closure time, and pressure settings).

JAZZING UP THE TRANSFER

An additional feature of this paper is that most commercially available textile transfer metallic foils can be used to highlight or 'jazz up' the transfer. To do this, the T-shirt with the transferred image is placed back into the press (image side up). Just the part of the image that is to be highlighted is covered with metallic foil (metallic side up), and the entire image (including foil) is covered with a sheet of siliconised kraft cover paper. Then the press is closed (same temperature, platen closure time, and pressure settings). Upon removing the T-shirt from the press, the image is allowed to completely cool, then the foil is peeled 'cold'. The foil will only adhere to those areas where toner (image) is present.

Although One Step HiTemp Plus No Weed is not designed to be used with black or dark T-shirts or fabrics, there are some unique effects that can be achieved with dark fabrics. For instance, the image can be printed with black toner (grey scale … not in colour), then the black image is transferred to the T-shirt in the normal way. Of course, the transferred image will appear dark on the T-shirt. But, then, any commercially available textile transfer metallic foil can be applied over the top of the entire dark transferred image on the T-shirt, as described in the previous paragraph. Textile transfer metallic foils are widely available in many different colours and patterns, so the number of effects that can be achieved with dark fabrics (light fabrics, too) is astounding.

Longevity of the transfer on the T-shirt has been tested at eight to ten machine washings before the transfer begins to show signs of wear (perhaps a bit less for foil inclusions). It is recommended that T-shirts decorated with HiTemp Plus No Weed transfers be turned inside-out when washed, and that a cold water cycle be used. The T-shirt should remain inside-out and tumble dried on a low-to-moderate heat temperature setting.

One Step HiTemp Plus No Weed digital colour laser textile transfer paper is available directly from One Step Papers in sizes of 215 x 279mm, 279 x 432mm, A3 and A4 (as well as in custom sizes, volume permitting). Instructions for the proper use of No Weed, as well as contact information for purchasing are given on the One Step Papers web site. ■

Rick W Hess is Vice President, Analog Paper Products, at One Step Papers

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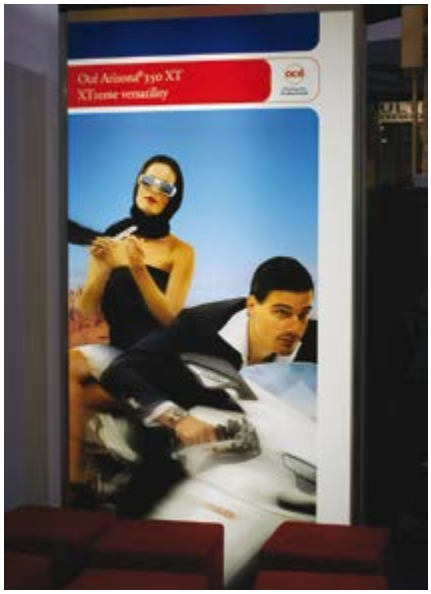
IS WHITE INK CAPABILITY REALLY SUCH A BIG DEAL?

Jeff Edwards explains why it's important to understand its potential despite its limitations

Jeff Edwards

As a prominent vendor in the wide-format ink-jet market, we once experienced the challenge of selling printers that lacked white ink capability, so I can assure you that this functionality certainly is often critical to prospective customers. But why is it so important? Are there meaningful applications? Are current implementations up to the task? Let's consider some of the technical characteristics of piezoelectric ink-jet white ink capability and the possibilities of its use.



Backlit images can be created on transparent media using white ink as a light-diffusing layer

WHITE INK CHALLENGES

Embedding white ink capability in a piezoelectric ink-jet printer is tough, but implementing it in a high-quality, credible way is even tougher. Formulating a successful white ink solution presents several unique engineering challenges. To begin with, the most appropriate pigment material for white is titanium dioxide, which is very heavy compared to the pigments used in the coloured inks and it doesn't like to stay suspended in a fluid. As a result, most white ink equipped printers go to great lengths to circulate, agitate or otherwise excite the ink in some way during idle times to keep it well mixed.

Titanium dioxide presents other challenges as well. Unlike the pigments used in the coloured inks, it must be used in a mass/volume proportion of pigment/ink at least three to four times the normal rate in order to achieve sufficient optical density. Partly as a result of this high pigment loading, it actually acts as a thickening agent in the ink. Both these characteristics make it particularly difficult to jet white ink through the tiny nozzles in piezoelectric ink-jet print-heads if it is not very carefully formulated, and consistently manufactured, stored and distributed. These characteristics also usually result in a shorter shelf life than for coloured inks. Assuming your printer manufacturer of choice has surmounted these considerable technical hurdles, there are other issues to consider.

A white ink solution must offer sufficient opacity to completely cover the media (no colour show-through) with a bright, white base when printing on non-white media or objects. It must also have sufficient translucence and smoothness of tone to act as an even light diffuser when printed on top of the colour in a backlit application on transparent media. Some wide-format solutions available today offer mediocre white options that simply are not bright enough, white enough, opaque enough, or smooth enough to use with much commercial credibility.

Understanding exactly the image quality limitations of the white ink implementation is critical but there are other questions to consider:

- Can white be printed as a layer underneath and/or on top of the coloured inks?
- Can white be printed as a layer between two layers of coloured inks, for day/night backlit applications?
- Can white/coloured layered prints be made on both rigid and flexible media?
- Does white print with the same resolution and/or droplet size as the other colours for fine detail printing, or is it suitable only as a fill (flood) coating?
- Can white ink be printed at full speed when printing a non-interfering spot colour area, or are layered print modes the only ones available?

This is a myriad of questions to consider but will determine the total applications capability of the printer. The most important point to take from this is that putting a 'check in the box' next to White Ink Capable is not enough when it comes to this important feature. Understanding the image quality and technical capabilities of a printer is critical to successfully implementing this service in your offerings.

ENDLESS APPLICATION POSSIBILITIES

Assuming that you have indeed purchased a printer with a credible white ink solution that really works, what do you do with it? The answer of course is, anything you want! White ink capability dramatically expands the possibilities, especially for flat-bed-style printers.

White ink enables printing or dark or coloured substrates

This example of white ink in an opaque application shows where white forms part of the image content, and creates a base for the CMYK colour set.

When considering transparent media applications there are two possibilities. Rigid media such as polycarbonate, acrylic or PET-G can be used for second surface backlit applications where the image is viewed from the unprinted side of the media. This is most commonly used for backlit point-of-purchase and retail advertising displays. The quality of some printers is such that they almost rival the quality of laser-based photographic printing solutions, such as the Océ LightJet printer.

A more interesting twist on this technique is available on some printers that actually enables the white layer to be printed between two coloured layers on the same (second) surface of the media. This facilitates the use of the print in a day/night mode where it is actively backlit at night but not during daylight hours. This has great appeal to the ecologically sensitive end user by requiring less than half the electricity of standard backlit prints. Of course the ability to print in two or three independent layers on flexible (roll based) media is also important. Flexible transparent or translucent media deliver all the same application options as rigid but for lower cost, short-term display purposes. Flexible media also expands use to such applications as static-cling window decoration where the white-between-colour method of printing makes the prints even more interesting by enabling them to be viewed from both sides – doubling the number of potential views in the retail environment.

When considering non-white media, things get even more interesting. Imagine being able to print on any reasonably flat object or media, regardless of base colour. Doors, wood, glass, tiles, carpet, stone, cardboard, metals, foils for packaging, fabrics – the list is endless. And if the system doesn't move the media/object during printing, such as a stationery flat-bed, the choice of substrate is not limited to media but includes almost anything you can imagine.

In summary, white ink capability offers print producers the ability sell high value backlit graphics on rigid or flexible media. White ink also gives print providers with flat-bed printers the ability to create speciality applications on almost any media or object. Adding high value, high margin propositions that enable printer providers to differentiate their business is a great defence against the commoditisation of wide-format printing.

White ink printing – it's real and it's profitable, and that makes it a really big deal. ■

Jeff Edwards is International Product Marketing Manager at Océ Display Graphics Systems

Using the day/night technique, where a white layer is 'sandwiched' between two colour layers, can also be used to create static cling graphics on clear, flexible material.

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WHAT TO DO WHEN SCREEN-PRINTING STENCIL PRODUCTION GOES WRONG

Part one of a four-part summary of the most common errors, their causes and prevention/elimination

1 STENCIL ADHESIVE DOES NOT BOND

a) Frame not degreased
Remove grease and dirt with Pregan Paste or Pregan NT Paste.

b) Frame has silicone residue on / in the surface
Burn off residue from the frame.

c) Frame surface is too smooth
Surface should be sandblasted, sanded down or chemical roughened with Pregan Paste or Pregan NT Paste

d) Moisture on the surface
Dry the frame; do not transport from cold to warm areas (condensation). If necessary, prime with Kiwodur hardener.

e) Adhesive surface is too small or narrow
Prime frame with Kiwodur hardener.

f) Mesh tension is too high
Prime frame with Kiwodur hardener, then use Kiwobond 1000 HMT or 1100 PowerGrip.

g) Solvent creeps under the adhesive
Roughen frame well. Avoid grooves that may arise from grinding with an angle grinder or the like. Prime bonding area with Kiwodur hardener or an adhesive/hardener mixture.

h) Adhesive is attacked by solvents
Use Kiwobond 1100 PowerGrip. Prime bonding area with Kiwodur PowerGrip 1100; if necessary, apply coating of Estelan Y 224-03 (light yellow) or R 224-04 (red) protection lacquer.

2 FORMATION OF FISH EYES AND DOTS

a) Badly decoated mesh
Treatment with Pregan post-cleaning products (eg Pregan Anti Ghost, Pregan Megaclean X-Tra etc).

Application of screen adhesive

b) Badly degreased mesh
Degrease carefully with Pregan A9 extra, NT9 or Pregan Paste, then rinse thoroughly with water.

c) Dust in the work area
Keep the work area as clean as possible.

d) Coating application too fast
Slow and uniform coating prevents the formation of air bubbles. The best results are achieved with coating machines.

e) Too much air stirred in during sensitising. Impurities mixed in (e.g. through dirty stirring tools).
After sensitising, all emulsions should be allowed to stand for at least two hours, preferably overnight to allow air bubbles to escape. If filtering is possible, this will speed up the process and also remove any possible contaminants.

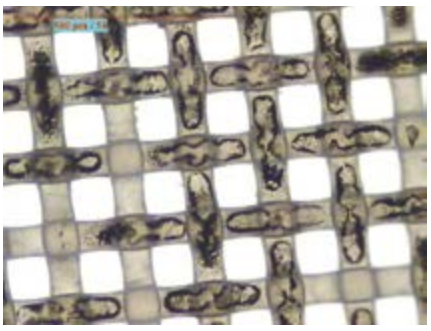
f) Water splashes on the mesh
Even the smallest water droplets on the mesh can create irregularities in the flow of emulsion during coating.

g) Insufficiently dried stencils
Water droplets may run from the frame sides onto the mesh during the coating process, which will render the stencil useless.

3 STREAKING IN THE COATING

a) Damaged coating trough
The edges of the coating troughs are very sensitive. In the worst case, damage may even cause the mesh to rip during the coating process. Therefore, treat and store coating troughs with extreme care and protect the edges with a plastic cover.

b) Dried emulsion on the edge of the coating trough
After each coating operation the edge of the coating trough should be carefully cleaned (e.g. with a damp sponge).



A carelessly cleaned mesh showing ink residue

A hand coating trough

c) Condensation in the emulsion container
Condensation can form in the emulsion container when the temperature difference between the storage and processing areas is high or between day and night. This can lead to streaks in the coating. Therefore, avoid temperature fluctuations or stir the emulsion again about two hours before processing.

d) Streaking caused by mechanical damage of the mesh
The traces of the squeegee or flood bar edges can often be seen after long runs or the break of a single thread only noticed after a screen is newly coated. Such mesh should be replaced.

4 UNEVEN COATING

a) Coating trough is too long
One should keep a minimum distance of 5cm between the frame and coating trough. This is because the mesh tension builds up more towards the frame sides, which can no longer be compensated by the coating trough pressure. In the worst case, the mesh can even be ripped open.

b) Incorrect coating trough pressure
When the pressure of the coating machine is incorrectly set, an air leak in the feed line might possibly be the cause for uneven coating. Therefore, settings and air lines should be checked regularly.

c) Dried emulsion in the coating trough
If the period between two coating operations is too long, dried skin can form on the emulsion, which leads to haze formation during coating. By covering the trough, this process can be slowed down; otherwise the trough must be emptied, cleaned and filled again. ■

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LIMITLESS POWERS OF UV SPECIAL EFFECT INKS

Ron Hayden describes how screen-printing value-added special effects creates more profit

One of the challenges in design for print is how to stand out effectively, transforming any ordinary print into an extraordinary breath-taking one. Printers of all stripes (offset, flexo, digital and screen) are on the prowl for innovative and resourceful ways to create added value finishing. Interestingly enough, RHUV special effect inks, which are applied only by screen-printing, onto any previously printed material are specifically designed to provide a visually amazing enhanced effect allowing commercial and graphic printers to maximise profit margin on each printing job.

Manufactured unlike regular UV inks, RHUV special effect products are created to yield the exact same exquisite finishing characteristics regardless of screen-printing or UV curing equipment used. Setting the plateau to an all-time high, these innovative products are specifically formulated for special effect printing and available in 18 distinct finishes-and counting. Each one gives an authentic pleasurable sense of touch, three-dimensional appearance and unique richness to catch several senses at one time.

In unlimited or single applications onto a vast array of materials, the visual appeal catches the viewer suddenly and strongly. These truly stunning visual enhancements are obtainable on an inexpensive assortment of exclusive-looking substrate types, such as foil-likeness but can be placed in selective areas to create multiple effects, regardless of which printing process was originally used. Picture 8 shows a distinctive special effect sample combining holographic/micro-embossing, bubble and coral effects.

ENDLESS MARKETS

The markets for special effects are virtually endless, while the present marketplace benefiting are general merchandise, posters, POP/POS displays, children's books, games and toys, reference books and encyclopedias, books and magazine covers, digitally-print-books, greeting cards, calendars, door-opening business cards, catalogues and folders. Other options include use in advertisements, fine art, high end and luxury labeling and packaging, cosmetics, confectionary, spirits, plus annual reports, leaflets, diaries, pictorials, audio visual products, publishing materials, jewellery boxes, Braille, garment tags, gift wraps and bags, and more. In fact, virtually any type of special effect enhancement can be created to provide a distinctive and stunning addition to any ordinary plain-looking print to bring it alive.

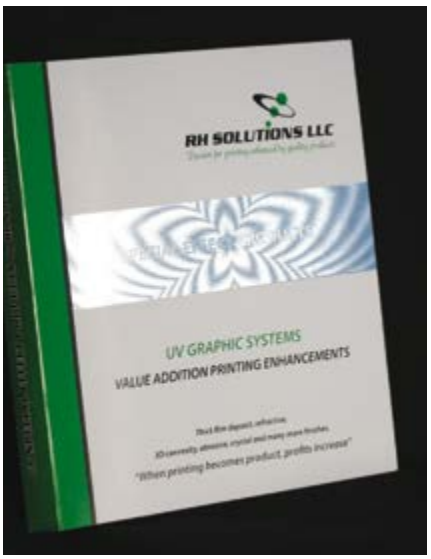
The prominent pulling-power of these screen-printed effects can produce, but are not limited to, deep high gloss, texture, silver foil, scented, glow in the dark, metallic, pearl, water droplets, fragrance, abrasive-feel, wrinkle, coral, icy snow, genuine-looking silver and gold, bubble, glitter, selective foil stamping and an infinite range of fine line micro-embossing and 3D holographic imaging that no other process can replicate or emulate any time soon.

REIGNITING CLIENT BASES

In today's economy, maybe there has never been a better time or opportunity to reignite your business passion. By strategically embracing innovation and creativity into your printing process, companies can develop new markets outside the ordinary

Continued over

This creatively stunning but inexpensively printed selective foil-like finish gives a distinctive look of richness to any folder, book cover or packaging



A simply printed but highly attractive crystal, coral and micro embossed foil-like gift box.

RH Solutions UV Special Effect Book in colour offset specially created with before and after matching pages of various RHUV Special Effects 100% screen-printed on one side. Mesh count and stencil parameters are provided at the bottom of each special effect sample making this is an excellent sales and demonstration tool.

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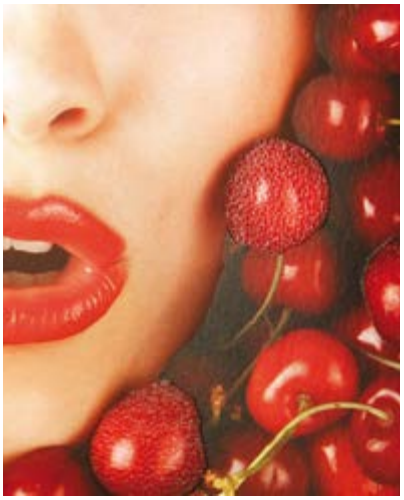
mainstream to infuse the financial benefits. Screen printing is the oldest of all printing processes, existing largely today due to its ability to successfully print the widest range of substrates with the broadest selection of ink coatings for colour vibrancy and opacity that delivers the greatest visual impact of any printing process excellently and some.

It has been said that you only have one chance to make a lasting impression. Enterprising commercial and graphic printers applying special effect ink can reignite their client base, attract new niche markets and captivate long-time established customers with something totally unique to shore up their bottom-line. UV special effects are limited only by imagination. The most resourceful 'think outside the box' innovative printers applying value added finishing, coupled with amazing sensory impact, will enjoy a higher return on investment by adding such features that radiates excitement instead of minimising cost per unit. When special effects become product-profits increase!

'Must-have' sample swatch books of eye-opening effects, containing before and after treatments, provide potential customers with first-hand appraisal of these truly stunning visual enhancements. ■

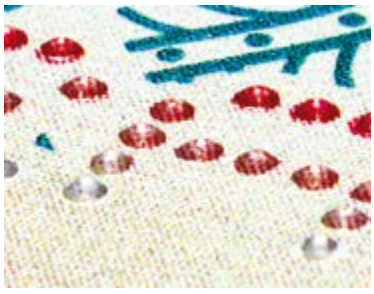
Ron Hayden is President of RH Solutions

As Ron Hayden, the president of RH Solutions, reports: "Providing special effects will enable any printing company to win business and increase profits due to added-value finishing. Enterprising printing companies today are seeking ingenious ways to enhance their customers' products, by adding and creating value-added additions to their in-house capabilities. These special features are truly unique and striking, each with distinct properties for many 'knock-your-socks-off' applications. The ensuring results have such an impact that virtually any commercial graphic application can be transformed to provide added embellishments that promotes genuine isolation from the competition."



RH Solutions sample book photos of eye-opening effects, containing before and after treatments, provided to help printers supply potential customers with a first hand look at these truly stunning tactile 3D and visual enhancements

At the SGIA Expo held during October in New Orleans, a rather strange looking showcase was displayed to the visitors for the very first time on RH Solution's booth, a supplier of specialised inks and printing machinery. Its purpose was to flaunt the intrinsic virtues of special effects, an ingenious new profitable business by printing innovative value-added finishes. Displayed was an array of sensational features that were applied to existing prints, irrespective of the original printing process used to print them. The booth was swarming virtually throughout the show with visitors and suppliers and exhibitors alike. Those in attendance were in absolute awe over the ground-breaking striking effects an otherwise plain-looking print can be transformed into something that is visually dazzling and stunning to the eye.



SGIA Expo showed an array of sensational features with inks people wanted to touch. Any printing company not stepping into this lucrative market means they will be leaving money behind on the table!

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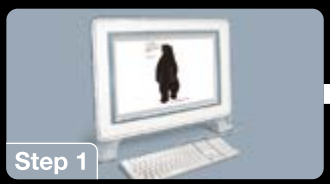

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REDUCING COSTS AND TIME IN A TOUGH MARKET

Galit Beck outlines the benefits of using third-party inks in a tough economy

It is no secret that, although business analysts claim some countries are pulling out of the recession, you cannot feel it in your bottom line. The financial crisis has hit the screen-printing industry hard. The expenses for running a print shop and the dwindling of printing jobs took their toll and it seems that the promising financial newspaper headlines did not penetrate to the personal economic situation of the print shops trying to survive the recent economic storms.

As in all areas of business, wide-format digital and industrial printing costs can be divided into fixed and variable costs. Fixed costs include the premises, printers and other factors which, unlike variable costs, do not change no matter how many prints are needed. Variable costs like the ink, media used and staff have a significant influence on the price of every print job.

There are many ways in which print shops can reduce costs and continue their business. In some cases this may entail delaying purchase of new equipment and supplies, new software or spending less on advertising. Another method is to cut down on staff. This may be wise during recession time but, once the market snaps out, you are left unready to cope once the good times start to roll. Another option, and probably the best, is to start looking at the budget and where you can reduce without sacrificing your bread and butter.

CONSUMABLE COSTS

One of the major expenses in every print shop's business is the cost of consumables, especially ink. Ink is still one of the leading costs for running a print shop which you cannot do without. The more successful your print shop is, the more money you will spend on ink. Your business relies on ink but have you ever stopped to think whether you can save on it? Today the market offers many brands of reasonably priced third-party inks since many print shops realised that this is an easy way to increase the business's revenue.

Key to succeeding in today's market is gaining a competitive edge and ink, no matter whether it is mild and low, eco-solvent, latex or UV-curable, it provides a very important cost factor in wide-format digital printing

In the wide-format printing industry, alternative ink manufacturers have invested heavily in research and development of inks and in production upgrades. This has resulted in very good quality inks that are significantly lower in price when compared with the OEM, with no distinction in quality and performance. Some inks save the end users up to 40% on ink expenditure. This is a real incentive for both small print and sign businesses that operate on low margins as well as for larger businesses, running bigger volumes of work, where the cost savings can significantly influence their bottom line.

Bordeaux Digital PrintInk's products include mix and match inks for more compatibility and cost savings

DON'T BE INTIMIDATED

When deciding to select third-party inks, you may be intimidated by your printer dealers that the quality will bring you savings in the short term, but will cause you clogging, machine downtime and damage to the print-heads. However, this is no longer true. The alternative ink market has thrived in recent years and more print shops have found that all these prophecies are simply a hoax!

Customers such as Steve from Las Vegas, who owns a print shop downtown, has been using Bordeaux's eco-solvent ink for the past three years. He is not only happy with the results but claims he will continue to use Bordeaux Digital Printink inks regardless of the economic climate since they simply work better.

He claims he has been saving 30% on inks since he started using Bordeaux and the satisfaction of his customers from the quality only increased. Bordeaux PeNr – the eco solvent ink – is the best-selling alternative eco solvent in the industry and they will save you at least 30% compared to the original inks you are currently using.

ANOTHER SIDE TO THE COIN

However, there is another side to the coin. If the alternative ink is not fully compatible with the OEM ink, it is necessary to perform conversion in order to reach the true printing output. Because of this, multiple prints have to be printed in order to come close to the desired colour appearance and performance, leading to a waste of media, operator time and also time which is taken up when the printer is not actually working because of the set-up process.

Bordeaux's wide range of inks is fully compatible with the leading wide and grand format printers and most of them are mix and match, enabling on-the-fly conversion of the original ink to Bordeaux without the need to flush, replace parts and, in most configurations, to perform colour profiling thus resulting in saving time and costs.

Another consideration is that, due to OEM ink providers' attempts to bind the end users and protect their market with encrypted chips and compatible cartridges for specific printers, printing companies can no longer settle only for the ink, but require specific packaging and chips for their printers and print-heads. Most respectable third party ink manufacturers such as Bordeaux offer a complete solution of chipped cartridges, and some even offer their own bulk ink system that eliminates the need to change cartridges. Bordeaux even offers its customers a chip encoder, specially developed by InkOnDemand, so that the end user can reset the chip at his site using unique software with a new code, saving time and money. This terminates the dependency of the users to their OEM ink providers. ■

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UNDERSTANDING THE VARIABLES IN DRYING TECHNOLOGIES

James Ortolani discusses digital direct-to-garment curing systems

Providing a drying system for today's digital garment printers presents a whole new set of variables for screen-print dryer and oven manufacturers to undertake. And the first step is understanding the curing specifications of digital direct textile inks. The dryer used in digital direct printing needs to be able to handle the curing of water-based inks and must fit the environment where the digital garment printing is taking place. If the digital printing production is taking place in a factory a 4.9 x 6.1m (16 to 20ft) conveyor oven with forced hot air works great, but a 6.1m (20ft) conveyor dryer takes up too much space for the digital decorator that operates in a retail gift shop! For the gift shop digital printer the new compact drawer dryers or a heat press works great in these environments.

Before going into the types of drying systems in detail it is important to understand the three basic methods of drying inks on any substrate. These curing methods include conduction, radiation and convection heat.

This Kornit Breeze direct-to-garment printer is shown with a HIX two drawer Verticure

A Brother 541 digital garment printer mounted on top of the HIX two drawer Verticure digital garment dryer

The use of a heat press is a good example of conduction curing for drying digital direct garment inks after they have been printed. The digital printed garment is removed from the printer and cured by locking down the heat element in direct contact with the printed design. A barrier sheet should be used between the heat element and the garment to keep the heating element clean.

The use of a conveyor textile dryer with infrared heat panels is an example of radiant drying. The infrared panels in the conveyor dryer 'radiate' heat from an IR heat source onto the digital decorated garments and cures the inks. IR heat is commonly used to dry textiles whether printed digitally or screen-printed but IR heat alone does not do a good job of curing water-based ink systems. When IR heat is combined with forced hot air (convection air) this makes for an ideal curing method for water-based screen-print or digital direct-to-garment inks.

Convection is the process of curing with hot air and convection dryers are available in electric or gas with both systems delivering hot air to the substrate with a series of air nozzles or air knifes. Convection drying systems are very effective for drying water-based digital or screen-printed textile inks. High velocity heated air dramatically increases the rate of heat that is transferred into the garment being dried. The success of curing with convection hot air is two-fold, not only does the hot air dry the printed ink by means of evaporation but it is also removes the moisture trapped in the garment allowing the ink to reach the cure temperature at a much faster rate.

CONDUCTION HEAT VS CONVECTION HEAT

Some digital direct printing systems use a wet pre-treatment solution designed for printing on dark garments while the surface of the garment is wet. With these types of printer the garment front is saturated with a wet pre-treatment solution and the digital inks are printed directly on the wet surface which allows the ink to 'float' on the surface of the garment and not 'soak' or 'wick' into the garment. Convection hot air drying is the best method to remove the moisture from the garment and ink in cases where a wet pre-treatment is utilised. The finished print is vibrant in colour since the ink is sitting on the surface of the garment and this type of ink has a soft hand feel.

The best drying method to use with this wet pre-treatment printing system is a gas conveyor convection oven or an electric combination IR forced air dryer.

And, as mentioned earlier, if space is limited in the shop the compact drawer forced air drying cabinets are also an excellent choice.

CURING WITH A HEAT PRESS

Some digital direct-to-garment printing systems (for dark garments) print on garments that have been pre-treated and dried prior to digitally imaging the garment. With this type of system the garment is pre-treated with a wet pre-treatment solution separate from the direct-to-garment printing machine, pressed with a heat press to dry and then staged to be digitally printed later. After the garment is digitally printed the next step is cure on a heat press by locking down the heat element in direct contact with the garment. (Use a barrier sheet over the print to keep the heat platen clean.)

A heat press is an inexpensive alternative used to cure most direct-to-garment inks. (Always consult your digital ink manufacturer for curing recommendations.) The use of the heat press to cure direct-to-garment inks has been an effective way to cure digital inks since

HIX two drawer combination IR forced hot air dryer for drying digital direct prints on garments

the beginning of the digital garment printing revolution.

After the printed garment is locked down in the heat press the cure time takes approximately 45 to 50 seconds at 190 degrees C (375 degrees F) for a full cure. (Always follow your ink manufacturers curing guidelines.) For shops that are challenged for space the heat press takes up very little room and is a reliable curing method. The trade off is that the finished print cured with a heat press will have a 'gloss' finish as opposed to a 'matte' finish of a digital print that was dried in a convection dryer or drawer type dryer.

FORCED AIR BENEFITS

Electric infra air dryers combine infrared and convection heat and are an excellent choice for drying digital water based inks! The physics behind the use of forced hot air is that this dries the moisture out of the garment allowing the infrared heat to bring the ink up to the proper curing temperature at a much faster rate than with a dryer that doesn't have airflow. Not all combination infra air electric dryers are capable of drying water-based inks due to various airflow designs from one dryer manufacture to the next. For drying water-based inks look for an electric dryer with a high cubic feet per minute rating in the range of 1500 to 1800 CFM.

The HIX NPII- 3616 electric combination IR forced air conveyor dryer

Gas conveyor dryers are classified as convection hot air dryers capable of maintaining very even temperatures across the entire belt width. The air is heated with a gas burner, pressurised in an air plenum, and forced through a series of nozzles or air knives. The heated air is then forced into the substrate accelerating the drying process. The CFM airflow rating for a gas dryer is almost twice that of the electric dryer cubic feet per minute rating due to the large blower motors. An average gas dryer produces up to 3000 CFM of forced air making the gas dryer an excellent choice for curing water based digital inks. The downside of using gas dryers for curing digital prints is the larger size foot-print of the gas dryer compared to a much smaller footprint of the electric dryer.

Whether you decide to purchase a heat press, drawer style dryer or conveyor dryer, do some research by asking your digital printer supplier what drying method they recommend and check with some end users before making your decision. Digital garment printing is here to stay and there are several good options to choose from for drying these digital prints! ■

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PREVENTATIVE VERSUS REACTIVE MAINTENANCE

Molly E Long and Whitney K Wiggin explain the importance of on-going finishing machinery care

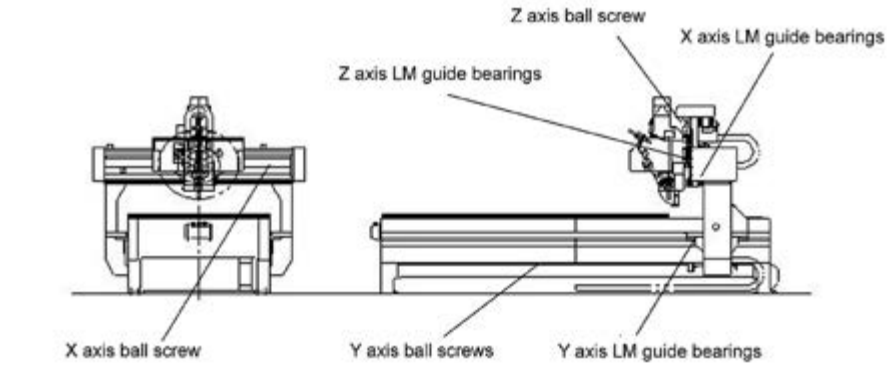
Do you have an enforced preventative maintenance (PM) plan in place? Have you fallen for the common misconception that routinely scheduled maintenance is more costly than running your machine until it fails?

Given today's current economic climate, preventative maintenance has never been more important and is a valuable investment in your existing assets. Every company and its respective machinery can benefit from a proper PM plan; if you do not have a strong plan in place you should implement one immediately. Plastic fabricators and distributors should be particularly vigilant about their PM practices, given the harsh nature of their materials and work environments.

WHAT IS PM?

PM is a set of tasks routinely scheduled for the on-going care and upkeep of a machine. PM may include daily, weekly, monthly and/or annual tasks. These tasks include, but are not limited to, cleaning, lubrication, visual and audible inspection, checking alignment, measuring tolerance, squareness, etc. This ultimately reduces costly downtime due to equipment failure or malfunction and increases profitable uptime.

Every machine has its unique inspection points and one should always ask: "What have we overlooked or neglected with regard to maintenance on this machine?" For example, when it comes to routine care of your vehicle – oil changes, tyre pressure, timing belts, etc – you don't think twice. Your machinery, the lifeblood of your business, deserves the same level of attention and priority maintenance.



Lubrication points for a Hendrick 20ZXGN three axis CNC router

VALUE OF AND REASONS FOR PM

Proper PM extends the life of a machine and avoids considerable machine down time. A well maintained machine will always have a longer useful life and perform better. Regular PM reduces equipment failure and the chances of wrong or previously unnecessary machine repairs being made.

The following is a short list of some additional key benefits of preventative maintenance:

- Increases machine and operator safety, which may also reduce insurance rates
- Reduces the amount of money spent on spare or replacement part inventories
- Optimises machine performance, thereby producing a higher quality product resulting in more satisfied customers
- Minimises, and in most cases eliminates, costly machine downtime
- Requires machine operators to have a better understanding of their equipment and to maintain a standard level of care.

Semi-annual router spindle lubrication on Hendrick 20ZXGN CNC router

PM PLANS AND HOW TO IMPLEMENT THEM

A PM plan is not solely for older machines and should be put into action immediately upon installation of any machine. Machinery technology has become more sophisticated, which means yours requires more involved care. It is never too late to start a proper routine PM plan. If there is not one in place, contact your machine manufacturer for detailed maintenance schedules to get started or improve upon your existing plan.

Companies should work directly with their machine manufacturers/service providers to set in place regularly scheduled PM visits. Daily, weekly and/or monthly PM can usually be carried out by a company's own personnel. Note: annual maintenance is best completed by your machine manufacturer's factory trained technicians.

Monthly inspection of material support rollers for Hendrick VSs vertical panel saw

Reputable machine manufacturers will have various levels of maintenance plans available to you for consideration. Work closely with your machine manufacturer to craft a maintenance plan that will work best for your company. This will maximise the potential of your PM plan.

While working closely with your machine manufacturer, you should also have a dedicated and focused internal maintenance point person or crew, as mentioned above. It is essential that these individuals are properly trained on the machine's operation, maintenance and safety.

Often companies can lose sight of their maintenance programs due to operator turnover. Not only is the maintenance schedule interrupted or abandoned in this instance, but new operators are rarely properly trained, jeopardizing safety and efficiency. When new operators are provided with proper training on programming, operating and maintenance techniques the potential for costly errors is greatly reduced.

A standard must be set high to achieve a successful maintenance program. Those overseeing production must realise the critical role PM plays in reaching production goals and allow for adequate time to carry out necessary maintenance tasks. Operators and maintenance crews must commit to follow through on all PM tasks large or small on a continual basis. Also, follow up training related to maintenance practices and machine operation contributes to the success of effective PM.

IN CONCLUSION

If you have a machine, it is inevitable that you will experience machine downtime one way or another. You can choose to be proactive and prevent unscheduled downtime with proper on-going PM or risk a more costly halt in production due to machine failure. Your company's maintenance program should never be reactive. With a strong PM plan in place and properly trained operators your company will not only extend the life of your machinery but also improve safety and reduce operating costs. In short, take care of your machinery and it will take care of you. ■

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UNDERSTANDING AND ASSESSING COLOUR CRITERIA IN FOUR-COLOUR PROCESS SCREEN-PRINTING

Mike Ruff explains the four critical principles of print analysis

In a predictable, productive and profitable four-colour process work-flow good print analysis skills are critical. Some screen-print process colour professionals do not even capture the data and only attempt analysis when a print problem occurs. Actually, every job should be analysed good or bad. This is how profitable companies have a benchmark for comparison. By having knowledge of what is good and what is bad, they can avoid print problems but, when they occur, they can quickly and easily trouble-shoot print issues and move on with production.

In this article I will explain the principles of print analysis, what data is important to look at and how to analyse the data. I won't get very deeply into how to correct print issues in this article but if you can develop skills in identifying the problem with a print, you can then quickly and effectively implement corrective action.

BASIC PRINCIPLES

My friend, Bron Wolff, a screen-print production manager and member of the Academy of Screen Print Technology, always informed training classes at SGIA: "Colour is only three things… it is the colour of the substrate, the colour of the ink and the percentage of the dot." This simple principle in print analysis will help you avoid over thinking and confusing yourself in regard to print analysis. I understand there are many variables that can affect colour but, if you think about it, the variables are just affecting one of the three things Bron identifies. By learning the control points of these three things, control becomes more focused on the result rather than the input.

There are four critical principles we must understand in print analysis.

1. The principle of the colour target.
2. The principle of a neutral print.
3. The principle of the colour process ink colour. (More than density.)
4. The principle of the colour of the substrate. (More than white.)

THE PRINCIPLE OF THE COLOUR TARGET

A high quality internal proof must be the final predictor of what is intended on press in a four-colour process workflow. The colour target must be understood to be more than a visual reference. It must be your numeric reference. The data set the proof is representing must be known, such as SWOP, GRACoL or Fogra. By knowing the values of the target, the data recorded from the print becomes relevant. Your internal proof must be accurate and equipped with colour bars that can be scanned. See Figure 1: IDEAlliance 12647-5 Screen Print Control Wedge. All the data you will see in the sample print analysis is scanned from this control wedge.

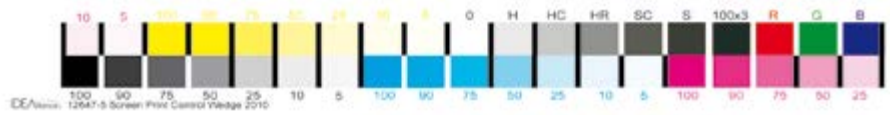


Figure 1: 12647-5 control wedge

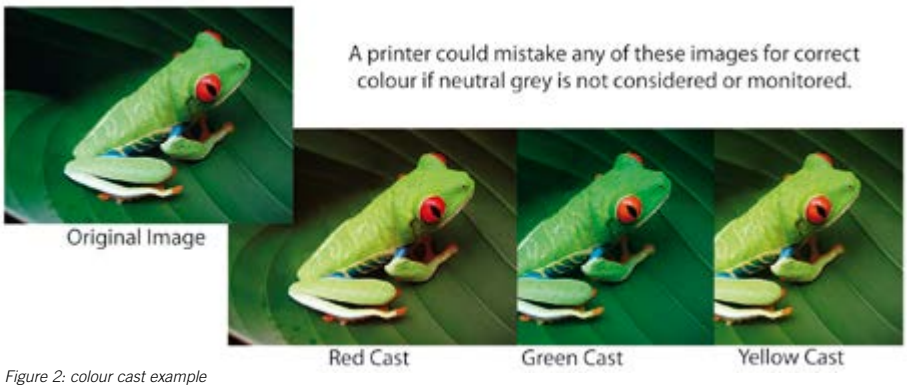


Figure 2: colour cast example

THE PRINCIPLE OF A NEUTRAL PRINT

We must understand that a neutral work-flow guarantees the integrity of the original file. Scanner operators have understood this for years. Printers, for the most part, just chase density and tonal values. But if we understand and print to neutral and to a synchronised tonality we are printing accurately. All analogue print processes can be evaluated by the same rules. If we print to neutral, we are accurately simulating the input with the output. See Figure 2: Neutral Printing.

THE PRINCIPLE OF COLOUR PROCESS INK COLOUR

The density of the solid colour of ink is not the colour. The density is the way we control repeatability. Therefore, the colour of the ink must primarily be evaluated in L*a*b*. Also, the stand-alone values of the solid ink colours are not as important as the three-colour overprint of CMY. The three process colours must be balanced and produce a neutral result. I will explain this on the example analysis in this article.

THE PRINCIPLE OF THE COLOUR OF THE SUBSTRATE

The colour of the substrate is the fifth colour in four-colour process printing. The G7 methodology and the new ISO/TS 10128 Near Neutral Grey Standard documents the principle of adjusting for the substrate. In print analysis the substrate colour must be a noted factor. Substrate can be compensated for through neutral print density curves and in print analysis it must be evaluated.

ANALYSIS EXAMPLE

Now that I have established these four analytic principles, Figure 3: Neutral Grey Proof Data is an accurate ink-jet proof. You can see that it is very close to perfect grey balance. Evaluation of the grey balance graph at the bottom left shows a green line that is the target. The a* axis and the b* axis are very close to the zero line representing neutral.

Figure 4 is a scanned data sheet of a 65 lpi screen-print targeting the accurate proof. We should be able to evaluate the colour without seeing the print using these principles and knowing our intended colour space target. The target this print is compared to is GRACoL 7, the data set most commonly targeted in G7. My mark-up and commentary should point the

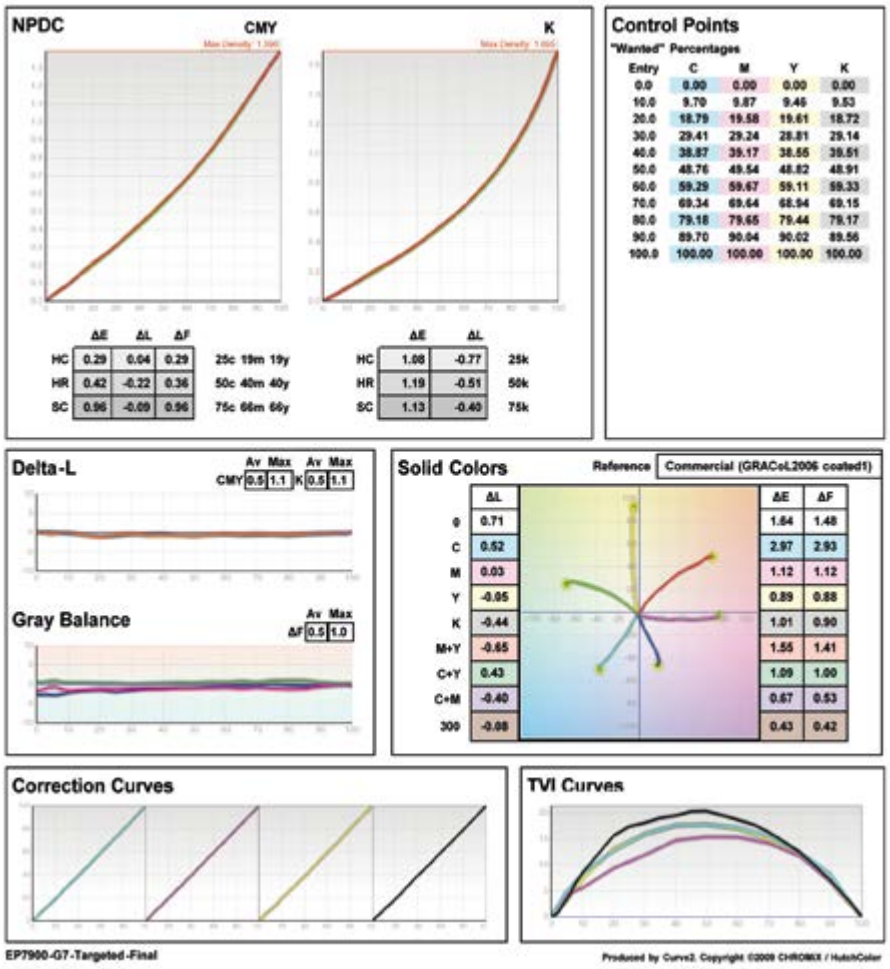


Figure 3: neutral grey proof data

printer to the causes of the mis-match. Note that the data sheet, Figure 4, has two L*a*b* columns. The centre column is the delta E in the CIE2000 Formula. This formula agrees the best with human vision. The L*a*b* column that is designated "target" are the data set values of GRACol 7 (The proof). The column on the right is the print result. This analysis layout is very friendly for easy comparison because results and target are side by side. So let's compare to our 'known' colour data set GRACoL 7, the proof data set.

Continued over

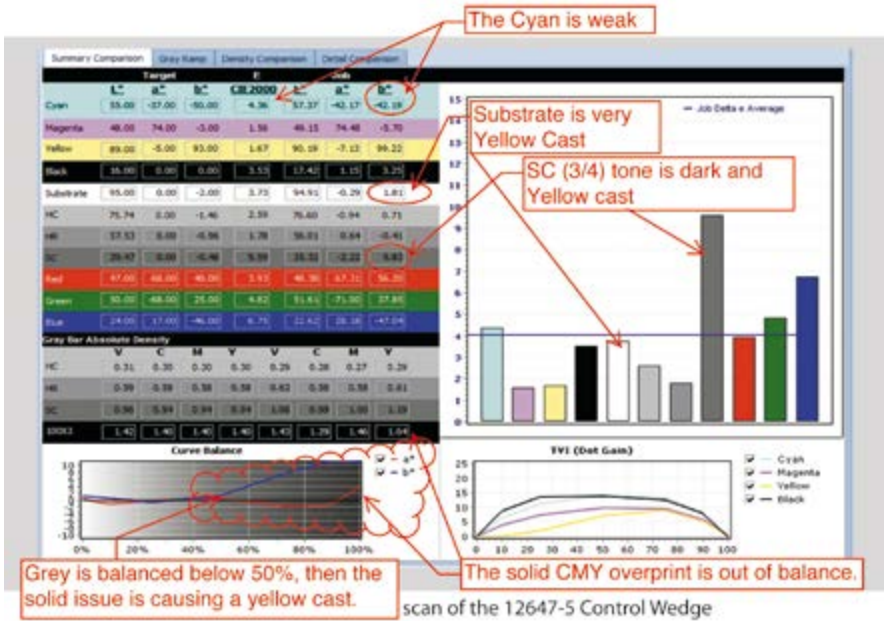


Figure 4: 65 lpi screen print data

COLOUR OF THE INK

The colour of the solid C,M,Y and K seem to be very good except for the cyan. The cyan is close to failure but passes ISO Tolerancs at 4.36 delta E. This was a phenomenon our consulting group struggled with in screen-print grey balance for years until Tim Quinn, a G7 Expert and one of our lead consultants, pointed out and proved with testing and research that the three-colour solid CMY overprint was critical in producing a neutral print.

A quick look at the three-colour CMY overprint in the bottom left of the analysis is indicating a grey balance problem. Both the a*and the b* line should meet close to the '0' on the right side because the '0' point on the right side of the graph is the three-colour black overprint. We desire balanced neutral colour in the three-colour overprint process black. The start of the a* and b* on the left is the paper colour. Ideal paper would start the a* line at 0 and the b* line at -2. (Slightly cool is standard substrate.) As we add colour from highlight to solid we should merge to near neutral CMY black if our ink CMY colour is in balance. It's not in this print.

Notice the ideal 3x overprint absolute density of CMY is 1.40 cyan, 1.40 magenta and 1.40 yellow. The print result of the 65 lpi screen print is 1.29 cyan, 1.46, magenta and 1.64 yellow in the absolute denstity evaluation line. This indicates that, even though the solid densities and L*a*b* colour of the pure CMY are in compliance to our data set target, the overprinting CMY result is not neutral. The primary cause of this it the L*a*b* colour of the ink and using the wrong print sequence, not the density of the ink. This is causing a yellow cast in the print.

TONAL VALUES

The HC, HR and SC are the 25%, 50% and 75% tonal areas. But, unlike conventional densitometry evaluation of each single CMY colour by measuring the TVI (Tonal Value Increase or Dot Gain), a much more accurate evaluation is to look at the tonal values of these areas as grey overprints – in other words with all three colours printing one on top of the other just like a process colour print would print. The values we are targeting are the values of the proof which is the GRACoL 7 data base.

ISO 12647-5 specifies the nominal values of a file that will produce neutral grey is on the chart in Figure 5, Nominal Grey File Values. For example the midtone, CMY is 50% cyan, 40% Magenta and 40, Yellow. This will produce a neutral grey midtone. These are the same numbers Adobe Photoshop will apply if you convert a neutral RGB, 128 Red, 128, Green, 128 Blue to CMYK. If we measure it with a densitometer in absolute density the density values will be about equal if you measure the colours or if you measure the same patch with a spectrophotometer it will be close to a* 0 and b*-2. The numbers are very close to the target except there is a slight yellow cast in the midtone, HR and the three-quarter tone (SC) is dark. This means I have too much dot gain above the three-quarter tone and a slight yellow cast in the grey midtone.

THE COLOUR OF THE SUBSTRATE

Is the colour of the substrate causing a problem? Yes. It is also a big part of the yellow cast problem. Look at line 5, Substrate. It is 3.75 delta E. The a* axis is good with less than 1 dE difference but the target value of the paper on the b* is -2.00. The substrate of the printed piece is a positive +1.81. The substrate is very yellow compared to the ideal white substrate. In my summary I am assuming the substrate can't be changed. However, we can adjust the neutral print density curves to compensate for the yellow cast and the result will be very good.

ANALYSIS SUMMARY

The print is not accurate to the file. It has a strong yellow cast and is should be corrected.

1 The cyan is part of the problem. It is about 8 dE weak in the b*. Higher density would help.
2 The three-colour overprint is very yellow cast. The CMY is not balanced as it overprints and has a yellow cast. Look at the grey ramp in Figure 6: Grey Ramp Comparisons. You can see that the grey ramp is yellow cast. That means anything in the image would have a yellow cast. A blue sweater would be slightly green. A fleshtone would be too warm. A green would be yellow cast.
3 The substrate is also a problem. It is very yellow.

All the problems of the print are correctable except the substrate. But it can be neutralised with a Neutral Print Density using the G7 Methodology or the ISO TS 10128 formula. It will never look exactly like the proof with the substrate so yellow but, if we neutralise the values that we can control such as ink colour, tonal values and overprinting ink colour balance, we should have a very good common appearance with the proof.

CONCLUSION

You can see from this simple print analysis that knowing the target and collecting the data from a print can easily be compared if you understand the numbers and know what the numbers should be. The result of numeric analysis is also much more accurate in determining calibration adjustments than visual assessment. Terms like 'too yellow' or 'too red' or 'too blue' are useless unless you know why something is too yellow, red or blue.

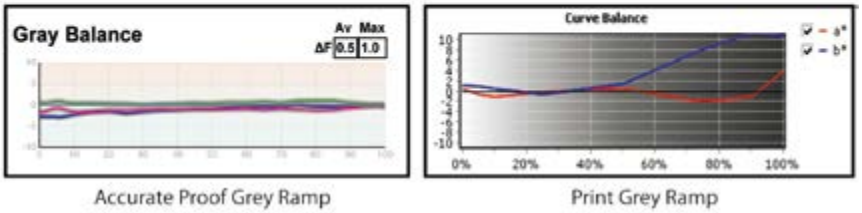
I hope this sparks your interest in becoming a print analysis professional. Remember, know your target, know the data and then just compare the values. Go to colour management classes offered by associations like SGIA, IDEAlliance or Fogra and learn as much as you can about cause and effect in process colour. It may seem difficult at first but you will soon be able to glance at a data sheet and know exactly what is causing mismatches target to print. At that point you move from an artist attempting to be a printer to colour analysis profit producing machine. ■

The values in the chart below are tonal values of linear film or on a file that when printed will produce neutral grey IF the substrate colour is correct and IF the ink color is correct and IF the overprints are neutral. This rarely happens in screen print. Therefore we just target neutral gray and compensate for the variations with Neutral Print Density Curves, Ink Colour and Sequence Control.

Tone Value	Cyan	Magenta	Yellow
25% Tone (HC)	25	15	15
50% Tone (HR)	50	40	40
75% Tone (SC)	75	64	64

Figure 5: nominal grey file values

The left starting point is the colour of the substrate.
The right ending point is the three colour CMY 100% over print. It should be close to "0".



Accurate Proof Grey Ramp Print Grey Ramp

Figure 6: grey ramp comparison

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DO YOU WANT FRIES WITH THAT?

The art of the up-sell is set out by Ulrike André

Participants of a recently held webinar in which I participated were asked to state whether they had an up-sell strategy in place or not. An astounding 78% announced that, indeed, they had no such strategy in place.

McDonald's lays claim to quite possibly the world's most famous up-sell question: "Do you want fries with that?" A close runner up would have to be "Do you want to super-size your order?" which helped McDonald's to increase their sales, without any added cost to them, across the globe and overnight.

By asking a simple question at the moment we were trying to satisfy our quench for deep fried pommes de terre, McDonald's was adding instant sales (profit) and making us believe they were merely being observant and making sure our culinary needs and desires were being met.

This begs the question: can we adopt this theory of offering French fries or even increasing the ordered size of fries – to our industry?

The simple answer is: "mais oui!"

START WITH THE BASICS

A customer who comes into your shop and enquires about your products and services will often have a pretty good idea about what they need. They might even have a specific T-shirt, hoodie, or other promotional item in mind and they often have the design they want to see applied onto it ready in hand or on a flash drive. Sounds fairly cut and dry you might think. After all, who's to question a determined and prepared customer?

ELEVATE THEIR VISION

Nowadays a T-shirt is no longer just a T-shirt. There are many facets to consider and even more options available: Cotton, polyester, Lycra, nylon, Cordura … the list is endless. And each material has its purpose and value. Take cotton for instance: how was the cotton harvested? What is the carbon footprint of an organically grown cotton T-shirt? Was the cotton treated after the shirt was made?

To many customers it will matter. Many customers have spent a lot of time to come up with an idea, finding or creating the design, and chances are they want their decorated textile to last a while. To suggest the matching textile to heat apply their design onto might make a difference and you do not only have an appreciative customer but also added some profit to your margin.

PERCEIVED VERSUS ACTUAL VALUE

Continuing this thought you will know that the material that you use to heat apply will have a real value and a perceived value. Why not utilise this fact to your advantage? A glittery or holographic heat transfer material is often perceived as more valuable as a straight-coloured flex material. True or not, that is how most customers see it. But we know that this is not necessarily the truth. Be prepared accordingly and you can benefit from this fact.

Your time is valuable – make them aware

Although the customer might have a design in hand when they come to you, more often than not this design needs tweaking. It might take a minute or it might take longer. Many times the customer simply does not know how time consuming it can be to prepare their artwork to work with your machines. Let them know! Tell them how much you charge per 30 minutes, 60 minutes etc. They ought to know of the cost of your time and respect that. If you decide to not charge them, inform them how much you could have charged; you are still adding value in the customer's mind – this is important!

Product samples from Stahls' International contain plenty of ideas for up-selling

INSTEAD OF DISCOUNTING – ADD VALUE

You know your margins, you know your cost, and you know your profits. You know that a straight discount means loss in revenue – your revenue. Why not alter what you have great control over – the product you use to make the designs? Up-sell your customer to a 'better' material but charge them for a 'lesser' one? You are in control of your discount and the customer feels that they received something for 'free'.

BE IN THE KNOW

Some things are negotiable; some are not. In order for you to speak to and satisfy your customer you must have full understanding of what your customer wants and needs.

Only then can you successfully customise your conversation to match your customers' wants and needs and exceed their expectations. Show and suggest all resources you have available and guide them to a great final product.

A 'basic' koi design utilising black Cad-Cut Super Film

This shows a 'better' koi design in red Cad-Cut Super Film with black MultiFlock

This special effect 'best' koi design utilises Cad-Cut Hologram (mirror), black MultiFlock and red Glitterflake.

BE PREPARED

Being prepared is the key ingredient for the successful up-sell. This pertains to all aspects of your business such as product selection, presentation, training and motivating staff.

In order for you and your staff to make any suggesting to your customer, you need to know exactly what stock to carry, what a service costs you, the discounts you are able to afford and the amount of time needed to produce the order.

SHOWING SAMPLES IS KEY

Some people have a vision of a finished product; many do not. Help them. Create tools that help people visualise. You can take it a step further and group these marketing tools – samples, swatch cards and so on to match your pricing structure – for example: Basic, Better, Best. That way you make it easy for customers to see what they get for their money.

Ideas for visual aids are available all over: a small binder with sample work or an album with pictures of past jobs. One of the simplest up-sells is showing lettering or numbering in one colour and then showing the same job as a two-colour example. Make sure you have a sample swatch or colour card. Ask your vendors for their ideas or see if they have any pre-made samples or swatch cards available. If they don't, why not make your own marketing tools?

Decorate a garment and show the three price points by heat applying, screen-printing, direct-to-garment printing samples of colours, foil effects, reflective materials and so on. And keep in mind what we talked about earlier: you might want to move a perceived higher priced material/effect to the more expensive price bracket.

ENCOURAGE AND REWARD YOUR STAFF

Never forget your own staff. Thoroughly explain your products and services to them and keep them updated at all times. Encourage them to be creative by allowing them to utilise your inventory and pay them in incentives that are interesting to them. Support them in their creativity; after all they have just as much (or more) contact to the outside world (in your shop and in their personal lives) that can prove to be most valuable.

Tap into that world of knowledge and insight by encouraging, appreciating and rewarding them. Why not set up a reward system that is tied to your newly implemented up-sell system? Most of us hold customer reward cards in our wallets. Why not create an employee reward system? Create a point system where they can earn points for every up-sell they were able to generate. Communicate the prizes that can be achieved and see if this does not create a buzz within your staff.

PRACTISE, PRACTISE, PRACTISE

It may sound like a lot of work; it might sound tedious and time consuming – true. But with just enough patience and perseverance you will see that slight increase take on a snowball effect. Once word gets out that you and your staff are knowledgeable, take time to get to know customers' needs and surprises by innovative improvements and suggestions the customer has not thought of before meeting you; your business will increase.

A happy knowledgeable associate helping a customer to make their individual mark in their world is the best advertising you can ask for. Happiness sells and up-sells.■

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HOW TO MAKE A PAD PRINTING PLATE (CLICHÉ) WITH UV EXPOSURE UNIT

Maria Savelyeva shows how to master plate-making to generate the best results

Pad printing is a process designed for printing objects with curved or uneven surfaces. It is used for many different applications, including those in the promotional product, medical, electronics, automotive, tagless garment, sports equipment and toy industries. The etched cliché (printing plate) is a crucial component in pad printing. How well the image is set into the plate will largely determine the quality of the printed image.

TYPES OF PAD PRINTING PLATES

There are four major types of printing plates that may be used with a pad printing machine. These are photosensitive polymer (or photopolymer) plates, laser engravable plates, thin steel plates and thick steel plates.

Photopolymer plates are made by exposure to light, developing and curing, a process that takes a film positive, exposure unit and curing oven. Photopolymer plates differ by the type of liquid used to develop them: alcohol or water. In general, alcohol washed plates have a harder surface than water washed plates and are less susceptible to weather changes, such as increased atmospheric humidity (which may cause water washed plates to soften).

Thin steel plates are chemically etched. Thick steel plates can be etched either by chemicals or a YAG laser engraver.

Laser engravable plates are polymer plates specifically designed to be etched by a CO2 or YAG (or both) laser engraver - directly from a digital file, sent from a computer to a laser. Laser plate-making is a newer, fully digital technology, providing a number of benefits such as a major simplification of the plate-making process, dramatically reduced production times, first-generation etch with straight walls and fine control over depth and dot pattern, elimination of chemicals and absolute repeatability of results. However, many small and medium-size businesses are still using the traditional exposure unit and photosensitive plate materials for plate-making – and the following explanations and step-by-step instructions will help to verify the process and avoid common issues.

Figure 1: The dot pattern created during the second exposure

PHOTOPOLYMER PLATE EXPOSURE AND DEVELOPMENT

To master plate-making, it is important to understand the mechanism of exposure and development. When an area of the photosensitive plate is exposed to UV light, this area starts to harden and becomes less sensitive to the developer liquid. The longer the exposure, the thicker the hardened layer of the plate becomes – and the less of the plate material in that area will be washed away by the developer.

The first exposure is carried out using a film positive – a transparent film with a non-transparent image. During the first exposure, the goal is to harden the surface of the plate surrounding the image, leaving the image area sensitive to the developer.

The second exposure is done with a line screen – a non-transparent film with holes or 'dots'. During the second exposure, the goal is to make a dot pattern in the image area. The hardened 'peaks' (see Figure 1) are needed to support the motion of the ink cup on the plate. When the plate has large etched areas, especially if the printing cycle is fast, the dot pattern is also necessary for another reason – to prevent the print pad from splashing the ink and distorting the print. Sometimes, when the image has only very fine lines and no bold elements, the dot pattern may be not needed (or, in rare cases, it might even distort the fine lines within the image) and the second exposure may be omitted.

Line screens differ by the number or lines of dots per square inch and by dot size. You can control the printing effects by varying halftone screens:

- A 300 line screen will print finer graphics with shallower printing plates
- A 200 line screen will print medium graphics and medium depth printing plates
- A 150 line screen will print course graphics and with deeper printing plates

During exposure, the plate material hardens starting from the deeper (bottom) layer toward the outer (top) layer – so when the first and second exposures are the same length, it will make the dots as tall as the plate surrounding the image. The second exposure should never be longer than the first one (otherwise the plate will not doctor well); usually, it is shorter. Reducing the second exposure time will reduce the height of the dot (compared to the plate surface surrounding the image) and will allow more ink transfer. In other words, the shorter the second exposure, the deeper the plate.

Procedure for etching a 0.001" deep alcohol wash plate

IMPORTANT NOTES:

- For best results, one should use equipment expressly designed for processing photopolymer printing plates. Minimum requirements for the UV exposure unit are ultraviolet florescent bulbs operating in the 350 to 370nm light band and a digital timer. A vacuum hold down system is a good option as it helps increase the contact between the plate and film positive.
- The times given below may vary depending on the type of exposure unit, opacity of film and quality of bulbs.
- The 0.001" depth is standard for printing onto smooth surfaces. For some other applications, for example printing tags onto garments, the etch should be deeper.
- The first exposure time (using the film positive) determines the overall depth of the ink well.
- The second exposure (using the line screen) determines the size of the dots and the spacing between the dots. Reducing the second exposure time on the screen will reduce the height of the dot and will let more ink transfer.

FIRST EXPOSURE:

1 Roll up vacuum blanket on UV exposure unit
2 Remove the protective cover sheet from photopolymer plates
3 Inspect the surface of printing plates for spotting or other visual defects
4 Centre the plate on the platen metal side down
5 Place the film positive (emulsion side down) on the plate and centre it on the plate
6 Turn on the vacuum and drape the vacuum blanket over the film/plate combination. Wipe the vacuum blanket

Continued over

smooth to ensure there are no air pockets trapped or creases in the blanket.

7 Once achieving a steady vacuum of 22 inches Hg, close the UV exposure unit and set the exposure timer according to the table below (please note that exposure times will vary with different exposure units):

DEPTH OF ETCH	FILM EXPOSURE	SCREEN EXPOSURE	SCREEN SIZE
0.001"	60 Seconds	60 Seconds	200/90
0.001"	90 Seconds	90 Seconds	300/90

8 Verify that the vacuum gauge has a steady reading and start the timer sequence.

9 After the timed sequence is completed and vacuum has shut off, slide out the drawer (or open the lid) and roll back vacuum blanket.

10 Remove the film positive from the printing plate.

SECOND EXPOSURE:

11 Place the halftone screen film on the plate emulsion side down.

12 Turn on the vacuum and drape the vacuum blanket over the film/plate combination. Smooth out vacuum blanket to ensure there are no air pockets trapped under the vacuum blanket and creases in the blanket.

13 Once achieving a steady vacuum of 22 inches Hg, close the UV exposure unit and set the exposure timer according to the Table 1.

14 Verify that the vacuum gauge has a steady reading and start the timer sequence.

15 After the completion of the timed sequence, slide out the door (or open the lid).

DEVELOPING PRINTING PLATES:

16 Remove the plate from the UV exposure unit.

17 Using a printing pad soaked in alcohol wash developer solution rub gently to washout the uncured material from the plate for about a minute.

18 Neutralise the developer solution by spraying the plate with a light mist of fresh, warm water.

19 Gently blow-dry both sides of the plate with clean, filtered air.

POST EXPOSURE:

20 Open the UV exposure unit and place the printing plate on top of the platen. Do not cover the plate with the vacuum blanket.

21 Post-cure the printing plate by setting the UV exposure time for 10 minutes. The post-cure ensures plate longevity by fully curing the etched area and surrounding material.

22 Place the plate into a convection oven preheated to 140 degrees F for 8 to 10 minutes.

23 Remove the printing plate from the oven. Allow to cool down to room temperature.

24 Make beautiful prints!. ■

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HARMONISING INFORMATION SUBMITTED TO POISON CENTRES

Elaine Campling looks at the reasoning behind the forthcoming EC review

Organisations producing and importing chemical products await the outcome of the European Commission (EC) review to assess the possibility of harmonising the information to be submitted to poison centres, including the format in which the information should be submitted. The submission of information on hazardous products is the responsibility of downstream users and importers placing mixtures on the market under the Classification, Labelling and Packaging of Substances and Mixtures (CLP) Regulation (EC) No 1272/2008, which aligns European legislation to the UN Globally Harmonised System (GHS).

The EC is required to undertake the review by 20 January 2012 in accordance with Article 45(4) of the CLP Regulation and recently held the 2nd stakeholder meeting in November of this year. The Commission held expert group meetings during 2010 involving representatives from member state (MS) poison centres (PC), during which specific proposals were agreed for discussion at the 1st Stakeholder workshop, which was held in November 2010 and involved representatives from interested parties, including the European Association of Poisons Centres and Clinical Toxicologists (EAPCCT), national poison centres, industry, and industry associations.

Making provision for information to be submitted to emergency advisory bodies, or poison centres as they are commonly called, is not a new requirement. Article 17 of the DPD, ie Dangerous Preparations Directive (1999/45/EC), specifies a requirement for member states to appoint 'bodies responsible for receiving information relating to preparations that are considered hazardous due to their health effects or their physical-chemical properties'. Preparations are now termed mixtures according to the CLP Regulation (which will eventually completely repeal the DPD in 2015) and further clarification is provided by Article 45 (1) in relation to the information to be submitted.

Information provided under the DPD was to be used only 'to meet any medical demand by formulating preventive and curative measures, in particular in case of emergency' and for no other purpose. Information submitted in accordance with the requirements of the CLP Regulation may be used by MS for statistical analysis to improve risk management measures if required.

CURRENT REGULATIONS

The notification of information on hazardous products to PC in MS is currently regulated by national legislation. The method and procedure for fulfilling this legal obligation was not defined under the DPD, which has resulted in a variety of notification systems and country specific requirements across the EU member states. This was identified in a study undertaken by the Dutch PC, commissioned by the Dutch Ministry of Health and published in 2007. The general conclusion was that Article 17 of the DPD was imprecise, lacking specific guidelines on the quality and format of the information to be provided. A recommendation that the forthcoming CLP Regulation should be a vehicle to harmonise notification of hazardous mixtures within the EU Member States was proposed, which led to an extension of article 45 of the CLP Regulation to make provision for the EC to undertake the review.

Some disharmony has emerged during the review process, relating to the needs and wants of PC, conflicting with the level and detail of the information that DU and importers are comfortable with submitting for a variety of reasons. Due to space limitations, it is not possible to provide a full account of all the specific points of debate, which include allocation of unique company identifiers to individual organisations, product identifiers (and version number) and full product composition, but may be illustrated by a couple of examples.

Many PC would prefer the submission of

exact chemical composition of mixtures with exact concentrations, at least for the most hazardous ingredients, with the possibility of concentration ranges for less hazardous materials. This would be difficult for many producers of complex mixtures, such as printing inks, which do not comprise single substances, but often contain mixtures themselves. The full composition of the proprietary mixtures is often unknown to the final formulator, since it is generally only necessary to identify hazardous components above defined thresholds in safety data sheets.

MORE THAN ONE VERSION

Another difficulty reported by PC is that there are often two or more versions of the same product on the market, making it difficult for them to identify the most current version, since composition can change without a resulting change in the trade name of the product. According to EAPCCT, a product identifier and version number would solve the problem. However, even variations on current versions are common for industrial products, which are often performance driven, eg to meet specific customer requirements, for example, altering viscosity by addition of a solvent to a printing ink for one customer, but not another. A typical industrial formulation will also very likely be subject to fairly regular revision, especially during this current economic environment, when substance rationalisation is common. Providing full compositional information to PC would be very difficult and extremely resource intensive for certain sectors.

Confidentiality of information is a huge concern for industry, who would generally prefer at the very most to submit a safety data sheet (SDS), identifying hazardous compositional ingredients with range value. This would also limit the number of updates to PC that would be required. Industry representatives argue that concentration ranges could be narrowed if necessary.

PC in Europe are reported to respond to several thousand telephone calls relating to exposure to hazardous mixtures every day. Most incidents are said to be assessed and handled within a single phone call with duration of three to five minutes. This then suggests that PC are managing to undertake their duties with the information that is currently available to them. It is therefore difficult for industry to appreciate why some PC want full compositional information with exact concentration. Too much detail and information overload may slow the response rate of PC and seriously overload industry.

It is also reported that a relatively small percentage of poisoning incidents involve non-consumer products, so some relaxation to the requirements for products used in an industrial work place have been requested by certain sectors, though the text of the CLP Regulation does not make provision for this.

A common format for the submission of the required information does appear to be preferred by most parties. Industry would also prefer a single one-stop central European database to avoid unnecessary duplication o f work. Although PC would have less individual control, they could be provided with access to the data. A central database has been established to meet the notification requirements of the Cosmetics Products Regulation (EC) No. 1223/2009. The Cosmetic Product Notification Portal is expected to be operational early in 2012 and may prove to be a model for the CLP requirement. The different angles of this debate will be solved by compromise on both sides. In the end, it is likely that a new regulation will be introduced as an Annex to the CLP Regulation, and industry, including ESMA member companies, must brace themselves for the further work load to come. ■

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TACKLING LOW MIGRATION

Robin McMillan examines issues surrounding the safety of food packaging

Robin McMillan

Food packaging safety is becoming an increasingly hot topic in the media and quite rightly so. Compliant food packaging is increasingly also on the radar of brand owners, retailers and consumers.

WHAT IS MIGRATION AND WHAT ARE LOW MIGRATION PRODUCTS?

Migration refers to the unwanted transfer of components from the actual packaging into the packaged foodstuff itself. Various sources could contribute to these elements, such as the packaging substrates, inks, coatings, adhesives, the printing press itself or the environment that the raw materials, work in progress or the finished printed pack, are stored in.

Migration could occur by several different means such as penetration migration, where the unwanted component migrates through the substrate and also through contact as a result of processes such as stacking or reeling. Migration could also occur through evaporation and condensation.

Good manufacturing practices and considered packaging design are, therefore, critical to reducing the risk of unwanted migration of packaging components.

Low migration products on the other hand are consumables (inks, coatings, founts, wash-ups etc) for use in low migration printing applications that are specifically formulated and tested to minimize migration in use. Essentially they are made from raw materials that under normal, or foreseeable conditions of use, do not migrate.

KEY FOOD PACKAGING REGULATIONS

In Europe, packaging that is intended to come into contact with food must meet the requirements of EU regulation (EC) No 1935/2004. The guiding principle of this legislation states that food packaging should not transfer materials to the packaged goods in quantities that bring about a change in nature, substance or quality of the food and must not be injurious to health. In addition, producers must operate using Good Manufacturing Practice (GMP) as defined in EU regulation (EC) No 2023/2006.

Many brand owners require compliance to the Swiss Ordinance which specifically outlines lists of raw materials that can be used in food packaging inks. Other brand owners have taken steps to define their own positive/negative lists.

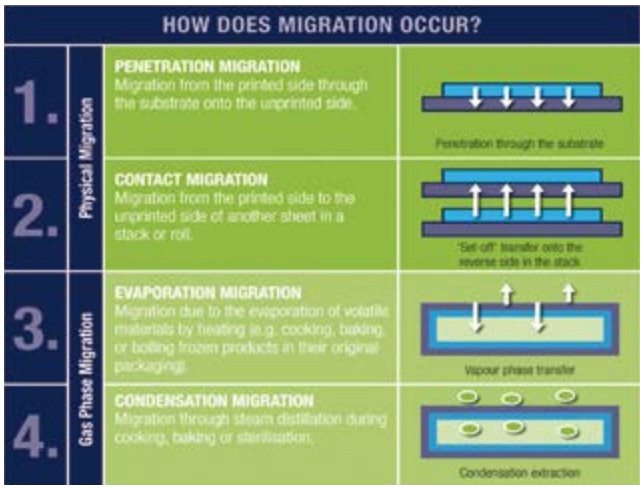
Sun Chemical's low migration best practice guide

German Authorities also declared their intention to implement their own National Ordinance on inks for food packaging. Both sets of legislation are fully anticipated to form the basis of an EU wide legislation in coming years.

RESPONSIBILITIES IN THE SUPPLY CHAIN

As per GMP (EU regulation (EC) No 2023/2006), the objective of achieving safe packaging requires all stakeholders in the packaging design and production chain to work together.

This stance is mirrored by the UK Food Standards Agency (FSA) which states: "The packaging designer, manufacturer and the food manufacturer that distributes the product are responsible for ensuring the requirements of the



How migration occurs

regulations are met and for ensuring appropriate selection of materials for the intended end use of the packaging."

It is clear that the onus is on the entire packaging supply chain to work together to ensure product and packaging safety. The reason for this delineation is that the ink manufacturer does not control the selection of inks and coatings for each print specification nor the press production and environmental conditions. Printing with low migration inks and coatings only does not necessarily ensure compliant packaging – good manufacturing printing protocols are essential.

FOCUS ON SAFETY

Sun Chemical is a market leader in the development and promotion of low migration inks and coatings for the printing of packaging for foodstuffs, as well as sensitive applications such as tobacco, pharmaceutical and personal care packaging.

Through doing fairly simple risk assessments, brand owners, print specifiers and print converters can determine their packs' level of sensitivity to migration. If a migration risk is anticipated, then the pack either needs to be tested to prove its migration performance and appropriate steps taken to reduce the risk or low migration inks and coatings should be used to avoid any worries. Substrates, such as glass, will act as an absolute barrier.

If the testing route is chosen, and it is proven that appropriate barrier performance is provided by the substrate, then the designer has a choice of using standard inks and coatings or 'intermediate' migration solutions. If unacceptable migration is present, then either design in a functional or absolute barrier to migration or use low migration inks and coatings. It really is that simple!

The economics of the choices are another matter though. Weighing up which route is the cheapest can be complex, but the bottom line is that the whole of the packaging supply chain, from brand owner to packer filler, needs to work together to ensure safe packaging for the consumer.

In May 2011 Sun Chemical issued the third edition of its Best Practice Guide to Food Packaging Printing entitled 'Designing Packaging with Certainty – A Best Practice Guide'. This updated guide now reflects the current packaging market situation as it stands today including the impact of the new Swiss Ordinance legislation and REACH. ■

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THE REASONING BEHIND KAIZEN

Sean Taylor discusses the quality philosophy that has helped the company ride through the recession, bringing new market opportunities

Sean Taylor

Prior to instigating a new quality initiative at MacDermid Autotype the focus for quality was more on 'detecting' quality defects as opposed to 'preventing' quality defects. The systems focused more on 'inspecting quality in' and less on how the business might focus on root cause analysis and improvement.

Fit for purpose and right first time are the two principles at the heart of MacDermid's Quality Philosophy, which goes well beyond the conventional tenets of quality control. It aims instead at a much more proactive approach to quality, rather than merely a reactive one and is, for the most part, concerned with controlled and capable processes.

In my opinion our Quality Philosophy can be represented by three interlocking circles. The top circle represents the overarching vision a company has concerning quality, the second is all about processes and systems, and the third one is about culture and people.

Systems and processes are normally the most straightforward steps. Although systems may need to be adapted to the specific circumstances of each company, in our instance specialist coated films and chemicals, there are numerous models and technological tools to aid in the implementation of processes. For example, we installed sophisticated laser equipment that scans the surface of the coating web in real time, to identify possible defects on-line, rather than relying on sample inspection. In other production areas we were able to implement 100% packaging control based on automatic sensor systems. If a package is missing an item, this is detected by the sensor and the parcel is then inspected and corrected.

TACKLING THE 'CULTURE CIRCLE'

In the three interlocking circles model, the circle with the line of most resistance is the one related to a company's culture, or its people. Changing the values of a company so that they are aligned with the new Quality Philosophy takes time, energy, patience and empathy. This is just one of the many challenges business leaders have to face when the 'culture circle' is tackled. The message about a company's culture has to come from above, by example, rather than merely by decree. Success can only be possible if all senior managers are fully committed to change and continue to support the new course.

But changing the way people think about quality is fundamental to the entire process. And here is where MacDermid Autotype's newly implemented Kaizen based approach starts. Kaizen (which simply means 'improvement' in Japanese) is a system of continuous improvement, based on empowering people to work constructively in small teams in order to improve their own productivity and environment. The aim of Kaizen is to produce more, efficiently, effectively, economically and with less effort. Japanese transnationals have mastered the art of Kaizen, applying it successfully to all their operations, regardless of their company's location in the world.

It is absolutely essential to allow everyone

MacDermid's Quality Philosophy goes well beyond the conventional tenets of quality control

to be fully involved in the improvement process. This not only speeds up issue resolution, but creates a virtuous circle where faster improvements lead to a more ingrained quality culture.

Constancy of purpose is essential too. There would be little point in going for a specific model one year and then swapping for something else the next. People simply dis-engage and is probably why so many government plans fail, as they often lack consistency of purpose.

NO COMPROMISE

At MacDermid Autotype its Quality Philosophy has been applied across the entire company's operations. This can frequently be challenging as sales teams naturally may wish products are launched quickly to meet market demands or stave off competition. So it is essentially about understanding every aspect of a product's life cycle in order to come up with the best possible outcome. Product launches may need to be delayed, and in very rare occasions, simply abandoned. Ultimately, quality is closely concerned with a company's integrity and reputation. So if an organisation has a reputation for excellence it would be impossible to compromise by issuing products that are below the required standards. We return essentially to culture, but this time of a corporate kind!

With MacDermid's Quality Philosophy, people are at the heart of all improvement strategies and they need to be involved from the start. They have to feel they are part of the system, investing adequate time and efforts training them, as well as stimulating participation in order to identify new and clever ways of improving quality. In short, it's all about empowering people to become part of the journey to quality, taking pride in what is accomplished on a daily basis.

MacDermid Autotype's own Quality Improvement journey has been going on for the last ten years. In some respect the company owes this change of perspective to its increased presence in other markets, such as the automotive sector, where quality improvement has been fundamental to daily operations and where it is simply expected that every supplier abides by the same standards.

MANY MILESTONES

In this never ending quality improvement journey, which is made up of many milestones, rather than a final goal, MacDermid Autotype has had to learn a new 'language'. For example in the company's traditional markets it was acceptable to manufacture within parameters that allowed for a defined tolerance range. The automotive sector aims instead at zero tolerance, so a completely new philosophy had to be put in place. But the company's previously existing ethos for excellent technical and customer support also gave it an edge over other organisations.

For MacDermid Autotype the journey into Kaizen has only just started. But, thanks to this journey, our traditional customer base has also been able to benefit tremendously from our improvements. It would be simply impossible to implement high standards in one area of the business, leaving the rest of the company behind.

The substantial investment in implementing a new Quality Philosophy can often be an initial barrier. But in the example in question data speaks volumes – since 2008 the company has literally tripled its presence in the demanding automotive sector and has halved the number of product and service related customer complaints across its entire range. So, embracing a new Quality Philosophy can be challenging and the journey, once undertaken, is never ending, but the results can be tremendously encouraging and the rewards enormous. ■

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GLASSPRINT 2011: BIGGEST AND BEST YET

The largest ever GlassPrint conference and exhibition was successfully staged last November and presented the latest decoration trends and developments to an international audience that gathered in Germany.

Powered by glasstec and staged for the first time in Düsseldorf, the record attendance of over 170 glassmakers, glass decorators and leading suppliers was 30% higher than at GlassPrint 2009. Attendees travelled from 32 different countries, not only from throughout mainland Europe and the UK but also from long distance destinations such as Brazil, China, Costa Rica, Guatemala, India, Iran, Japan, Korea, South Africa and USA.

PRESENTATIONS

The two day conference programme was also 30% larger than the last event, offering delegates 14 technical conference presentations that covered the latest advanced technologies for printing onto architectural, automotive and hollow glass with digital and screen applications.

In addition, keynote addresses were made for both the flat and hollow sectors. Bo Lennart Nilsson, Plant Director at Ardagh's Limmared plant in Sweden, looked at current and future challenges and opportunities in container glass in-line printing, while Bertrand Cazes, Secretary General of Glass for Europe, presented 'Producing flat glass: Providing nega-watts for a low-carbon economy'. Later, Dr Johann Overath, Director General of Bundesverband Glasindustrie eV, examined the current situation and trends in the German glass industry and an update of glasstec 2012 was provided by Birgit Horn, Project Director at Messe Düsseldorf.

Technical experts working for various companies in the glass decoration sector then delivered a series of presentations that demonstrated processes and ideas to add extra value to the end product:

- Inkjet printing on glass - Scope and limitations (Durst).
- Thermoplastic holloware organic inks see the light (FERRO).
- LED UV curing for glass (Fimor).
- Automation and cost reduction for stencil production (Grünig).
- Hollow glass decoration - From craft-based to engineering-based industrial production (ISIMAT).
- 100% in-line silk-screen print inspection (ISRA).
- Stencil technology for successful glass printing - Selection and application (KIWO, Kissel+Wolf).
- Flock - the surface treatment: Flocking on hollow and other types of glass (Maag/KIWO).
- Glass decoration by roller coating, including UV-curable primer, colours and special effects (Marabu).
- Controlled drying of decorated flat glass (Natgraph).
- Digital printing with sol-gel-inks (Ormo Print/University of Munich).
- Ink validation in glass printing (Polytype).
- Mesh and stencil for glass decoration (Saati).
- New trends in architectural screen printing (THIEME).

Anyone who missed GlassPrint 2011 and would benefit from viewing the full presentations should contact sales@glassworldwide.co.uk to learn how to purchase the download code.

"GlassPrint gives the real opportunity to get in a short time the latest updated information regarding printing on glass. Very valuable," commented Olivier Dangmann of O-I about the 2011 event, while Arnaud Huignard confirmed that Saint-Gobain had been provided with a "rather good overview of the glass print technologies."

More than 170 delegates attended GlassPrint 2011 in Düsseldorf.

EXHIBITION

The conference programme was supported by intervals dedicated to the accompanying tabletop exhibition and at the end of the first day, delegates benefited from networking with their peers and suppliers during an evening dinner.

Exhibitors who displayed the latest developments in inks, pre-press technology, printing equipment and supplies included Cerinnov, Durst, Fermac, FERRO, Fimor, glasstec/Messe Düsseldorf, Global Inkjet Systems, Grünig-Interscreen, ISIMAT, ISRA Vision, KIWO (Kissel + Wolf), Machines Dubuit, Marabu, Natgraph, Ormo Print/ University of Munich, Polytype, PPG, RUCO, Saati, Sefar, SIAK Transfers, Sun Chemical, Tecno 5, THIEME and Tiflex.

SPONSORS AND ORGANISERS

GlassPrint was jointly organised by Chameleon Business Media, publisher of *Specialist Printing Worldwide* and *Glass Worldwide* and ESMA, an association of European manufacturers of machinery and consumables for the specialist printing industry. As well as being powered by glasstec, in recognition of its importance in the global glass event calendar GlassPrint 2011 was also sponsored by Deutsche Glastechnische Gesellschaft (DGG), glassglobal.com, SGCDpro and the SGIA.

After confirming its status as Europe's leading event for glass decoration, the organisers are already planning to repeat GlassPrint in 2013; details on the location and dates will appear in future issues of *Specialist Printing Worldwide* and interested delegates can register their interest at www.glassprint.org. ■

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THERE'S A BUSY AGENDA PLANNED FOR FESPA DIGITAL 2012

Neil Felton, Managing Director of FESPA

February's FESPA Digital, which takes place in Barcelona for the first time, looks set to be filled with a busy programme of supplementary events that complement the exhibition itself. Visitors should find an action-packed programme of educational activities and live features that invite printers to explore the wider opportunities, bringing to life the central message of the event campaign.

Although HP retains its position as FESPA's Corporate Sponsor for FESPA Digital 2012, the digital exhibition also incorporates three brand new platinum sponsors to the show: INX Digital, Océ and SigmaJet, while d.gen continues as Digital Textile Sponsor. Kornit Digital returns to support FESPA Fabric 2012 as Fabric Corporate Sponsor for the four day 'show within a show', which is part of the comprehensive FESPA Digital visitor experience.

Neil Felton, Managing Director Exhibitions and Events at FESPA comments: "The calibre of sponsors we secure year on year is a clear indication of the confidence these vendors place in FESPA as an important business partner, underlining the significance of the FESPA community to their businesses. Committed to supporting visitors beyond the show floor, our sponsors are valued FESPA partners who aid us to deliver compelling material for our multi-faceted and interactive events. The support we receive through these sponsorships also helps us to deliver rich content in the form of educational tools and market intelligence for the benefit of our global community."

He continues: "We are fortunate to have such a dedicated community of supporters who endorse FESPA's organisational objectives over and above our events. FESPA is a not-for-profit organisation, and connecting and supporting our global community of print service providers is at the heart of FESPA's mission."

FESPA's reputation as a global conference organiser for the digital wide format community will be reinforced in Barcelona with the Explore Conference at FESPA Digital. This series of free half-day conference and workshop sessions will run within the main exhibition centre, making it easy for printers to structure their day and mix visits to exhibitors with participation in the conference sessions that appeal to them. Delivered by world experts, the conference is structured around topics such as business building, technology issues, narrow format print, sustainability, digital signage, customer insight, and printed electronics, and will deliver a rich mix of information and inspiration. Back in the exhibition, a series of explore routes will offer visitors mini-maps highlighting different technologies or consumables on display around the show, helping them to optimise their time if their interest is specific to a particular product or technology.

Visitors looking for a more hands-on technical experience will want to factor in time for Print Shop Live!, an exciting new feature within a European FESPA event. Print Shop Live! allows the visitor to experience each element of the production process first-hand in a live and interactive forum, moderated by *Specialist Printing Worldwide's* editorial consultant and independent analyst, Sophie Matthews-Paul. Here printers can test and try their own artwork file on wide and narrow format technologies, from pre-press through to finishing, and on a range of substrates. The aim of Print Shop Live! is for visitors to build their technical know-how and seize the commercial opportunities that come from boosting productivity and extending the capabilities of their digital production equipment.

Diversification is one of the wider opportunities referenced in the event campaign, and there are several areas of the show which look at new applications or formats to offer food for thought for printers considering breaking away from the tried and tested. The Narrow Format Zone invites visitors to investigate how adding smaller format digital output to their service portfolio could help them tap into new revenue streams from new and established customers, while FESPA Fabric, the 'show within a show' for garment printing and decoration will interest printers considering a move into promotional wear or other garment applications. (Note to editors: see separate release re FESPA Fabric).

Fresh opportunities also come in the form of creative and innovative print applications that optimise the capabilities of digital output and take advantage of the latest substrates and inks. A coffee break in Big Buck's Café at FESPA Digital 2012 will open the visitors' eyes to the full spectrum of applications now possible using digital output technology. This 'pop-up' cafe will showcase everything from signage, to promotional and point-of-sale graphics, to interior decor, to printed furniture, to soft signage, to furnishings, to fine art and to garments. The Big Buck's Café 'menu' will tempt the visitor to explore further, with simple explanations of the applications on display and how they were produced.

FESPA Marketing Manager, Lynda Sutton, comments: "Our campaign for FESPA Digital 2012 challenges printers to explore the wider opportunities, but it's not just a marketing strapline, it's the essence of the event. Of course, technology is fundamental, and visitors to the show will find several hundred exhibitors on hand to share their innovations and offer advice. But being a print entrepreneur requires a spirit of adventure, and successful PSPs tell us that there's a wealth of opportunity if you open your eyes to the products and services your customers want from you. We want to stimulate visitors to FESPA Digital to look at how to use software, printing and finishing equipment, substrates and inks to expand their horizons and develop new products and services that match customers' needs and help them to be more profitable." ■

"We are fortunate to have such a dedicated community of supporters who endorse FESPA's organisational objectives over and above our events. FESPA is a not-for-profit organisation, and connecting and supporting our global community of print service providers is at the heart of FESPA's mission."

Further information:
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DATES ANNOUNCED FOR SCREEN PRINT INDIA

The dates for Screen Print India Exhibition 2012 have been announced and the event will be held on 5, 6, 7 September in Hall 1A, Bombay Exhibition Centre, W E Highway, Goregaon (E), Mumbai, India.

Screen Print India Exhibition takes place every two years, having made its debut in 1994. It is considered to be one of the Asia's most respected events, attracting exhibitors and visitors from across the globe.

In a unique support with ASGA, which has earlier supported the exhibitions in China, this edition of the event is also being supported by ASGA. Screen Print India 2012/ASGA India 2012 will be the tenth international exhibition on screen, textile and digital printing showing the latest advanced technologies for materials and equipment. Spread over 3,000 square m, it will bring these three segments together on one common platform where they will complement each other.

Leading international and national associations have already lent their support to this exhibition. These include Specialty Graphic Imaging Association International (USA), Asian Screenprinting and Graphic Association (ASGA), Screenprinting and Graphics Association of India (SGAI), Bombay Master Printers Association (BMPA), North India Printer Association (NIPA), Tirupur Export Knit Printers Association (TEKPA) and Madurai Screen Printers Association (MASPA). Specialist Printing Worldwide is also supporting the event as media partner.

Exhibitor profiles at Screen Print India 2012 encompass technology drivers, knowledge bases, manufacturers, distributors, dealers, service providers and allied businesses, all contributing to the process of screen-printing, textile printing and digital printing. Visitor profiles comprise leading industrial screen-printers, technicians, consultants, professionals, entrepreneurs, product and service providers to end-users who are employing these technologies.

A programme of technical seminars is being planned to run concurrently during the exhibition. Additionally, the Screen Print India Awards 2012 will be announced and distributed at a gala function on the evening of the second day. The Screen Print India Buyers Guide 2012 will also be released during the exhibition. ■

Further information:
web: www.screenprintindia.com

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FINDING A COMPETITIVE ADVANTAGE IN SCREEN-PRINTING

Michael E Robertson explains why the 'unattainable triad' concept no longer applies

Michael Robertson

Imagers serving the major markets such as retail, brand management and exhibition are challenged to find competitive advantages in today's marketplace. The success of digital imaging technologies has created a level playing field among imagers in regards to print quality and print production. As a result, margins are tighter, print quality standards have been elevated and imagers are having a difficult time differentiating themselves in the marketplace.

Back in the day, hanging around traditional print shops, I often heard print salesmen use the 'unattainable triad' concept to discover what was most important to the customer. The unattainable triad is a triangle with the word price at one of the three points, and the words speed and quality at the other two points. A customer can request a combination of any two, such as price and quality or quality and speed, but requesting all three was too much. Not today. In today's marketplace, imagers need to excel at all three points of the triad simultaneously in order to compete.

To differentiate their businesses, many US-based imagers are looking before and after the print for value-add opportunities. Fulfilment and distribution of finished products have become highly valued competition points. The ability to provide customers with graphic management/implementation programmes as opposed to just providing project solutions has proven to be a value.

But some in the community are also using the capability of traditional technologies to improve their competitive advantage. It's true that digital imaging excels at producing many of the products our community offers, but there are many print applications that can only be achieved through the use of screen-printing. The imagers who have both digital and screen capability are turning their screen-print skill into a competitive advantage. Applying textures, adhesives, coatings, creating highly durable images and reproducing corporate colours are just a few areas where screen-printing excels. And it's cost effective. Creative screen applications are being used to offer customers added value and differentiation. The chart opposite, which was gathered from SGIA's Surveys & Statistics, shows some of the products where screen-printing is being used to add value.

PRODUCTS	DIGITAL ONLY	DIGITAL, SOME SCREEN
Architectural Wayfinding	33.60%	51.60%
Architectural Facade	26.20%	41.90%
Directories	29.50%	51.60%
Awning	12.30%	24.20%
Back-lit Sign	73.80%	67.70%
Banners	93.40%	95.20%
Billboards	26.20%	25.80%
Building Wrap	20.50%	24.20%
Building Graphics	42.60%	46.80%
Construction Signs	54.10%	58.10%
Presentation graphics	72.10%	64.50%
Point of Sale (POS)/POP	76.20%	80.60%
Floor Graphics	54.90%	46.80%
Trade-show Displays	76.20%	69.40%
Window Displays	80.30%	82.30%
Indoor Wall Graphics	77.00%	69.40%
Safety Signs	23.80%	45.20%
Vehicle Graphics	67.20%	72.60%
Decal/Label/Sticker	60.70%	71.00%

SGIA Surveys & Statistics, 2011

Creative screen applications are being used to offer customers added value and differentiation

It's a bit of a turn around. It wasn't long ago that digital imaging was seen as a value-add to screen-printing. Today, screen-printing can be a value-add to digital imaging. SGIA Surveys & Statistics indicate that approximately 50% of the community serving the major graphic markets is multi-technology, while 46% is digital only and 4% is screen only. When multi-technology imagers were asked if they planned to replace their screen-print capability with digital, 58% said they had no plans to do so at this time.

While this article is focused on graphic imagers supporting major market segments, it should be noted that screen-printing remains strong in the industrial sector. SGIA Surveys & Statistics show 79% of industrial imagers employing screen-printing and 76% employing digital imaging. Many are using both technologies. ■

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

SGIA

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