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SPECIALIST PRINTING

GLOBAL TECHNOLOGY IN FOCUS

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MESSAGE FROM BRYAN COLLINGS

I am delighted to be able to report that *Specialist Printing* is well and truly launched. We are receiving many excellent articles from manufacturers pleased to be able to share their technical expertise. This helps their customers optimise both the use of *specialist printing* techniques and their products. We look forward to publishing more interesting items in 2008 when the frequency of the magazine will increase to three issues. Manufacturers are seeing the benefits of using a technically focussed magazine which reaches their customers worldwide.

Fespa 2007 in Berlin was an outstanding success for visitors and exhibitors alike and we applaud Fespa on running another excellent event. We are proud to include a gallery of pictures of the stands of supporters of our first issue and exhibitors who were members of our sponsors ESMA at the time of the show.

We are delighted to report that NASMA has decided to join ESMA as official sponsors of *Specialist Printing* magazine; we look forward to enjoying a long and mutually beneficial relationship. We are now eagerly anticipating the next SGIA show on 24th to 27th October in Orlando, USA where we would be pleased to meet you at our booth (number 0450). We will be distributing this issue free to visitors from our stand and those of our contributors and advertisers. Chameleon Business Media is a proud member of SGIA and wishes the Orlando event every success.

It has been extremely gratifying to us to have received very many favourable comments from readers who found the articles most informative and also testimonials from advertisers who had been pleasantly surprised by readers' responses. To ensure that you receive future copies of *Specialist Printing* please complete and return the subscription form on page 24.

Bryan Collings
Publishing Director, Specialist Printing

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ESMA moving forward!

FIRSTLY, ESMA WAS PROUD TO SEE THE SUCCESSFUL LAUNCH OF THE FIRST ISSUE OF *SPECIALIST PRINTING*. THE SPONSORING OF THE MAGAZINE WAS PART OF A MARKETING STRATEGY FROM THE ASSOCIATION TO BRING TECHNICAL ARTICLES FROM THE MANUFACTURERS TO THEIR CUSTOMERS. ESMA HAS ALWAYS HAD GOOD RESOURCES FOR TECHNICAL ARTICLES FROM ITS MEMBERS, THE LEADING MANUFACTURERS IN THE SPECIALIST PRINTING FIELD, AND IS NOW DELIGHTED TO HAVE AN EXCELLENT VEHICLE TO SHARE THIS KNOWLEDGE WITH THEIR CUSTOMERS.

At the beginning of 2007, ESMA took an important decision to appoint a full time General Manager. The main goal is to provide a more complete and professional service to its members.

ESMA's move to Belgium is now complete, achieving the aim of moving offices to Belgium to be closer to the European Community headquarters in Brussels and to have a more centralised office in Europe to be closer to most members.

A full-time office will not only provide more frequent information, but also create more possibilities by providing seminars such as CTS Forum, GlassPrint and other events to provide the latest knowledge of the Association. ESMA is a technology-driven association and wants to promote special applications of the industry through seminars, which will act as guidance for decision-makers to follow the latest trends in the business.

Part of the service consists of providing European statistics for the screen printing industry, and also for the new digital side of the business. These unique statistics provide trends and insights into the European market which are not available from any other source!

ESMA is also building its external relationships with important exhibitions to provide its members with the best conditions to participate at different shows in Europe and also in the rest of the world. ESMA is working closer with industry associations in the USA, China and India. This has already resulted in a closer cooperation agreement with SGAI. They will have a Screen Print Technical Conference Seminar in India. ESMA is supporting this event with guest speakers (from amongst its members) and other sponsorships during their events.

Meanwhile, ESMA has been growing strongly in the last quarter and has already reached 53 members. It is also worth mentioning the growing number of digital members. These new members understand the advantages of being part of a professional association. A balanced group of ESMA members, covering the different segments of the industry, is important for the effective functioning of the committees and projects.

By the time of the ESMA General Assembly in Rome on 30th November, the Board of ESMA will be in a position to update all members on the progress of the implementation of the new strategy and associated projects. We will keep you informed about these new and exciting changes at ESMA in the next issue of *Specialist Printing*.

With kindest regards,
Peter Buttiens
General Manager of ESMA

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REPRESENTING SPECIALITY PRINTING IN NORTH AMERICA

WITH THE DYNAMICS OF THE SCREEN PRINTING MARKET CHANGING SO QUICKLY, IT CAN BE CHALLENGING FOR MANUFACTURERS AND SUPPLIERS OF PRINTING TECHNOLOGY TO STAY ON TOP OF SHIFTING TRENDS. NASMA, OR NORTH AMERICAN SPECIALTY PRINTING MANUFACTURERS ASSOCIATION, IS A TRADE ORGANISATION WHICH PROVIDES A FORUM FOR MANUFACTURING EXECUTIVES TO NETWORK WITH FELLOW DECISION MAKERS IN A RELAXED, INFORMAL ATMOSPHERE. IT ALSO REPRESENTS THE FIRST OF ITS KIND IN THE USA.

NASMA was founded in 2004 by industry executives from key manufacturing companies. Prior to NASMA's formation, there was no venue in the USA that effectively represented and served the unique interests of manufacturers of equipment and consumables for the screen printing, digital imaging and pad printing industries.

The overarching goals of the organisation are threefold: to promote the health and growth of the specialty printing industry, to attract business leaders to a forum which crosses corporate boundaries and to facilitate cooperation in the following fields:

- Market metrics and technology assessment: Analyse market data covering a broad range of topics, including economic activity, geographic migration, technology obsolescence / substitution, and business process evaluation (e-business).
- R&D and market development / global leverage: Assess opportunities for joint funding of R&D and a more comprehensive understanding of market opportunities.
- Technical development and standards: Develop NASMA approved standards, to include product specification, description and qualification, processing procedures, testing and monitoring, component application qualification and approved training guidelines.
- Health and Safety: Identify and address the specific issues affecting the printing community and ensuring proper representation before government, to the ultimate good of the specialty printing sector as a whole.
- Industrial applications: Identify industrial prospects and emerging markets worldwide, and inform NASMA members as potential market opportunities arise.

In addition to networking possibilities, membership also presents the opportunity to gain international perspectives through NASMA's close ties to its sister organisation in Europe, ESMA. Similarly, ESMA's objectives are to promote the adoption and correct use of the various specialist printing processes through exhibitions, press, public relations, technical training and research into the specific requirements of printing and imaging technologies used in industrial and graphic processes.

Parnell Thill, VP Marketing for Ikonics and incoming President of NASMA

Harold Johnston, NASMA's Executive Director

TOOLS AND SERVICES

Value-added tools and services also available to members include market metrics surveys, the business outlook barometer and business performance benchmarks. These tools provide a unique look at customer perspectives, business prospects and market feedback which can provide a distinctive return on the membership investment. "The Market Metrics alone pay the cost of my membership many times over. A study like that could cost $25,000 to $30,000," comments Ed Carhart, President of Fujifilm Sericol.

Since it is a smaller alliance, NASMA members can benefit from its inherently intimate size. The 2008 Chairman of the Board, Parnell Thill, Vice President of Ikonics, notes that: "By design, NASMA consists of less than 35 members – all representing various segments of the printing market, all of them manufacturers.

"The organisation's 'smallness' allows members to be heard individually and to have their specific concerns addressed by the organisation. An excellent example of this model at work is the Market Metrics Study, which is an exceptionally accurate survey of market size, scope and makeup relative to the products NASMA members manufacture."

MEETINGS

NASMA holds two meetings each year where specific initiatives are evaluated and industry-leading guest speakers offer their view of business conditions and projections. These semi-annual sessions also offer participants the opportunity to develop peer relationships.

"NASMA meetings give the manufacturers an excellent chance to network with one another, something that's very difficult to do at a trade show or any other event where the focus is rightfully on our customers," Mike Fox, President of Nazdar, points out.

EXTENDING ITS REACH

Moving into 2008, NASMA is sponsoring *Specialist Printing* magazine in an effort to broaden its horizons and reach a wider audience. "*Specialist Printing* magazine represents an opportunity for NASMA to extend its reach to non-domestic markets," said Parnell Thill. "While NASMA continues to be a definitively North American organisation, our association with ESMA is indicative of our recognition that the sharing of information regarding how the specialty printing market is served is imperative to our members' success. We believe *Specialist Printing* magazine reflects this understanding."

For more information contact Harold Johnston, Executive Director. SP

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PRE-COATED FABRICS TO AID PRODUCTION OPTIMISATION

Mario Brunn outlines an industrial coating technology for supplying pre-coated screen printing meshes

The LDS 4060

The PCF fully coated

The PCF partially coated

PCF fully coated on the 3A stretching system

SEFAR PRINTING DIVISION MANUFACTURES A WIDE RANGE OF HIGH-QUALITY PRECISION MESH FOR SCREEN PRINTING. PRE-PRESS EQUIPMENT, PNEUMATIC STRETCHING SYSTEMS AND PRECISION TENSION MEASURING INSTRUMENTS ARE COMPLEMENTARY PRODUCTS FOR SCREEN PRINTERS. SEFAR ALSO OFFERS EXTENSIVE APPLICATION ENGINEERING EXPERTISE, ENSURING THAT ITS PRODUCTS DELIVER OPTIMUM PERFORMANCE ALONG WITH INDUSTRY-LEADING TECHNICAL SUPPORT.

INDUSTRIAL COATING TECHNOLOGY

The production of stencils for screen printing, and therefore especially the coating process, is a major factor that influences a controlled printing result. Reliability and reproducibility are the industry's aims for the entire stencil production process. To achieve an economic, high-quality and reproducible printing result, standardisation is a must.

PCF is an industrial coating technology developed by Sefar which supplies customers with fully or partially pre-coated screen printing meshes. The meshes are coated with photosensitive aqueous emulsions using Sefar's specialised machinery. The coating components and processes are individually controlled and coordinated. High-precision manufacturing guarantees a constant coating thickness in the micrometer range.

Customers benefit from a controlled and reproducible coating quality of a very high standard, which saves a substantial amount of time in stencil production. The development of new technologies and the standardisation for all printing processes make it vitally important for screen printing to adapt to the industry's expectations in terms of ongoing development and specialisation.

THE PRODUCT FOR A SYSTEM SOLUTION

Digitally controlled exposure methods called for the development of a new, highly reactive photo-emulsion which is matched to the relevant light spectrum. Within a very short time, the Sefar project team succeeded in bringing a solution to the market. The development of PCF HS enables Sefar to work on a system solution for stencil production.

For example, with regard to the use of pre-coated meshes in the CD sector: Retex provides a controlled and automated stretching system.

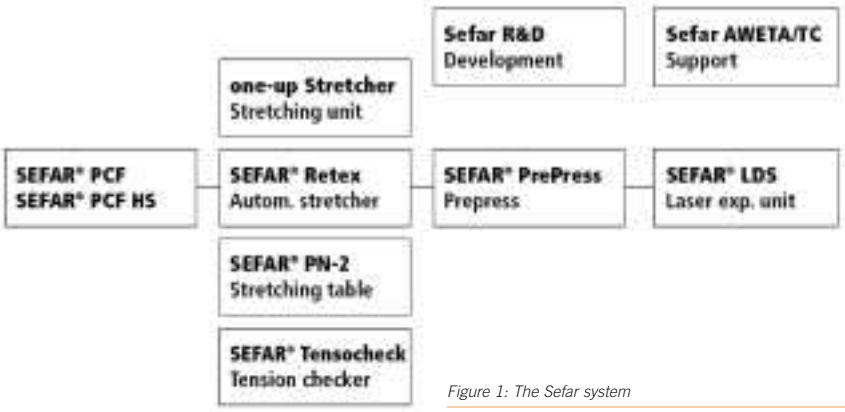
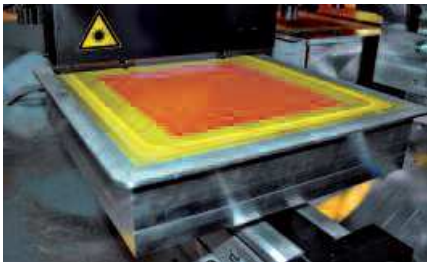


Figure 1: The Sefar system

PCF fully coated with the Tensocheck 100 tension measuring instrument



The LDS imaging process

The next stage of production, which allows controlled digital imaging of the stretched screens, is the LDS laser-based exposure system.

Measuring instruments to check the additional screen-making processes are also available, and services for pre-press and support have been redesigned. All the components can now be combined to create a system, or they can be purchased on a modular basis.

See figure 1 for an outline of the Sefar system. SP

Mario Brunn is part of the Market Field Management Team at Sefar

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INKJET COLOUR MANAGEMENT

Mark Rowe asks what the real cost is of not having a quality colour management solution

ONE OF THE MANY CHALLENGES FACING THE INKJET PRINTING INDUSTRY IS FINDING A BETTER WAY TO MANAGE COLOUR QUALITY ISSUES. SYMPTOMS OF POOR OUTPUT QUALITY INCLUDE, BUT ARE NOT LIMITED TO, STEPPING IN GRADIENTS, POSTERISATION IN COLOUR TRANSITIONS AND INACCURATE COLOUR REPRODUCTION. OFTEN THE BLAME IS PLACED ON 'BAD' OUTPUT PROFILES. WHILE THERE IS SOME LEGITIMACY TO THIS BELIEF, THE REALITY IS THAT THE OUTPUT PROFILE PLAYS ONLY A SMALL ROLE IN CAUSING THESE PROBLEMS.

The root of most problems associated with poor output quality is the use of output profiles which were created, based on the incorrect or unknown tonal reproduction behaviour of the printer. Additionally, problems may occur from the use of 'canned' output profiles which, by definition, are created on one printer but used on another printer, which may exhibit different tonal reproduction behaviour.

To make the statement that an output profile is responsible for bad output is similar to saying that the driver of a vehicle is responsible for speeding when the speedometer is not accurate. Like the profile, the driver of the vehicle is doing his or her best, based on the data provided. An output profile is akin to a book of recipes. The function of the output profile is simply to provide the recipe of mixed primary inks that will most accurately reproduce colour values in the image files, based upon a printer's tonal reproduction behaviour.

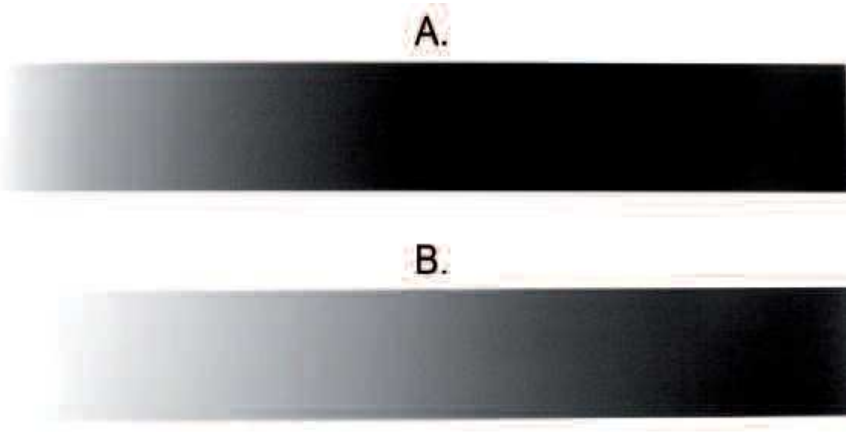
CANNED PROFILES

The accuracy of a printer's ability to reproduce colours is dependant upon the output profile created for it. The accuracy of the output profile is dependant upon having accurately described the tonal reproduction behaviour of the printer prior to generating the profile. Many manufacturers of ink, paper, software and printers provide 'canned' output profiles that have been created on a printer other than the user's printer.

Even though these 'canned' profiles have been made for the same paper type and printer model, there is no guarantee that the tonal reproduction behaviour of that printer is equal to the user's printer. Mechanical and environmental differences between printers can lead to different tonal reproduction behaviour. Therefore, if the output profile does not posses the accurate recipes to reproduce colour due to these differences, the accuracy of the colour reproduction will be compromised.

Inaccurate colour reproduction may require the user to edit and re-print the image numerous times to compensate for the inaccuracy of the output profile's description of the tonal reproduction behaviour as it relates to their printer, thereby significantly increasing production costs.

The question then becomes: "how does one characterise a printer's tonal reproduction behaviour in order to accurately profile it and take full advantage of its available colour gamut?"



(A) Nonlinear output, and (B) linear output after performing a density linearisation

DENSITY LINEARISATION

There are necessary steps that must be taken before one can accurately profile an inkjet printer's ability to reproduce colour, as well as ensure consistent, repeatable results in the future, thereby minimising wasted consumables and re-profiling time while increasing production. The first and most important is characterising the printer's tonal reproduction behaviour. ErgoSoft's PosterPrint RIP allows users to do this through its density linearisation module.

"When a system is linear, people examining it can make certain mathematical assumptions and approximations about its behavior, allowing for simple computation of results. In nonlinear systems these assumptions cannot be made. Since nonlinear systems are not equal to the sum of their parts, they are often difficult (or impossible) to model, and their behavior with respect to a given variable (for example, time) is extremely difficult to predict." [1]

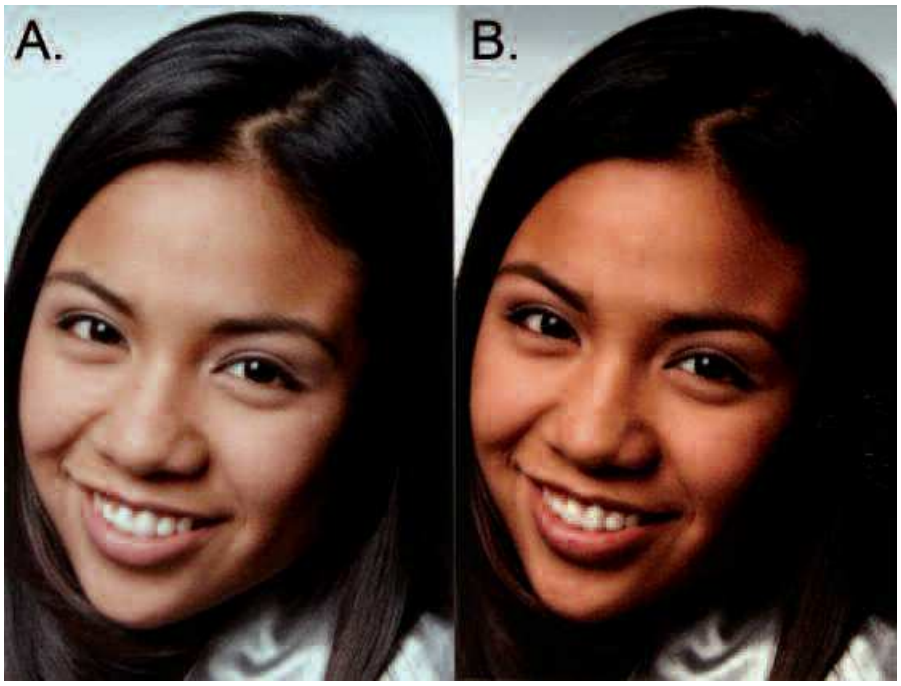
Anyone that has ever profiled a monitor can relate to the process of density linearisation. Before one can accurately profile a monitor, the profiling software needs to quantify the output behaviour of the monitor when given particular input values. This requires adjustments to monitor characteristics such as brightness and contrast. It can then adjust the input values accordingly to generate the desired gamma output behaviour. This process is known as calibration or characterisation. The same must be done for an inkjet printer with density linearisation (contrast) and total ink limit restriction (brightness).

THE PROCESS

The process of density linearisation is straightforward and is the same for all inkjet printing applications, such as photographic reproduction, dye-sublimation and direct-to-fabric. Through the PosterPrint RIP density linearisation module, a target composed of a specified number of patches for each primary colour channel is printed. The patches increase from 0% to 100% output.

After measuring the target with a spectrophotometer, PosterPrint compares the measured output values against the expected input values and creates a density linearisation adjustment curve to remap the input values accordingly. Using the adjusted input values, the outcome of the resulting behaviour of the printer is smoothly printed gradations from 0% to 100% output from each primary ink channel. When PosterPrint requests 20% dot coverage based on the information in the image, you get 20% dot coverage and not 18% nor 23% dot coverage – the system is now predictable.

There are many advantages to starting in a predictable base state. For instance, like anything mechanical, a printer's behaviour to input will shift over time with use. Therefore, the density linearisation and output profile no longer describe the current behaviour of the



(A) Image printed with proper ink limiting, and (B) the same image printed with insufficient ink limiting

printer and colours are no longer accurately reproduced.

When colour shift does occur, the printer operator can use PosterPrint's density re-linearisation module to adjust the input back to the known base state, eliminating the need to re-profile. Without this ability, many companies are forced to adjust their files to compensate for the shift.

Other advantages of density linearisation include smooth gradients, a greater tonal range, and it also contributes to the preservation of detail in highlights and shadows. In essence, it increases the number of discernable levels of separation your printer can reproduce in each primary ink channel. This equates to more possible colour combinations when combining primary inks.

TOTAL INK LIMIT RESTRICTION

The second major contributor to 'bad' output profiles is over-inking of the media. There are adverse consequences to printing too much ink, that is, printing more ink than is needed or more ink than the media can handle. The consequences range from the obvious – using more ink than is necessary and blocking up shadow detail – to the not so obvious – restricting your colour gamut and reducing maximum density, Dmax. In the end, over-inking results in higher production costs.

ErgoSoft's PosterPrint RIP has multiple tools to control total ink limit restriction. One feature, which is part of the density linearisation module, is the ability to restrict the primary inks on a per-channel basis. The other tool is the total ink limit setting for combined primary inks.

Per-channel ink restriction allows the user to limit each primary ink channel to its ideal chroma or saturation point. Many assume that because they can achieve more saturation from an ink, they can obtain more colour. This is not always the case. There is a point of

diminishing return with regards to saturation. More saturation per ink channel means less total per cent combined primary inks, thereby reducing the ability to reproduce secondary colours and limiting one's overall colour gamut.

REDUCING UNNECESSARY INK USAGE

Because the media is literally saturated by that single ink channel and already close to its total ink limit, introducing additional inks would cause bleeding. The per-channel ink restriction function greatly reduces unnecessary ink usage, helps maximise colour gamut and contributes to decreasing the total ink load.

The total ink limit setting tells the RIP what the maximum percentage of combined total primary inks that a media can handle is. This percentage is easily determined by printing out the provided total ink limit target and evaluating it visually. Each media has a specific total ink limit and anything above that limit is going to have negative consequences on the output quality and eventually on a company's profits.

The bottom line is this: there is no guarantee a 'canned' profile will work on your printer and there is no point profiling your printer unless you have the ability to characterise its tonal reproduction behaviour and limit the amount of total ink being printed on the media.

Custom ICC profiles maximise the colour gamut of inkjet printers, result in very high quality output and minimise wasted time and consumables, reducing production costs and increasing profits. This raises the question: "what is the cost of a quality colour management solution?" but a better question may be "what is the cost of not having a quality colour management solution?" SP

Mark Rowe is an Applications & Color Support Specialist for ErgoSoft US

BIBLIOGRAPHY

1. Nonlinearity; in *Wikipedia, The Free Encyclopedia*, retrieved 15:45, 10 August 2007 from http://en.wikipedia.org/w/index.php?title=Nonlinearity&oldid=150404391

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IMPROVING SCREEN PRINTING QUALITY

Jorge Ellert outlines some technical arguments to demonstrate that capillary film dramatically improves screen printing quality

IN THE INDUSTRIAL SCREEN PRINTING INDUSTRY IT IS NECESSARY TO KNOW WHICH STENCIL WILL BE NEEDED TO MEET PRODUCTION REQUIREMENTS. THE FIRST IMPORTANT STEP IS TO SELECT WHICH MATERIALS TO USE. THE SELECTION OF THE CORRECT STENCIL SYSTEM CAN NEVER BE UNDERESTIMATED. IT IS NECESSARY TO ACCURATELY CONTROL THE TOTAL COST OF THE SCREEN-MAKING PROCESS, TO HAVE PRODUCTION WITH CONTROLLED VARIABLES AT THE END, BETTER FACTORY THROUGHPUT AND BETTER FACTORY PROFITABILITY.

Therefore it is important that the technician has up-to-date knowledge to increase efficiency and reduce total production costs. This is possible if they understand how to use the newest generation of stencil systems, such as capillary film adapted to the highest screen quality needs.

The CDF/QSR and CDF/MATRIX capillary films are a step forward in the easy and fast production of consistent, high quality stencils. These kinds of capillary film allow good control of the ink deposit, one of the most expensive variables in the screen printing process. With a controlled ink deposit, production will also reduce the drying/curing time and thereby give a quicker production throughput. It is important not to forget that with excellent screens it is possible to reduce lost production time – no messy chemicals and no liquid emulsions are necessary.

Wet processing eliminates dust-related problems and reduces touch-ups. CDF/QSR and CDF/MATRIX have been designed to meet the requirements of the most advanced screen printers. They were also designed to provide the highest consistent quality in an easy and sure way. With these quality screens the shot downs of prints will be less.

SPECIAL BACKING SHEET

Screen printing technicians know that the ideal stencil has a low and defined stencil profile and a low Rz-value with an excellent resolution and ink transfer. CDF/QSR and CDF/MATRIX answer these requirements. All the capillary films have a backing sheet that can achieve an excellent Rz-value. Ulano has added a better quality sheet: CDF/QSR has a special backing sheet using a high performance polyester with a special surface that significantly reduces the usual static problems by printing on even surfaces and the hydrostatic attraction when printing on polished surfaces.

Capillary film is similar to direct emulsion in terms of ingredients but has been pre-coated onto a carrier sheet by running it through an extremely high precision coating machine. The precision coating process performed by the manufacturer produces a consistent, precise thickness, enabling the screen technician to coat consistent, predictable stencils. The polyester carrier sheet leaves an exceptionally smooth stencil surface, which contributes to the desired gasket effect needed for printing sharp, crisp lines and dots. This type of stencil is pre-sensitised by the manufacturer.

The consistency of these screens always gives reproducible results from stencil to stencil, because CDF/QSR and CDF/MATRIX are manufactured with high quality control standards. Ulano produces these types of films with some of the smallest production tolerances ever tried. CDF/QSR is available in 10, 15, 20, 30 and 40 µm thicknesses in both roll and sheet formats. CDF/MATRIX is available in UV, 18, 20, 30 and 40 µm thicknesses in both roll and sheet formats. Both have excellent storage properties – 15 months as film, six weeks as unexposed applied stencil.

A RANGE OF APPLICATIONS

These are products for a wide range of applications, especially for producing fine details and for thinner ink deposit applications on fine screen fabrics. With this stencil system it is possible to obtain press-ready screens with high quality in as little as half an hour. CDF/QSR and CDF/MATRIX obtain a superior mesh bridging that produces extremely sharp edges in the screen and in the prints. This is possible because they give excellent flat-bottomed stencils and sharp printing shoulders for a superb definition.

CDF/QSR is produced with a special magenta colour and CDF/MATRIX is produced with a special green colour, giving both a good coloured stencil to reduce the amount of light scatter creeping under the edge of the positives. This gives an easier screen control and a good stencil to improve the registration of different screens. This colour is obtained with a healthy coloration and also offers the necessary minimal environment contamination as it has no heavy metals or strange components in the formulation.

These CDF/QSR capillary films adhere to the screen fabrics with water or QFX emulsion and are very simple to apply. The CDF/MATRIX films are, however, applied using Proclaim-HR (a high resolution emulsion). Many screen makers apply capillary film with the wet roll-down method. This method requires essentially the same skill level as sticking a postage stamp to an envelope, except that with capillary film, the dry 'stamp' sticks to the wet 'envelope' instead of the wet stamp to the dry envelope.

The spotting gun mounting method is a convenient way to apply larger sheets of capillary film. Remove the spotting fluid and dry the spotting gun, then fill the gun with water. Adjust the nozzle to produce the finest atomised mist of water. The application with emulsion will improve the print run quantity, giving print runs the same as those made with stencils prepared with emulsion only, but with the print quality that capillary film stencils offer. Washout with cold or warm water is possible. They offer a very fast exposing time because they are produced with the newest improved raw materials and sensitised products.

CALCULATING EXPOSURE

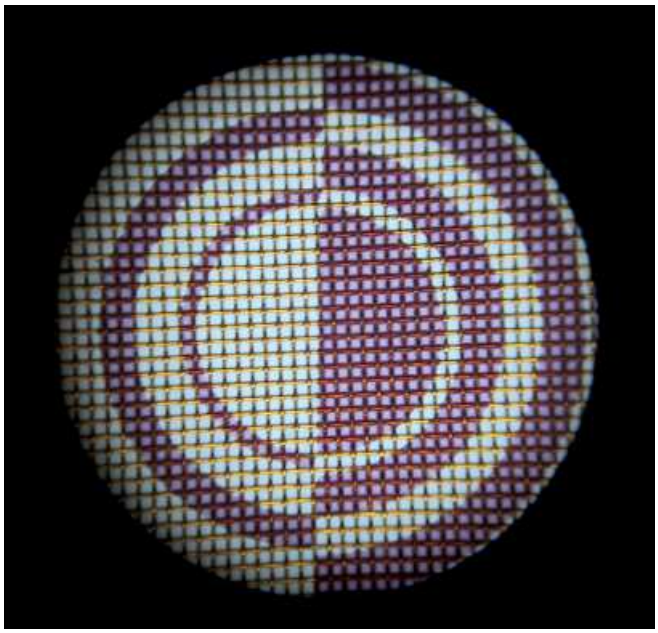
Screens must be properly exposed to ensure maximum durability on press. Under-exposure is often the culprit when screens break down prematurely. Under-exposure causes weak stencils, mesh staining and difficult reclaiming. The Ulano Exposure Calculator will enable the operator to determine the proper exposure time required for each mesh count, mesh colour and stencil and stencil thickness used in production.

Over 80% of screen printers are underexposing their screens! Why? The most common answers are "because we always did it this way" and "because we need to underexpose to resolve our detailed images." If you have to underexpose your screens to hold the detail, it means that you need one or more of the following: a finer mesh count, a dyed mesh, a finer resolving emulsion or capillary film, a test of the vacuum pressure, a good point light exposure source, a better positive original, or to realise that the particular fine detail is beyond the limits of what you can realistically produce under print shop conditions.

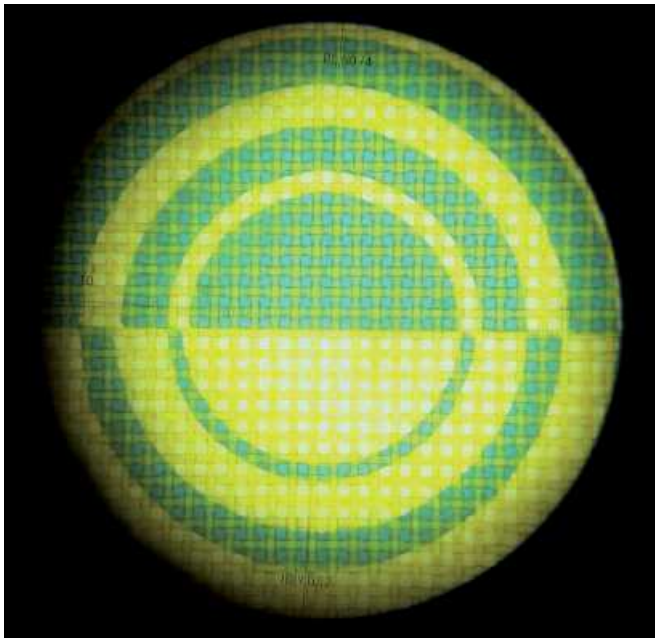
Stencils made with capillary film have excellent durability and repeatability; they give extremely good print quality. CDF/QSR and CDF/MATRIX show a complete solvent resistance intended for use with all solvent-based inks, whether mild or aggressive. They can be removed quickly and easily with Ulano chemicals.

APPLYING CAPILLARY FILMS

The traditional way to apply capillary films is also the usual way to apply this new generation of film, which allows higher quality production but without special staff training: water held in



Reproduction of an original with capillary film CDF/QSR-10 on Bopp 400 (SD 40/25) steel mesh



Reproduction of an original with capillary film CDF/MATRIX-20 on 120(305)-34 polyester yellow mesh

the fabric softens the film emulsion, which is attracted by capillary action up into the mesh structure. A single squeegee stroke skims off excess water, controlling the thickness of the stencil and speeding up drying time. After drying, the polyester backing is removed and the screen is ready for exposure and washout with plain water.

Application fields where the use of CDF/QSR and CDF/MATRIX are a big step forward for easier and higher quality screen making include: glass (automotive, construction, cosmetic, pharmaceutical, household, slot machines), ceramic decals, printed circuits boards, compact discs, membrane switches, graphics and textiles. In all these application fields they give better reproducibility of production with longer printing runs and superior end products. SP

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A BREAKTHROUGH IN DIGITAL PRINTING TECHNOLOGY

Tudor Morgan relates how the launch of possibly the world's fastest digital UV flatbed printer may redefine the boundaries of wide format speed and productivity

The Onset requires only one operator with a 20 minute set up time

OVER THE LAST FEW YEARS, INCA DIGITAL AND FUJIFILM SERICOL HAVE CONTINUALLY DEVELOPED PRINTERS THAT BREAK PRODUCTIVITY AND IMAGING QUALITY EXPECTATIONS IN WIDE FORMAT DIGITAL UV FLATBED INKJET PRINTING. THE COMBINATION OF INCA DIGITAL'S ENGINEERING AND IMAGING EXPERTISE WITH FUJIFILM SERICOL'S EXPERIENCE OF UV INK FORMULATION AND APPLICATION KNOWLEDGE PROVIDE USERS WITH A COST-EFFECTIVE METHOD FOR PRODUCING HIGH QUALITY POP AND SIGNAGE. THE PARTNERSHIP IS RESPONSIBLE FOR THE INCA EAGLE, SPYDER 320 AND COLUMBIA TURBO. THE LATEST ADDITION TO THE RANGE, LAUNCHED IN APRIL 2007, IS THE INCA ONSET.

The Onset has been engineered from the ground up to achieve new levels of performance. Its design draws on Inca's vast experience of jetting inks and includes some of the core technologies the company has developed to produce the Columbia Turbo and Spyder 320 presses.

Its high productivity opens up new opportunities within display and commercial print markets. At present, run length tends to define the choice of technology. Flatbed is typically used on run lengths up to 150 sqm, screen printing for 150-750 sqm and offset from 750 sqm. However, the Onset's productivity easily pushes the cost effectiveness of UV inkjet up to 750 sqm. Digital production output of 5000 to 6000 sqm is now possible during a 12 hour day.

The Onset delivers speed and quality. It takes up 21 x 13 m of floor space which includes a fully automatic material handling system. Handling print sizes of up to 3.2 x 1.524 m and delivering true output speeds of 500 sqm/hr, the printer delivers 100+ full bed sheets an hour. This speed and quality is delivered by an array of 576 Spectra printheads (73,728 actual inkjet nozzles) – far more than is needed to maintain image quality. These Spectra printheads are mounted onto Inca print bars, supported by alignment systems.

DETERMINING PRINT QUALITY

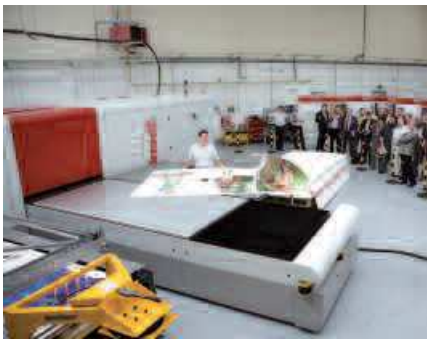
Print quality is determined principally by two factors: inkjet nozzle performance and textural banding due to the need for multiple stepping of the print heads across the image width. The Onset has been designed with a high level of nozzle fault tolerance to ensure maximum print quality, and by arranging the print heads across the width of the platform, textural banding is eliminated by minimising the distance the printheads need to travel across the image during printing.

The Inca Onset has been designed specifically to provide a flexible and cost-effective alternative to traditional high-volume print technologies. It meets the production needs of companies handling high volumes of large format material. With run length getting shorter, the Onset provides an alternative to both screen printing and offset.

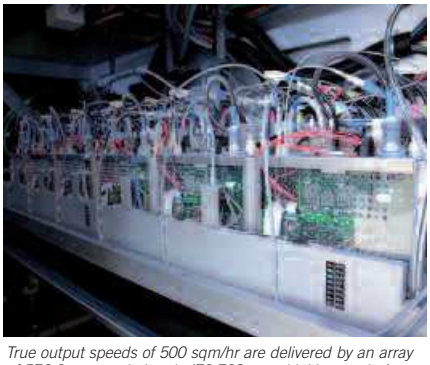
Initial interest is as a replacement for

Digital production output of 5000 to 6000 sqm is possible during a 12 hour day

The Inca Onset includes a fully automatic load/unload system with optional manual handling



The Onset was demonstrated at a launch event in April



True output speeds of 500 sqm/hr are delivered by an array of 576 Spectra printheads (73,728 actual inkjet nozzles)

multicolour screen lines. UK-based SP Group, part of the St Ives plc group of companies, has taken delivery of the first printer which, in the words of SP Group Operations Director Jeremy Jones: "gives SP Group marked competitive advantage in the wide-format display marketplace. We are confident that the new machine will, ultimately, allow us to optimise our response to our customers' needs through better utilisation of our overall output capacity, while also letting us take advantage of new business opportunities, particularly in the screen printing arena."

EASY OPERATION

The Inca Onset is extremely easy to operate, requiring only one operator with a minimal 20 minute set up time at the start of each day. It includes a fully automatic load/unload system as standard; however it is designed to allow users to move to manual mode within seconds if required for immediate fast proofing or the production of single prints. The Onset will handle substrates up to 15 mm thick if they are manually loaded, or 10 mm with the autoloader, and up to 10 Kg in weight. It has the ability to choose between two finishes, 'low glare satin' or 'high impact gloss', at the press of a button.

Fujifilm Sericol, Inca's long term worldwide distribution partner, sees the Inca Onset as the next generation of digital printing for a wide range of print applications in the large format display market and within the wider commercial print market currently served by extra large format offset presses.

Because of its speed and set up time, the Inca Onset could redefine cost-effective print run lengths previously not associated with digital printing. Jerry Avis, International Strategy and Business Development Director of Fujifilm Sericol, considers the Inca Onset to be an important step change for the print industry:

"The market is seeking improved quality alongside faster production speeds and turnaround times and it is this need that has driven development of the Onset in partnership with Inca," he says. "The Inca Onset will transform UV digital flatbed inkjet printing speed, quality and finish. The result is a machine that is so fast that it not only delivers a highly competitive solution for screen printers but, for the first time, provides a highly competitive alternative to offset presses, offering a flexible and cost effective alternative for up to 400 finished sheets."

NEW INKS

Fujifilm Sericol's vast experience in UV digital ink formulations and understanding of the needs of the market has been central to the development of the Onset. Simultaneously, Fujifilm Sericol has been developing a new range of its Uvijet UV digital inks for use in the Inca Onset. Using patented Micro-V dispersion technology, these new Uvijet UV digital inks are formulated to provide the user with superior dot reproduction, bright vivid colours and the same finishing characteristics as other display UV screen ink systems from Fujifilm Sericol.

Uvijet for the Onset also has the right combination of adhesion and flexibility. Usually UV inkjet inks with good adhesion make the substrate brittle due to ink film shrinkage in the curing process. The latest Uvijet chemistry eliminates this effect by reducing the stress caused by shrinking at the ink/substrate interface. The choice of satin or gloss finishes increases application opportunities even further. SP

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AN INVESTMENT IN THE FUTURE

Gianni Robertazzi explains the possible fields of use for UV pad printing inks

IN PAD PRINTING, IT IS INCREASINGLY IMPORTANT TO PRODUCE GOODS OF HIGH QUALITY AND PROCESS STABILITY 'JUST IN TIME'. THE ADVANTAGES AND USES OF UV INKS ARE UNAMBIGUOUS AND ALLOW THE USER A HIGH DEGREE OF FLEXIBILITY, AS WELL AS COMPETITIVENESS.

The origin of pad printing leads back to the printing of faces within the clock and watch industry. Other industrial applications in use today were started in the early 1970s and have been perfected since then.

The technology is based on an indirect gravure printing process where the motif is put in the print form (cliché) in a deep-end position to then be flooded with ink. After squeezing, the ink is taken up from the cells by a printing pad made of silicone rubber and transferred to the substrate. The ink transfer is due to a change in the adhesive behaviour of the ink which results from the evaporation of solvents.

No other printing process can realise the decoration and marking of three-dimensional goods – no matter whether concave, convex or having a structured surface – with such an excellent definition and great versatility in colours and effects, in the author's opinion.

STRENGTHS OF PAD PRINTING

The strengths of pad printing are:

- printing of 3D parts
- realisation of the finest details
- extremely versatile colour range and special effects
- high opacity
- excellent mechanical and chemical resistance
- little space required to easily integrate into production lines
- a great variety of substrates.

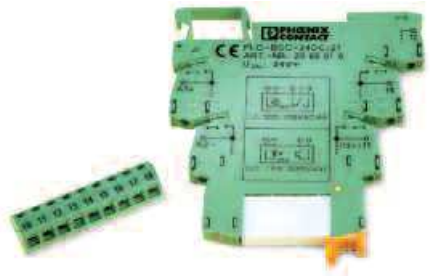
For printing processes such as screen, offset, flexo or letterpress, UV inks have proven to be reliable for many years.

WHAT ABOUT PAD PRINTING?

Is it possible to transfer the experiences and advantages of other printing processes to pad printing, too? To answer this, it is important to have a closer look at the differences between solvent-based and UV inks.

In the case of a solvent-based ink, a resin or a combination of resins is dissolved in a solvent. The result of this process is a printable binder which is the basis for a printing ink and defines adhesion as well as resistance.

A UV ink mostly consists of highly viscous prepolymers and achieves a press-ready adjustment by adding monomers. Due to UV irradiation, the prepolymers and the



Electronic component – a typical UV application

monomers are chemically cross-linked. This reaction is the actual origin for the typical ink and its quality. The cured ink layer is, therefore, a newly developed, chemically cross-linked resin film.

FEWER SOLVENTS

The essential difference for UV screen printing inks is that UV pad inks usually contain a reduced percentage of solvents necessary for the ink transfer. Compared to traditional inks, UV inks display a high stability in viscosity during the printing process. This is why the colour shade remains almost constant, leading to reduced labour input and increased time-saving. The prompt drying via UV light also makes it possible to post-process the printed parts immediately.

Using UV curable inks saves times and offers a higher quality and process stability. One of the first applications was simple markings where the printing and curing station was integrated in the production process, enabling the printing of 'in-line' markings without any problems. This success soon led to an increased demand for applications on high quality decorations.

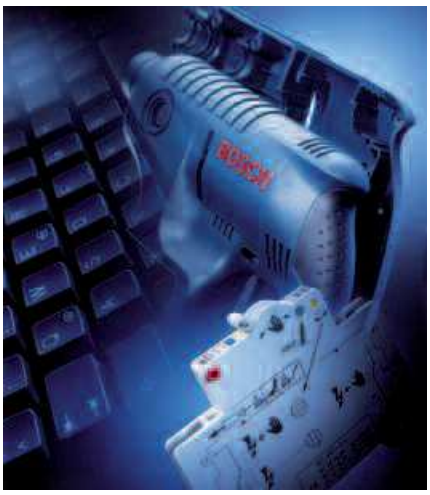
ADVANTAGES OF UV PAD PRINTING INKS

The advantages of 1-component UV pad printing inks include:

- increased chemical resistance compared to 1-component solvent-based inks
- significantly better chemical resistance than solvent-based inks mixed with hardener
- higher gloss compared to solvent-based inks
- great variety of substrates.

WHICH UV-DRYER?

Standalone UV-dryers with a power of 80-120 W/cm can already be used for UV pad printing technology. Depending on the type of application, such as if different parts require a UV-dryer that is adjustable in height, or if the drying must be carried out 'in-line', the dryers can be conceived accordingly.



Applications with UV pad printing inks

UV PAD PRINTING INK

The high-gloss Tampacure TPC covers a wide range of substrates and enables cost-saving storage. Besides a comprehensive range of basic shades, high-opaque colour shades and transparent 4-colour process shades, Tampacure TPC offers what a modern UV pad printing ink should have, together with an excellent chemical and mechanical resistance.

SUMMARY

Pad printing with UV inks not only plays a particular role for the high quality printing of end products which must be post-processed immediately, but it is increasingly gaining in importance. The low content of solvents common to UV pad printing inks allows for an increased environmental consciousness and safeguards a process-safe production run, giving high quality and reproducible print results.

The crucial question of whether this investment is actually profitable can easily be answered by its long-term advantages; a fast implementation of print jobs, immediate post-processing and therefore reduced drying times, and storage costs clearly indicate an investment in the future.

So the question is not if, but when, you want to start working with UV inks in pad printing. SP

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DIMENSIONS IN MULTICOLOUR DECORATION

Miriam Rossi outlines a system that allows printers to make angular adjustments to machine programmes

The MKM 80 with multi-position system

A MAJOR SOURCE OF MULTICOLOUR PAD PRINTING PRODUCTION INEFFICIENCY AND INACCURACY IS THE LACK OF A SYSTEM WHICH WOULD ALLOW PRINTERS TO MAKE XY AND ANGULAR ADJUSTMENTS ON THEIR MACHINE PROGRAMME.

Morlock has developed a system which can do this. The Multi-Positions System can be adapted to the MKM or MM6 machines series. Up to 50 different jobs can be saved as programme workflows, and therefore can be retrieved at any time. The MKM and MM6 series with the multi-positions-system has X-Y-Z and angular position correction, an LCD panel for all steering and control functions, a carousel principle, a programmable pad cleaning function, a closed ink cups system, the Morlock MCI and minimal set-up time. Up to 50 workflow programmes can be stored on disc.

EXAMPLES OF USAGE

The MKM 80 with multi-positions system can be used to print part of a ski binding which must have a precise replication of various print pictures. When washing machine panels have print pictures which need to be printed precisely single or multicoloured in one process, the wide format placement is done manually.

The new MM6 series round table system with six ink cups on an electro-mechanically driven carousel unit and the MKM with up to five colour dispensers have been supplemented with a 3-axis work piece positioning system. The ink doctoring units have been laid with various colours and print pictures so that the printing of the complete wide-format panel can be done precisely in one go. SP

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LIGHT FASTNESS AND WEATHER RESISTANCE OF PRINTED PRODUCTS

Thomas Enk offers some important considerations to take into account when planning outdoor advertising campaigns in different parts of the world

PRINTED OUTDOOR ADVERTISEMENTS ARE BECOMING MORE AND MORE ATTRACTIVE. THERE ARE HARDLY ANY BUSES, TRAINS, TRUCKS OR TAXIS AROUND WHICH DO NOT CARRY ADVERTISEMENTS. FOR SUCH PRINTS A BASIC KNOWLEDGE OF LIGHT FASTNESS AND WEATHER RESISTANCE IS ESSENTIAL IN ORDER TO AVOID THE ATTRACTIVENESS AND QUALITY DETERIORATING BECAUSE OF FADING OR SHIFTING OF COLOURS DURING OUTDOOR USE. THE REASON FOR COLOUR SHIFTS IS OFTEN THE DIFFERENT PROPERTIES OF THE FOUR BASIC COLOURS – BLACK, YELLOW, MAGENTA AND CYAN – OR OF THE DIFFERENT BASE COLOURS IN RESPECT TO DECOMPOSITION OF THEIR PIGMENTS UNDER THE INFLUENCE OF DIRECT SUNLIGHT (UV LIGHT).

What exactly does happen here? What is the reason for colour decomposition? What can be done to increase outdoor resistance of printed products?

THEORY

In the world of colours and printing inks, it is a well-known fact that any organic pigment or binder, thus every screen printing ink, is affected by direct or indirect sunlight (UV-radiation), resulting in a quicker ageing process initiated by absorption of radiation so the colour fades and colour effects become weaker. During this process, the molecules of the pigments begin to oscillate. In the consequent process of fatigue, the molecular bond cracks and the pigment will no longer be coloured – it has been destroyed. Now the important question is: how resistant is the printing ink used and when does the colour begin to change?

The amount of global radiation varies significantly depending on the geographic location – an important consideration for worldwide advertising campaigns

GLOBAL RADIATION

Global radiation is the sunlight that shines onto the total surface, usually referred to as one square metre of a horizontal area. Thus the global radiation is composed of direct and diffuse radiation. In this process, the atmosphere of our planet and possibly clouds will reduce the intensity of the global radiation as parts of this UV-radiation are reflected, scattered or absorbed. If the skies are clear, the energy consists of the direct radiation capacity outside the atmosphere (solar constants) minus approximately 53% loss of the energy on its way through the atmosphere (to the earth). If skies are cloudy, there is no direct radiation and such weather conditions will only have a weak diffuse radiation without sunburn.

However, the filter effects of the atmosphere are not a constant factor. For example there are possible changes due to ozonolysis. In addition, the amount of global radiation will also differ depending on geographic situations. In the desert regions of Africa, the Middle East, India, Australia and the southern part of the USA (the 'sun zone' of the Earth), the share of radiation is twice as high as in central Europe (e.g. Germany), not considering the topic of cloudiness. Literature shows the following average radiation values:

- North and central Europe, Canada, northern US States (North of the 45th degree of latitude) = 600-900 kWh/m^2
- Central and southern Europe, central US States, parts of South America, northern China, Japan, New Zealand (between 40th and 45th degree of latitude) = 900-1200 kWh/m^2
- Southern Europe, North Africa, Middle East (between 35th and 40th degree of latitude) = 1200-2000 kWh/m^2
- Africa, south of USA, Central America and parts of South America, Arabian Peninsula, India, Australia (between 35th southern and northern degree of latitude, equator region) = 2000-2500 kWh/m^2.

It is quite clear that the dose of global radiation varies significantly depending on the geographic location, a fact which has to be especially considered for worldwide advertisement campaigns. However, other influences such as increased temperatures also need to be taken into account.

LIGHT FASTNESS

Light fastness is the resistance of printed products against the influences of daylight without direct weather influences. In addition to real weather testing there are standardised test methods and accelerated weathering equipment to determine the light fastness. Such weathering equipment will simulate an accelerated natural radiation so that test results can be obtained within a reasonable amount of time.

Correct standard methods for testing of light fastness of printed products and printing inks is described in DIN 16525, part 1. Part 2 of that standard comprises accelerated weather testing in a.m. equipment. That standard has also been published as ISO standard no 12040.

STANDARDS FOR LIGHT FASTNESS OF A PRINTING INK

The light fastness of a printing ink depends on the quality of the binding agents and organic pigments used. Pigments are classified and described as quality 1 (very low) to quality 8 (outstanding) according to the 'wool scale'. The higher this value is, the better is the quality of the pigment. An increase by one grade will mean double the quality for outdoor use.

The following light fastness values are listed in the wool scale:

Grade 1 . very low
Grade 2 . low
Grade 3 . moderate
Grade 4 . quite good
Grade 5 . good
Grade 6 . very good
Grade 7 . excellent
Grade 8 . outstanding.

This means that a high quality screen printing ink for medium to long term outdoor use (3-5 years) requires grade 7 to 8 pigments according to the wool scale. Such pigments are generally more expensive (especially yellow and red).

FACTORS INFLUENCING LIGHT AND WEATHER RESISTANCE

The screen process, together with its many different binder systems (therefore also various possibilities) and its high layer thickness used for prints for medium and long term outdoor use, has a distinct advantage compared to other printing

processes. Naturally, this statement only applies to the use of ink ranges containing weather-resistant binder systems. However there are further factors that influence the results obtained.

SUNLIGHT

Clearly, the direct sun radiation is mainly responsible (up to 90%) for the colour decomposition of prints used outdoors. The very low percentage of UV-radiation contained in sunlight is the reason for this decomposition. Thus, there is an obvious dependence between the number of direct hours of radiation and the degree of colour decomposition or yellowing. As the power of the sun is not the same in different regions of the earth, results may vary depending on individual regions.

WATER AND TEMPERATURE

Repeated direct contact with water or constant high humidity, in combination with higher temperatures and direct sun radiation, will cause premature yellowing processes of printed matter. The binding agent decomposes at the surface and will deposit on the surface in the form of a white powder. This will inevitably result in colour shifts. This white film can be washed off by cleaning the surface and the original colour will reappear.

Colour shades containing white (pastel or grey colours) have an especially high tendency to yellowing as the titanium dioxide contained may accelerate the decomposition process due to photomechanical activities. Another stress factor is the possible temperature increase to around 80° C in summer months with direct sunlight. In addition there will be much more colour changes in regions with saliferous air (close to the sea).

Direct sun radiation on water drops on the surface of prints will also be much more intensive, as the water drops will simulate a burning glass effect and concentrate the sunlight.

ENVIRONMENT

Often climatic influences on printed objects are intensified by contaminated industrial waste gas, such as sulphur dioxide, carbon, ashes and other combustion gases as well as by agrochemicals. These also vary from region to region and thus cannot be described in more detail.

POSITIONING OF PRINTS

All printed matter facing the sun (northern hemisphere – southward) show much more wear due to direct radiation. There is an additional influence of the angle of position, horizontal 90° or 45°. For instance there is much more wear using a 45° angle compared to a 90° horizontal angle in central Europe. If printed products are used in altitudes above 1,000 metres, colour decomposition will be accelerated due to decreasing filter effects of the atmosphere.

Another important difference will be that if the printed matter is stationary, e.g. used as a sign, or if it used in changing positions, such as car labels. The UV resistance of prints used on moving subjects (cars) is usually twice as high as that of stationary applications.

PRINTED SIDE

Another factor of influence is the printing side of transparent materials. If one prints on the back of the material the substrate will absorb the harmful UV-light before the full radiation can reach the printing ink. Therefore using the right ink, prints on the reverse side of materials will always be of advantage.

SUBSTRATE

The choice of substrate as well as the substrate colour will have an effect on the weathering results obtained. Not only printed inks are affected, but also a number of substrates, e.g. yellowing of PS materials.

A white PVC foil used outdoors will show the lowest degree of colour change. A large part of the UV-radiation will be reflected and the substrate will be approximately 10° cooler than a black foil. It will be much more difficult with metal substrates (although metal is used as substrate for foil lamination) as metal will accumulate much more heat which is then passed on to the printed matter. That again will accelerate the process of colour decomposition.

COLOUR SHADES

The choice of colour shade also has a great influence on the weathering result obtained. Contrary to yellow, orange and yellowish gold and red shades, black and blue shades will show high light-fastness values even if used as standard shades. The aforementioned bright light shades require those pigments of the highest quality for medium and long term outdoor use, which ink manufacturers are offering as highly light-fast colour shades. Pure (mono pigmented) colour shades will show much better outdoor results than colour or pigment mixtures. When using colour mixtures, the share of individual components should not be below 5%.

It should be noted that pastel shades with a high share of white (50-95%) will change colour much quicker than pure shades in outdoor applications. Transparent colours with a high varnish content will also not show high UV resistance, as the addition of varnish will quickly reduce the pigment share and therefore the decomposition of pigments will result in a quicker colour. This should always be considered.

OVERPRINTING

Generally full overprinting will improve the protection of colours against UV radiation. Prints intended for long-term outdoor use should therefore always be overprinted. For this application, special absorbing varnishes (not standard varnishes) are recommended as they contain UV absorbing additives.

The varnish layer will then act as a protective layer against the aggressive UV radiation before the coloured pigments are affected and decomposed.

INK APPLICATION

Another possible way to retard step by step colour decomposition due to UV radiation is to increase the ink layer using corresponding fabrics. Generally the following fabrics are used:

SOLVENT-BASED INKS
line motive: . . . . . 77-90 threads/cm
solid motive: . . . . . 54-77 threads/cm
process motive:. . . . . 120-140 threads/cm

UV-CURING INKS
line motive: . . . . . 120-140 threads/cm
solid motive: . . . . . 120-140 threads/cm
process motive:. . . . . 140-150 threads/cm

FURTHER INK ADDITIVES

For long term outdoor use, one should not use matt inks or gloss inks which contain matt pastes or powders as they will decrease light fastness and weather resistance. Other ink additives, such as plasticisers or flow agents, are not as problematic as matting agents, however they do somewhat reduce the drying of the ink film to a compact and resistant layer and should therefore not be used unless absolutely necessary.

RESULT

In addition to good adhesion on the substrate and the required mechanical and chemical properties, the colour range used is also of great importance. Using only white, black, green or blue shades of special highly light-fast pigments is not necessary. Such pigments are always offered in highly light-fast adjustments.

Colours such as yellow, orange, red, yellowish green, as well as the process colours yellow and magenta, are much more problematic. When using such colours, only highly light-fast pigments can be used for medium to long term outdoor applications (3-5 years).

OVERPRINTING

In addition, prints for long term outdoor use always have to be overprinted with a suitable varnish (containing UV absorbers). All ink manufacturers offer such varnishes as standard products.

All these recommendations will effectively contribute to the protection of 'sensitive' printing inks in outdoor applications. SP

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BIG ALL-ROUNDERS & SMALL SPECIALISTS

Ira Aupperle explains why she sees radical changes in the screen printing market

FROM THE POINT OF VIEW OF THIEME, ONE OF THE LEADING MANUFACTURERS OF SCREEN PRINTING MACHINES, THE SCREEN PRINTING MARKET IS CURRENTLY UNDERGOING A PROCESS OF SEGMENTATION AND SPECIALISATION. LARGE PRINT SERVICE PROVIDERS ARE INCREASINGLY OPTING FOR FULLY AUTOMATIC MULTI-COLOUR LINES, WHILE SMALLER COMPANIES ARE SPECIALISING IN TECHNICAL NICHE APPLICATIONS. INDUSTRIAL SCREEN PRINTING IS ALSO PLAYING AN INCREASINGLY IMPORTANT ROLE.

Due to the increasing use of large-format offset and digital printing machines, the screen printing market is facing radical changes. Simple mass applications are already mainly produced using the offset process, while screen printers are returning to their 'core competence', i.e. the production of high-quality print products in which screen printing can fully demonstrate its advantages.

AN OPPORTUNITY

Jürgen Weischedel, Sales Director for Graphic Printing Systems at Thieme, does not regard this development as a problem, but as an opportunity: "There has been a clear shift in the market in favour of offset printing and digital processes, but screen printing has asserted itself extremely well nonetheless," he asserts. In the graphics area the domain of screen printing today is the printing of plastic materials, while in the technical area new special applications are coming on-stream all the time.

In the course of these developments, the graphics sector has crystallised down to two groups of screen print users:

- Large printing companies with extensive machine facilities who can offer their customers a complete, all-round service; these are currently increasing their investments in fully-automatic, large-format screen print multi-colour lines
- Small and medium-sized printing companies which are increasingly focusing on special applications and technical areas; these mainly use three-quarters automatic machines.

GRAPHIC SCREEN PRINTING

In the graphics sector the trend is towards the largely automated print line. "The new multi-colour technology of the Thieme 5000 XL was very well received by users," says Jürgen Weischedel. So far there are no signs of saturation in the market. "The market for multi-colour lines is clearly a growth market," he says. And this does not only apply to Europe. In the USA and elsewhere there is still a very strong demand for high-end technology.

In the future, printing companies will be increasingly concerned to set up the overall print process in the optimum manner and to fully exploit the possibilities offered by modern machine technology. The high degree of automation will allow smaller printing companies, many of which still depend on a large degree of manual work, to remain competitive.

INDUSTRIAL SCREEN PRINTING

An increasingly important user group is the industrial sector, where companies need special machines for printing functional layers onto various media such as adhesives, pastes and electrically conductive structures. For example, Thieme recently installed a roller screen printing machine for the printing of sensors onto foil and

In the graphics sector the trend is towards the largely automated print line

a rotary indexing machine for the printing of solar cells. Klaus Meßmer, Sales Director of Industrial Printing Systems at Thieme, sees great prospects in the future for screen printing in the industrial sector: "Industrial clients will be a strong driver of turnover for Thieme in the medium term," he predicts.

Compared to the graphics market, in which innovation is taking place mainly in the area of process and machine technology, machine components, control systems and automation etc., industrial screen printing is facing completely different challenges. According to Klaus Meßmer, it is usually the applications themselves which are innovative in this area. In this case it is essential to adapt the screen printing process and the machine technology in an optimum manner to suit these new applications.

However it is not only perfect technology that counts for users today – the reliability of their machine partner is also a major consideration. Weischedel and Meßmer agree that "large, stable suppliers who also offer a comprehensive customer service will lead the field." SP

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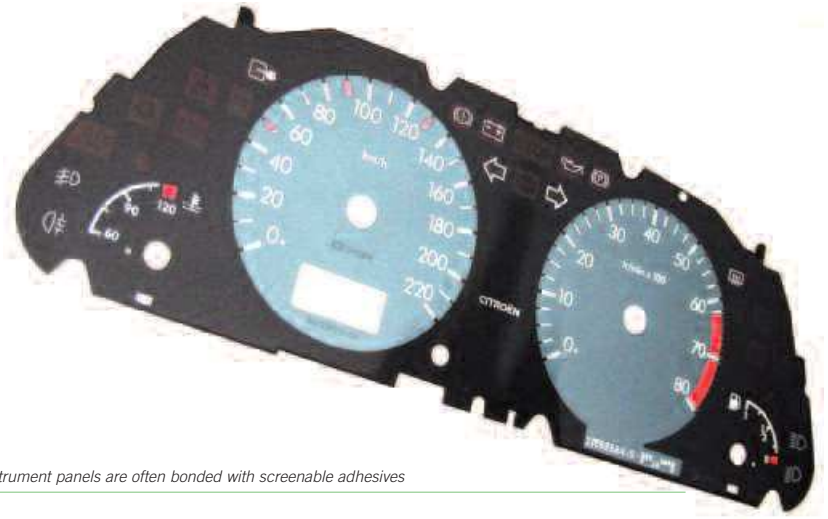
ACCURATE BONDING WITH PRINTABLE ADHESIVES

Guenther Perner takes a look at screenprintable pressure-sensitive adhesives for a variety of applications

THANKS TO FURTHER DEVELOPMENTS IN QUALITY, SCREENPRINTABLE PRESSURE-SENSITIVE ADHESIVES HAVE MADE THEIR MARK IN MANY INDUSTRIAL APPLICATIONS. FOR PROCESSING LIQUID ADHESIVES, THE SCREEN PRINTING METHOD HAS ESTABLISHED ITSELF ALONGSIDE THE CONVENTIONAL SYSTEMS SUCH AS CURTAIN COATING, SPRAYING, ANILOX AND KNIFE. THE SPECIFIC ADVANTAGES OF USING THE SCREENPRINTING METHOD FOR PROCESSING ADHESIVES WAS ALREADY RECOGNISED IN THE EARLY 1970S.

Today pressure-sensitive adhesives that have been printed on substrates can be found in many industrial areas of application, such as the automotive industry, household white goods and the electronic industry. More can be found in the production of optical displays as well as the advertising and sign-making industry.

The variety of these areas of application calls for an even greater variety of substrates, which have to be made self-adhesive. This begins with simple cardboard, metallic foils, coated films and the plastics industry. Here film, foam and hard plastic made from the usual materials (PVC, polycarbonate, polyester, polyethylene, polypropylene, PMMA, PUR etc.) are given a self-adhesive finish.



Instrument panels are often bonded with screenable adhesives

Heater shields in the automotive industry

Temporary tattoos are made from specially tested adhesives

Using the screen printing method, the liquid adhesive is printed through a stencil with a squeegee onto the substrate. The stencil is made from a woven polyester filament in which the mesh area is only open for the pattern of the adhesive to be printed. The choice of mesh (the number of threads and thread diameter) determines the thickness of the adhesive deposit. Dry coating thicknesses of 50µm are usual for technical applications today; for special applications where more thickness is required, it is possible to lay down 160µm.

ADHESIVE GROUPS

Screenprintable adhesives, which are liquid at room temperature, are usually solvent-based, aqueous dispersions or UV curable 100% systems. All three systems have their advantages and disadvantages.

SOLVENT BASED PRESSURE-SENSITIVE ADHESIVES

The advantages of solvent-based systems lie mainly in good printability, very good surface flow and extraordinarily short drying times, after which silicone paper can be applied or other processing steps can be carried out. The disadvantages of the system lie mainly in the flammability of the solvents used, as well as the fumes being breathed in. Added to this, solvents have to be used for cleaning and thinning.

The early screenprintable pressure-sensitive adhesives of the 1970s had low adhesive properties and were mainly used for decorative applications. The products available today have been optimised for industrial applications with regard to their tear strength, tack value, UV and heat resistance. Rubber and acrylic resin-based formulations are available which differ in price and property profile. Both product groups have very high water and steam resistance, which is especially advantageous for use where condensation occurs.

The economical rubber-based pressure-sensitive adhesives have very high initial bond strength but are yellow to brownish in colour, which intensifies when exposed to light. UV resistance is limited. Acrylic resin-based pressure-sensitive adhesives have only light colouration: they are resistant to light and UV and thus are good for outdoor applications. Initial bond strength is not as high as with the rubber-based adhesives, but develops within a few hours and then even exceeds the values of the rubber-based adhesives.

DISPERSION-BASED PRESSURE-SENSITIVE ADHESIVES

The advantages of the water-based systems lie in their environmentally friendly usage – the products are non-flammable and practically odour-free. The disadvantages are in the printability, which particularly affects the dwell time in the printing stencil. Drying times are longer than solvent-based products.

By being able to replace polyvinyl acetate by acrylic resin copolymers as a binding material for screenprintable pressure-sensitive adhesives, it was possible to advance into areas of application which were hitherto the reserve of solvent-based formulations. Good UV resistance, high heat resistance and the

Large format panels are examples of where high coating thicknesses are required

ability to prevent plasticiser migration are the advantages of this group. Limited water and steam resistance are the disadvantages.

UV CURABLE PRESSURE-SENSITIVE ADHESIVES

Only recently, liquid 100% systems have become available, which create pressure-sensitive adhesive when cured by UV rays after printing. The advantages of this range are mainly found in the problem-free application, long dwell times, good printability and excellent flow, fast 'drying' by chemical means and environmentally-friendly processing, as the liquid is 100% adhesive. Here additional equipment for drying and more comprehensive process monitoring is required.

The range of UV curable pressure-sensitive adhesives does not yet have the application variety of the dispersion-based adhesives, but augmentation is being worked on at full speed.

APPLICATION EXAMPLES

Self-adhesive products made with pressure-sensitive adhesives are in use in a broad range of industrial applications. The particular advantage in using screen printing for this class of adhesive lies mainly in the adhesive contours being exactly defined. Exact positioning to within millimetres, as well as fine filigree and stand-alone adhesive geometry, cannot be achieved with any other processing technology.

A special area of application for screenable, solvent-based pressure-sensitive adhesives is the transfer. Here we mean a decal, which is used for decorative purposes or in the advertising business. Because of the smooth and even adhesive film, only solvent-based rubber and acrylic resin formulations can be used. Where transparency and UV resistance are required, acrylic resin pressure-sensitive adhesives are used. Otherwise, the more economical rubber-based pressure-sensitive adhesives can be applied. Depending on the area of application and size of the motif, a differentiation is made between wet and dry transfers.

Semi-permanent advertising film for floor areas

SELF-ADHESIVE FINISH OF INSTRUMENT PANELS

The main area of application for screenprintable adhesives is for the self-adhesive finish of instrument panels. For optical display panels, polyester and polycarbonate film are mainly used; display texts, viewing windows and dials are then printed in different coloured and transparent inks. Die-cut parts, which have been finished with pressure-sensitive adhesives, are then bonded to injection-moulded housings and fibreoptics made from PMMA, PS, ABS, PA etc.

The main areas of application are instrument panels in the automotive industry and operating components of a wide variety of electrical devices. Screenable acrylate dispersions are predestined for this area of application. Laying down a very high coating thickness is possible due to the solids content; this is necessary when bonding to injection-moulded goods with their unavoidable pock holes. Specially formulated pressure-sensitive adhesives have an aggressive tack, which is important for successful bonding of difficult substrates. Finally, the adhesive film is transparent and is resistant to heat and UV light.

Printing is normally done using mesh with a thread count between 21 and 43 per centimetre – in special cases up to 8 threads per cm. After drying in a convector oven or drying tunnel, the product is covered with silicone paper and if required, is subsequently die cut. In order to achieve the best and reproducible adhesive results for industrial applications, it is recommended that bonding is done with pressure through a heated silicone rubber stamp (e.g. pressure dwell time 4-5 seconds, stamp temperature approximately 40°C with 3-4 bar pressure).

MEMBRANE SWITCHES

A further area of application is membrane switches, the upper film of which is for identifying and operating the circuits underneath. On the bottom side, dispersion or rubber-based (containing solvents) pressure-sensitive adhesive is applied by screen printing. After drying, the panel film can thus be bonded to the overlay underneath.

This overlay forms the second layer of the entire circuit and this is printed as required with, for instance, a silver conductive paste. In order to prevent contact with the under-layer film, a spacer is glued in-between, which can be made self-adhesive by screen printing. Still in evaluation is the development of a spacer which can be completely printed as pressure-sensitive adhesive.

It is also possible to provide a self-adhesive finish to the underside of the complete membrane switch, in order to facilitate positioning when applying to the final product.

SELF-ADHESIVE FILMS AND FOAMS

It is possible to furnish films and foams with a partial finish of pressure-sensitive adhesive where previously adhesive tape was used as a means of fixing. The selection of the appropriate pressure-sensitive adhesive system depends on what it is going to be used for. Restrictions only apply as far as soft PVC is concerned, because there is a danger of plasticiser migration into the adhesive layer, as well as unusual compounds which contain, for instance, PVDF.

Plastic film printed on both sides is used particularly for short term advertising campaigns in the fast food sector. In applications behind glass, the film has to be able to be removed from the glass without leaving any residue, and this can be best achieved by using cohesive and UV resistant acrylic systems.

To finalise from a selection of additional areas of application, I would like to mention foam bonding of mouse pads, screen dot shaped transfer adhesive film, rhomboid and line shaped adhesive systems for photo albums, tacky document security systems and rub-off letters and motifs.

SUMMARY

The advantages of processing with screen printing include:

- Exactly determinable adhesive contour, even for finest lines, stand alone dots and complicated geometrical patterns
- No overspray, no die cut waste or loss of adhesive through extensive area coating
- Definable and reproducible coating thicknesses by selecting different mesh types (from 5-160µm dry coating thickness per cycle)
- Economical series production through high coating speed and multiple repeat processing.

In the foreseeable future, when new raw materials can be combined with the relevant drying and cross-linking technologies in screen printing, we can look forward to even more areas of application for screenable pressure-sensitive adhesives. SP

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INTELLIGENT PRINTABLE FILM

Roel Meeusen introduces a new solution that makes full wrapping of vans a breeze

ONE OF THE MOST DIFFICULT GRAPHIC APPLICATIONS CAN BE FOUND IN A SMALL CORNER: THE ONE IN THE DEEP CORRUGATIONS FOUND ON MANY POPULAR VAN MODELS. ASK A RANDOM GROUP OF GRAPHICS APPLICATORS WHICH VEHICLE MODEL THEY HAVE EXPERIENCED PROBLEMS WITH, AND CHANCES ARE THE MERCEDES BENZ SPRINTER WILL SHOW UP ON TOP OF THEIR LIST.

The Sprinter can be considered a prototype of a typical European van. The corrugations on the side panels are there to strengthen the vehicle body; they also create headaches for professional applicators involved in vehicle wrapping. A combination of factors makes this application difficult:

- the graphic is stretched in three dimensions, which puts a lot of stress on the film
- the border of the 'valley' of the corrugation, where the film is stretched most, only allows a small area where the adhesive of the film can make contact with the vehicle body
- a typical digitally printed graphic consists of several layers (printable film, ink, overlaminate) and these components need to be fully compatible for the graphic application to last throughout its expected lifetime (usually 3-5 years)
- several automotive manufacturers are adopting new technologies in their paint systems to which adhesive systems react differently.

Typical graphic failures are film lifting or cracking in these areas. Different workarounds exist to prevent this from happening, but they all have their downsides. An often-used method is making cuts in the graphic to release the stress in the film. This method requires the cut film to be aligned well to get the desired visual appearance. If not done properly, the line of the cut is visible from close range, or the paint colour of the vehicle is visible as a line.

RISKS

The risk of this approach is that cutting the graphic can also damage the vehicle's paint surface. Even if it is not apparent during the application, it can still show up when removing the graphic and can be very expensive to repair, eating all profit out of the original application.

Another 'workaround' is to avoid the most risky areas by adjusting the graphic design to stay within certain confined borders of the vehicle. This, however, means compromising on the visual aspect of the vehicle wrap by not applying film in the corrugations of the vehicle. These days most brand owners would not accept this approach anymore.

The IJ380 Printable Film Solution 'remembers' its new shape

INTEGRATED R&D

3M has developed what it describes as the next generation of premium graphic films to overcome this well-known pain in the graphics industry. The IJ380 Printable Film Solution is the result of the joint development of 3M Controltac Graphic Film IJ380 and 3M Scotchcal Overlaminate 8580. More than five years of research and development went into this latest innovation.

3M was able to draw expertise from several of its businesses. For instance, scientists from its Automotive Division were involved to make sure the latest generation of automotive paint systems were used when testing the product's adhesion and lifting performance. The result is what 3M calls an 'intelligent' graphic: Controltac IJ380 and Scotchcal Overlaminate 8580 'remember' their new shape once applied.

They show virtually no tendency to return to their original shape, making them most suitable for extreme graphic applications, including full van wraps where 3D conformability is required. Controltac

Film lifting due to excess stress – a typical graphic failure in deep corrugations

IJ380 is suitable for screen printing and piezo ink jet printing with 3M approved ink systems.

Rigorous testing of products available on the market had shown that a thin overlaminate in combination with existing cast films did not lead to the desired results. Therefore it was decided to go back to the drawing board and develop these new films virtually from scratch. The guiding principle was to develop a robust graphic solution that was easy to apply and would minimise the risk of graphic failure. The result is a new film and a new overlaminate that can be applied in deep corrugations and 3D structures without having to apply excessive heat or to make stress-relief cuts, and a set of tools designed to aid with the application.

RECOMMENDED APPLICATION METHOD

3M's recommended application method for this new product involves bridging the graphic over the deep corrugation before warming up the film and pressing it in the channel.

Any proper application starts with proper cleaning, and the more irregular the shape of the substrate, the more important this step becomes. The main purpose of cleaning is because it is important to remove not only dirt and grease, but also silicone residuals from the paint that can seriously affect the adhesion.

During the cleaning step it is important to let the solvents evaporate from the substrate before starting the application and to dry lower parts of the vehicle (e.g. with a heat gun) to get rid of moisture that may have accumulated between rubber seals and wheel cases. After cleaning, the graphic can be positioned thanks to the Controltac feature, small glass beads in the adhesive that act as spacers and prevent premature bond of the film to the substrate.

This technology is especially useful in warm temperatures, when adhesives become tackier, to avoid the film from tearing when positioning the graphic. When applying pressure with a squeegee, the glass beads are absorbed in the adhesive which then makes direct contact with the substrate and provides the required bond.

APPLICATION IN DEEP CORRUGATIONS

When applying the graphic, the film is bridged over the deep channel. According to 3M, the heat of a standard hairdryer is sufficient to form the graphic in the corrugation. This is usually done manually using a cotton glove. The large application roller is designed to apply uniform pressure on the film without friction. Manual application by pressing the film with the finger into the corrugation can sometimes lead to visible application lines.

QUALITY CONTROL

After applying the graphic, quality control is necessary to verify that no air bubbles are left between the film and the substrate, especially in the critical areas such as the deep corrugations of blinded windows or protruding mudguards.

Air bubbles expand when exposed to higher temperatures and are the starting point for film lifting. By heating up the film, any air that is left will show up as a bubble and can be easily removed by pressing the film in the deep part of the corrugation using the small application roller.

As with any application, the quality of the job depends on a combination of a clean substrate, selection of the right products and the proper application method. SP

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CHEMICAL LABELLING IS SET TO CHANGE

Sem Seabourne outlines the new classification, packaging and labelling system to be used in the EU for chemical products and mixtures

IN JUNE THE EUROPEAN COMMISSION ADOPTED A PROPOSAL FOR CHANGING THE CLASSIFICATION, PACKAGING AND LABELLING SYSTEM USED IN THE EUROPEAN UNION FOR CHEMICAL PRODUCTS AND MIXTURES. THE NEW PROPOSAL FOR REGULATION WAS PUBLISHED AT THE END OF JUNE AND SEEKS TO ALIGN THE EUROPEAN SYSTEM FOR CLASSIFYING, LABELLING AND PACKAGING CHEMICAL PRODUCTS WITH THE UN GLOBALLY HARMONISED SYSTEM, KNOWN AS GHS.

This will result in new classification criteria, e.g. the threshold at which a chemical becomes toxic or harmful by inhalation, with new hazard symbols and labelling phrases. The new regulation will enact the requirement in the REACH (Registration Evaluation & Authorisation of Chemicals) for this activity related to notification of classifications, and the creation of an inventory of harmonised classifications and labelling.

BACKGROUND TO GHS

GHS is intended to be a worldwide system and was introduced by the UN in 2002. It is aimed at providing universal standards for health and environmental protection in countries with less sophisticated classification and labelling schemes than in the EU and other developed countries. This is widely considered to be useful in encouraging trade between countries where different classification schemes may have been applied.

GHS doesn't come with an inventory of substances – Europe will develop its own based on the existing Annex 1 from the Dangerous Substances Directive. However Japan has implemented GHS and developed an inventory of 1,500 substances, whereas in New Zealand their inventory contains >5,500 substances, so the use of the word 'harmonised' shouldn't be taken too literally.

GHS is a comprehensive scheme containing units known as 'building blocks' that governments can select from to build a classification system, so that although it may commence at an elementary level, it will continue to develop aligned with GHS building blocks applied in other countries. As the EU already has a sophisticated system originating with Directives 67/548/EEC and 88/379/EEC (now 1999/45/EC) for classifying chemicals and mixtures (preparations), the Commission intends to implement most of GHS.

DIFFERENCES AND DIFFICULTIES

The intention is to have a system offering the same level of protection as our existing system. However there will be some differences, and exporters of chemicals may face difficulties where they shall need to be aware of which particular GHS 'building blocks' a destination country has implemented.

For example, the EU will not use Hazard Category 4 of GHS for Flammable Liquids, and Hazard Category 2A/B for Eye Irritation will not be implemented. In the case of Acute Oral, Dermal and Inhalation Toxicity, Europe will not implement Hazard Category 5, although some Scandinavian member states would like to do this as their laws were tougher in this respect before EU membership. Environmental classification is likely to become much more sophisticated with three acute and four chronic toxicity categories. The EU will go beyond GHS to protect pollution levels from ozone depletants.

There will be a relatively small change to Safety Data Sheets in that Sections 2 (Composition) and 3 (Hazard Identification) are reversed in the GHS version, although the EU will not be vigorously enforcing this aspect in the early stages of transition.

Individual chemicals will be subject to the GHS-based regulation from 1 December 2010 and it will apply to mixtures (the new name for preparations!) from 1 June 2015 when the existing system is repealed. Suppliers are free to implement changes earlier than the deadlines in this case.

THE PROBLEM OF PICTOGRAMS

One practical problem faced by suppliers is fitting the new pictograms onto labels. The new symbols are diamond-shaped whereas the existing ones are square, hence to have the same symbol size, the new pictogram takes up much more valuable label space than is needed for all the many precautionary statements and different languages. Again, GHS does not come with codified precautionary statements; this will be generated by the Commission to have some level of cross referencing with the current system.

The appearance of new symbols may well confuse many chemical users and there will be a need for an information campaign. It is expected that the GHS approach may well capture some products not currently classified and it may change the hazard class for others. Clearly there will be much work required in assessing all existing data because in effect, all existing classification will need reviewing.

Since new pictograms are being used with new phrases, all existing EU labelling systems will have to be changed. This adds up to a costly exercise for chemical producers but the economic impact assessment (see SEC (2007) 853) claims to show that the establishment costs will be offset by cost savings in export markets. The overall cost has been assessed by one London-based consultancy as "millions of Euros" – the resultant effect on protection levels in Europe will be minimal. SP

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Existing 'harmful' symbol

Existing (respiratory) irritant symbol

New 'harmful' symbol

New respiratory irritant symbol

STRATEGY DEVELOPMENT AGAINST PRODUCT PIRACY

Peter Paul gives an overview of the planning and development of protective concepts for the prevention of product piracy

ACCORDING TO INTERNATIONAL EXPERTS, THE PROPORTION OF PRODUCT FRAUD ALREADY AMOUNTS TO 10% OF THE WORLD TRADE VOLUME. THE DAMAGE WHICH RESULTS TO THE LEGAL BRAND OWNERS IS ESTIMATED TO BE AN AVERAGE OF ABOUT €500 BILLION. THESE LEADING BRAND COMPANIES COULD EMPLOY MORE THAN 100,000 ADDITIONAL PEOPLE IF THERE WAS NO PLAGIARISM.

Criminal plagiarists take possible profit from legal manufacturers and thus the base for innovation and employment, as well as evading any responsibility or liability for products manufactured under the wrong name. It is no wonder that brand owners are constantly searching for new and better systems to protect their products and brand integrity.

Product packaging, labels or the product itself is usually already printed and coded, so it is a natural step to add suitable elements with an extra security function.

NEW CRIME DIMENSIONS

The unlawful use of logos, names and trademarks is conservatively known by the term 'brand piracy'. Product piracy now goes one step further and is the forbidden copying and multiplication of goods including the misuse of the legal brand owner's invention, design and manufacturing rights. In former times brand piracy was almost exclusively in textiles and wrist watches; today it also concerns software, spare parts and electronics or pharmaceutical products.

No sector is safe. Far more dangerous than a faked watch is, for instance, spare parts for cars. On the webpage of the German Customs Office is the following statement:

"In spring 1998, Formula 1 world champion Mika Häkkinen got a fright during the San Marino grand prix on the racing track at Imola. He had to give up at an early stage of the race when he was lying in a leading position, since a falsified ball bearing did not withstand the loads of the race. The supplier of the racing stable had received a copied spare part from an Asian product forger, which none of the experts had recognised as such!"

Security elements on banknotes, identity cards or government documents are especially important

Apart from the direct risk of damaged property, it is also a danger for the health or even the life of people. Here the fun stops; almost certainly action is needed for most manufacturers of products susceptible to plagiarism.

SOLUTIONS FOR MEDIUM-SIZED MANUFACTURERS

Global companies recognised a long time ago the risk of brand piracy and created their own departments dedicated to the development of systems and technologies for the protection and identification of their original products. For medium-sized enterprises without the necessary personnel or material resources, the answer is, in many cases, collaboration with external experts.

An analysis of the situation, the formulation of a security strategy, the development and production of the required printing inks with good access to security technology are important things to consider. The Printcolor group develops drafts, products and combinations taking into account the available up-to-date base technologies, and has an extensive network of cooperation with universities, research institutes and manufacturers of relevant materials. There are no off-the-shelf security products as individual, project-related system solutions are exclusively developed.

THE SECURITY STRATEGY CONCEPT

The first step in the development of an effective security strategy is to analyse the product, the manufacturing steps, the packaging and the possible attacks by forgers. The manufacturer's whole distribution process up to the end user is taken into consideration. At this analysis phase an understanding of the cost of the security elements should be gained – it makes little sense for an air filter with a market value of €6 to develop security features which may raise the manufacturing cost by 20% per unit.

The analysis of the production procedures gives an important indication of which current work processes can have a security element added. For instance, the air filter in the course of the printing of the manufacturer's data could receive a simple, optically identifiable security characteristic which distinguishes it from a fake.

NEW FORMS OF CRIME ORGANISATION

Nowadays forgers are no longer individuals in grubby garages, but large, well-organised companies with modern means of production and specialist staff. These companies, however, are familiar with a lot of confidential information about protection technologies. An additional problem is the internet where forums provide information for forgers and allow the exchange of ideas to take place. It is the purpose of all defence measures to always be a step ahead of the forgers.

THINKING AS COUNTERFEITERS

All possible attacks by forgers are naturally dependent on the type of product. For example, here is a list of possible attacks on a simple work identity card:

- imitation – complete forgery of the original
- change – change of information from the original
- exchange – change of the personal photo from the original
- cannibalisation – use of genuine parts for forgeries
- theft – theft of original components for forgeries
- impersonation – use of the original for other persons.

For each of these possible types of attack a way must be found to prevent them or to make a fake easily recognisable. It is not possible to block all potential attack types

Luxury articles are popular objects for fakes

with one measure, so a golden rule in the concept of security elements is: the more elements or combinations of elements, the greater the protective effect. It is important to foresee possible attacks and to know the resources and technologies used by the forger. To be able to foresee forger attacks requires a lot of experience, and a good understanding and overview about the state of the art in very different scientific disciplines.

CLASSIFICATION OF SECURITY LEVELS

Strictly speaking, a proper classification of security levels is not possible, because it depends in particular on the topical technology projection compared to the ones of the forgers and basic conditions of the product to be protected. However, for an understanding of the growing protection available, the following overview should serve in relation to printing inks:

- Technology is generally accessible and available – for example: interference pigments; check optically.
- Technology is limited accessibility and available – for example: UV luminescence; check with easy aids.
- Technology is planned for security applications – for example: IR luminescence; check with special aids.
- Technology is planned for security applications and is subject to strict control – for example: individual marker and tracer; check with special equipment and special software solutions.
- Technology is planned for security applications and is delivered only to one specially authorised user – for example: bank note printing; check with sophisticated, stationary aids and forensic technology.

Every individual security level can be combined with any other to reach graded degrees of difficulty for imitation. With current technology we usually do not rely on a single security characteristic but use combinations of substrate, adhesive, printing ink, laminate, hologram foils etc.

SECURITY FEATURES FOR PRINTING INKS

For cases in which security elements should be generated by printing inks there are many ways to achieve sufficient protection. As well as 'visible' technologies such as metal shine, interference, metameric colour pairs and tactile effects, there are 'invisible' technologies which need a special external stimulus for recognition: certain light spectra beyond the visible spectrum, for instance, as well as temperature, chemicals, friction and some others.

Silk screen colours with magnetic or electric qualities have attained an increasing meaning. Suitable developments now include printable data memories and electronic transponders which can be read at a distance of several metres to allow verification of objects.

TECHNOLOGICAL ADVANCES

The development of new security elements advances rapidly. Specially grown crystals and the latest developments from the fields of bio- and nanotechnology allow the use of biologically or synthetically manufactured tracers. In the production of these items, the costs of the manufacturing equipment and the very specific manufacturing knowledge present hurdles that are difficult to overcome for even the most up-to-date brand pirates. SP

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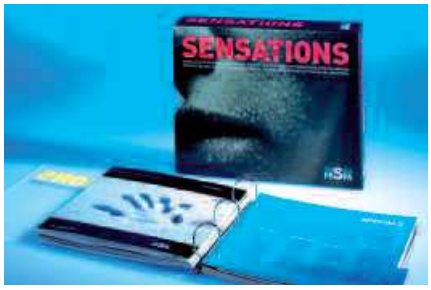
SPECIAL EFFECTS ADD POWER AND PUNCH

Marcus Timson asserts that, when it comes to achieving a bright, punchy, vibrant image, nothing can touch screen

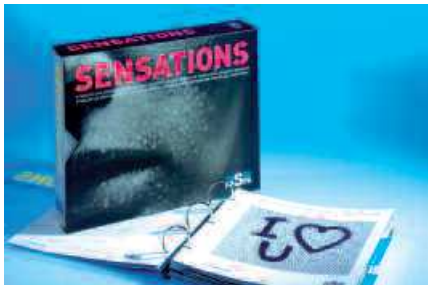
THE SLOGAN OF FESPA'S 'SENSATIONS' CAMPAIGN TO REINFORCE MARKETERS' AWARENESS OF SCREEN PRINTING – 'STIMULATE THE SENSES WITH SENSATIONAL EFFECTS' – CAPTURES SCREEN'S CAPABILITY TO CREATE STUNNING, STARTLING, ATTENTION-GRABBING PRINT.

As printing becomes ever more tightly integrated with digital technologies such as the internet and database management, the 30-plus special effects featured in the 'Sensations' sample book at the heart of the campaign are powerful reminders of the sensory, tactile qualities that printers, design agencies and their clients can enlist to make their messages louder and clearer.

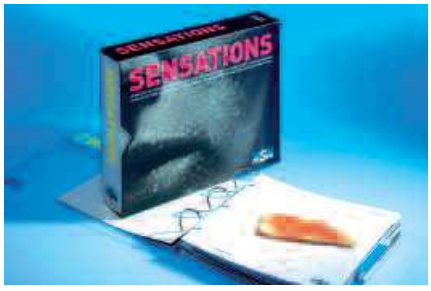
Screen printing's continuing role in the dynamic mix of technologies available to brand-owners is vividly demonstrated by one of the UK's largest producers of printed point-of-purchase (POP) material. Around a printroom that includes large-format offset and digital presses as well as screen printing machines, the company has created what is described as a "total communications resource for retailers and brand owners."



The specials section, containing 14 selected special effect inks



An example of hammer effect varnishes



An example of tactile varnishes

POP PACKAGES

Seeing this in practice provides an eye-opening insight into printing's contribution to a highly sophisticated operation that, in the words of the sales director: "applies direct marketing strategies to provide retail clients with POP packages tailored down to the 'micro' level of individual retail outlets."
For example, a mobile phone retailer whose national network of branches covers small towns as well as giant out-of-town shopping malls can expect each branch to receive POP material designed specifically for it alone.

He explains: "The package will be tailored to that outlet's profile – the stock it holds, the models it mostly sells, the average value of the sale, even the height of the ceilings in the unit. No longer does every outlet receive the same POP – it gets a package that meets its needs, in the same way that variable data printing can deliver precisely targeted mail shots."

The impact of this approach on print-runs is as one would expect – more versions, shorter runs. In the same way, clients' needs for a greater variety of POP packages means that major printers have to offer all three processes – offset, digital and screen – and frequently has to combine two or more of these for maximum impact.

NOTHING CAN TOUCH SCREEN

"When it comes to achieving a bright, punchy, vibrant image, nothing can touch screen," says the sales director. "A special effect, used imaginatively and appropriately, can create that moment where the consumer interacts with the print. In the most striking cases, they'll do a double-take – and how do you assess the value of a moment like that for a brand owner?"

Examples of recent campaigns where screen printing was used to bring print to life: a calendar where the addition of screen-printed liquid silver adds a high sheen that lifts the images on every page, a Christmas campaign for a retailer that combines liquid silver with the added sparkle of diamond enhancement across a full range of POP collateral, and an automobile poster campaign using thermo-dynamic inks where text promoting the climate control system becomes visible only when the temperature hits the right heights.

"Interactive enhancements using textured and thermo-dynamic inks and varnishes work just as well – sometimes better – on smaller items," the sales director explains. As an example he cites a striking case where a thermo-reactive ink was applied to a health-educational item to hammer home the importance of keeping your hands clean: touching the sheet caused the ink to vanish and reveal an illustration of teeming bacteria. "Choosing that one special effect, and using it imaginatively and appropriately, got the message across far more powerfully than any text or graphics could."

COMBINING SCREEN AND OFFSET

In a final example, they combined screen printing with offset on an automobile brochure. "We screen-printed what appeared to be mud on to illustrations of the vehicle using water-soluble inks. The client's mailing included a miniature bucket and sponge that recipients could use to 'clean' the bodywork and reveal the car in all its glory."

Talking to the company, it's clear that the close relationship it enjoys with its clients is every bit as important as the technological know-how and firepower it has at its disposal. "We run regular technology workshops to demonstrate what we can achieve with the various processes, and educate clients in what they can do to stimulate the creative process," says the sales director. "The aim is to encourage them to involve us as early as possible in a project, and treat us as a source of creative input."

Helping screen printers to establish similar relationships with existing and prospective clients is a key objective of the FESPA 'Sensations' campaign. As FESPA's CEO, Nigel Steffens explains: "Screen printing has to compete with other media and technologies for its share of companies' marketing budgets, and 'Sensations' is a reminder of what makes the process epical – its ability to bring print to life by creating visual and sensory effects that enhance marketing messages with an almost physical force. That said, there are people in the creative supply chain who don't appreciate the power of the process – 'Sensations' is designed to inspire, excite and enthuse them, and in the process to help screen printers improve their businesses." SP

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HP Scitex scores with Manchester United

The artwork above the club shop promotes Manchester United's current home kit

HP Scitex technology has been used to print a giant-sized graphic of the Manchester United football team for its Old Trafford ground in the UK. The job comprised a series of window graphics. Following a specially commissioned photo shoot with the Manchester United team, the artwork was printed at 336 dpi in six-colours on a clear vision adhesive substrate in two hours. MediaCo, a large format printing company, then cut the panels, fitted it together and installed the window graphics, which took a further two days. The artwork, measuring 15x49 m, is on display above the club shop.

MediaCo installed the HP Scitex TJ8300 three weeks prior to securing the Manchester United job. It has also installed an in-line Fotoba automated cutter which can cut a full sheet in 45 seconds. "The high throughput and high quality output of the HP Scitex TJ8300 were what initially attracted MediaCo," explained Vincent Randall, director of MediaCo. "The machine fits our profile perfectly and will be instrumental in helping to broaden our product offering. By buying this product we hope to achieve a bigger market share of floor and window signage and the outdoor and indoor signage markets." SP

XAAR ramps up production in the UK

Xaar's high-tech production facility in Huntingdon, UK, is now fully operational and producing the Xaar 1001 printhead. The company has also successfully completed certification of its Quality Management System to the international quality standard ISO 9001:2000.

The Xaar 1001 printhead, designed for high-speed, single-pass applications, is based on Xaar's Hybrid Side-Shooter TF Technology. Producing dynamically variable drop sizes, this new printhead architecture combines advanced piezo technology with Xaar's 'through flow' design. Key features include a high performance specification, good drop placement accuracy, variable dynamic drop sizes, self-priming and self-clearing. The TF architecture provides a wide operating window for a wide variety of inks. SP

BioVu inks used for eco-friendly film promotion

Schawk Los Angeles, in partnership with Universal Studios, recently produced a 'green' outdoor advertising campaign for the release of the film 'Evan Almighty' using EFI's VUTEk BioVu inks.

"Universal Studios is working to reduce its environmental footprint as Hollywood goes increasingly green," said Stewart Huey, Universal Studios' vice president of creative operations for print. "We believe 'Evan Almighty' is the first carbon neutral comedy film production in the world, and we wanted to carry that into our advertising campaign. All of our vinyl pieces, including outdoor advertising campaigns, boards in both our Orlando and Hollywood parks, promotional banners for events and some in-theatre displays, are being produced using VUTEk BioVu inks and biodegradable BIOflex vinyl from Ultraflex."

The BioVu solvent-based superwide printing inks are made from a renewable resource – corn – and are the only inks recognised by the US Environmental Protection Agency. They deliver the benefits expected from traditional solvent inks, have no harmful Volatile Organic Compound emissions and are non-hazmat, lowering disposal costs.

The 'green' outdoor advertising campaign for 'Evan Almighty' used BioVu inks

The greener Hollywood is reducing its estimated 140,000 tons of ozone and diesel pollutants from trucks, generators and special effects, recycling hardwood sets that previously made their way into landfill and participating in various carbon-offset initiatives. SP

Gallus opens new facilities in Switzerland

In a ceremony attended by representatives from politics and business, the Gallus Group officially opened its new production facilities for screen printing plates in Herisau, Switzerland. The new facilities, which cost approximately €7.3m, take over the global supply of Screeny screen printing plates.

Peter J Hauser, Chairman of the Board of Directors at Gallus, stressed that the new production facilities in Herisau reflect the Group's commitment to eastern Switzerland as a business location. He added that the production site provides Gallus with trained personnel, an ideal infrastructure and important synergies with Huber + Suhner, the company that owns the land where the production facilities have been built.

The Gallus Group officially opened its new production facilities in Herisau, Switzerland

The Gallus Group is safeguarding long-term supplies for the screen printing plate business, in addition to the manufacture of label presses. Around 20 new specialist jobs have also been created in Herisau. SP

Durst receives top prize for flatbed printer

The Rho Pictor from Durst was awarded 'Best Flatbed Printer 2007' at the recent European Digital Press Association (EDP) Awards ceremony, held at FESPA in Berlin in June. Richard Piock, CEO of Durst Phototechnik, commented: "We are very pleased to have received the award from the EDP Association, which recognises innovation and quality, two of the most important aspects of all Durst products."

The EDP Awards process evaluates nominated products for the previous year based on efficiency, performance, quality/price ratio, design and ease of use. The awards are aimed at helping to promote the digital printing market and will be held on an annual basis. SP

The Rho Pictor was voted 'Best Flatbed Printer 2007'

Océ introduces award-winning printer

The award-winning Océ Arizona 250 GT

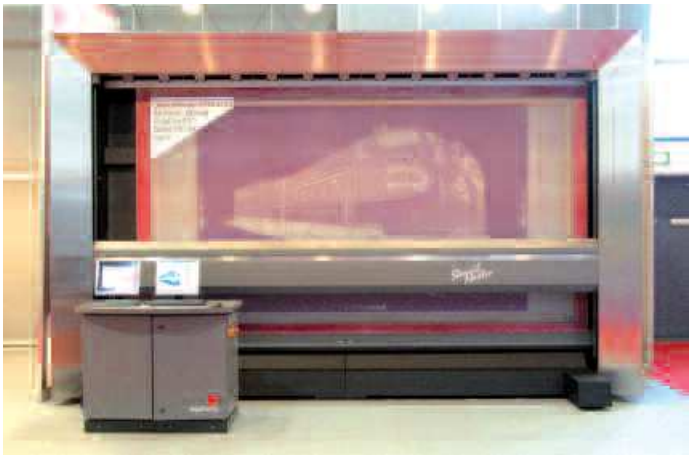
Océ is introducing its next generation Arizona 250 GT printer for a broad range of applications. It uses UV curable inks and Océ VariaDot imaging technology to deliver near-photographic image quality, includes a true flatbed platform to print onto a wide variety of rigid substrates and features an optional roll-to-roll module for printing onto flexible media.

The Océ Arizona 250 GT can print onto rigid media up to 1.25 m wide x 2.5 m long x 48 mm thick, and on irregularly shaped or non-square items, heavy substrates such as glass, or materials that have an uneven surface such as wood. An optional roll-to-roll module can be added to print onto flexible media, including vinyl, self-adhesive vinyl, scrim banner, paper and blue backed paper, up to 2.2 m wide. It uses four-colour (CMYK) UV curable inks and Océ VariaDot imaging technology, and delivers a true production print speed (sellable prints) of 16 m^2 per hour.

At its preview at the SGIA show, the Océ Arizona 250 GT won the Digital Printing & Imaging Association (DPI) Vision Award, which is given to an exhibiting manufacturer whose new product has the best chance of positively impacting the digital imaging industry, based on the product's relevance to the market, potential industry influence and prospective value to the product's end users. SP

SignTronics updates StencilMaster products

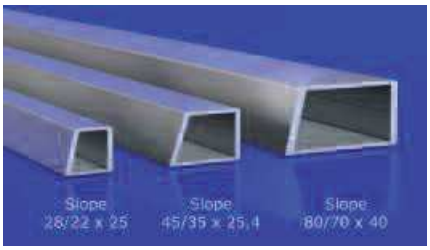
The STM 1621 product line has been improved, updated and extended. The mechanical stability of the StencilMaster machine has been improved to accept bigger sizes with customised milled profiles to give a high ratio on stability and weight.



The StencilMaster product line has been updated

The STM 1612 (for frame sizes up to 1850x1450 mm) is standard with an inline processing system and has an option of two optical imaging heads. It will be shown for the first time at SGIA 2007 in Orlando (USA) and at Productronica in Munich (Germany). The STM 2316 (for frame sizes up to 2700x1800 mm) replaces the STM 1621. Its landscape size allows a better integration with inline systems. The STM 3124 / 4124 have frame heights of 2600 mm and widths of up to 3400 and 4600 mm respectively.

Early in 2008 new UV-imaging heads will be available for the STM 1612 HD with a resolution of 2400 dpi, making it possible to image with around 10 micron pixels on screen or plate. It will be shown for the first time at Productronica. All StencilMasters are prepared for inline processing systems as standard. All types of emulsions and capillary film can be imaged on the StencilMaster with adapted production speeds depending on mesh, colour, thickness and type. SP



Hurtz has added three aluminium slope sections for screen printing applications

New slope sections from Hurtz

Hurtz has extended its range of professional sections for screen printing by adding three new aluminium slope sections. The smallest new slope section, which measures 28/22 x 25 mm, was developed to provide a lightweight alternative to cast frames.

The second of the new slope sections – 45/35 mm with a height of 25.4 mm – was developed for use in the electronics industry. The latest product is the slope section 80/70 mm, with a height of 40 mm, developed to supplement large-format prints (e.g. glass printing). Hurtz now offers a complete range of products for silk screen printing.

The slope sections are robust, have a broad adhering side and withstand higher fabric tensions such as, for example, those encountered on modern computer-to-screen systems, coating machines and direct projection. An advantage of the sloped interior edge is the quick and easy cleaning of the frame. The frames with slope sections are easy to use as the development remit stressed the need for the lowest possible weight at the highest possible strength. SP

Mutoh releases 'waveform' printer

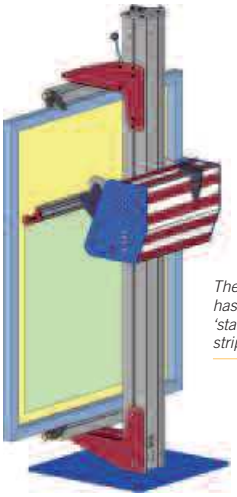
Mutoh Europe, manufacturer of wide-format piezo inkjet printers, has launched its new Spitfire 100 Extreme. This machine is a 2.6-metre high volume mild solvent printer incorporating Mutoh's intelligent interweaving print technology (i2), which allows bi-directional printing of images as wave sequences eliminate banding. The printer delivers good production quality printing at 42 sqm/h and top speeds of up to 81 sqm/h.

The Spitfire 100 Extreme incorporates a newly-designed main board to allow faster print speeds. With its new i2 technology, high-performance Spitfire mild-solvent ink is laid down in carefully optimised waveforms rather than straight lines. The Spitfire 100 Extreme will be delivered as standard with a fully motorised heavy-duty unwinding/winding system for media loads up to 100 kg, allowing unattended roll-to-roll printing. SP

Grünig's patriotic automatic coater

Grünig has devised a special model for the SGIA 2007 exhibition in Orlando, Florida (USA) which combines the advantageous features of a wide range of available coating equipment but can be offered at a special price. In addition, the G-Coat 404 US-Coater automatic coating machine has been painted in the colours of the flag of the USA – a new 'stars and stripes' design to confer an emotional touch to the machine.

This special model is designed for automatic screen coating up to a maximum frame format of 49x59 inches. All important coating parameters can be programmed and coating troughs with exchangeable edges have also been used for this particular version. Visit the Sefar Printing Solutions booth (1212) at SGIA '07 for more information on the US-Coater. SP



The US-Coater has a patriotic 'stars and stripes' design

ErgoSoft RIP supports new printer

Mimaki presented its new JV33 solvent printer at Fespa 2007 in Berlin, supported by ErgoSoft's RIP software. ErgoSoft also received three Fespa Digital Print Awards.

The piezo printer is available in widths of 130 cm and 160 cm. According to Mimaki, its new print head technology and different raster algorithm with ErgoSoft's RIP software increases the printing speed by up to 30%. The JV33 has only one high-speed print head, but with 1,440 nozzles. An additional heating system reduces drying time of the media. Users can choose between 'Stochastic' for fast production or 'Smooth Diffusion', which is suitable for fine art printing. SP

Orders for blue laser exposure technology

Following the launch of its JetScreen DX Computer-to-Screen (CtS) blue laser imaging system at FESPA 07 in Berlin, Lüscher has reported the first blue laser exposure installations for large format textile and screen printing stencil productions for customers in The Netherlands, Sweden, USA, France, Portugal and Australia.

The direct blue laser exposed stencils have crisp stencil qualities, fast imaging or exposing speed and cost savings through the elimination of consumable products. Since the introduction of the JetScreen WAX CtS, Lüscher has installed more than 450 CtS units worldwide using a hot melt masking product. Both CtS systems will be manufactured for printing frames ranging from 1600x1800 mm to 3800x8000 mm. SP

The JetScreen DX CtS blue laser imaging system was launched at FESPA 07

KEEPING IT IN THE FAMILY

Besides being the father and son combination behind a company that is a leading supplier to the screen printing industry, Alex and Manuel Zuckerman have also both played active parts in ESMA

The Zuckermans with Michèle Joly, manager of the screen printing department at Fimor

ALEX ZUCKERMAN TURNS 60 THIS YEAR, THE SAME YEAR THAT FIMOR WILL CELEBRATE 30 YEARS OF BUSINESS. ALEX STARTED FIMOR IN MAY 1977 WITH MICHÈLE JOLY, WHO IS STILL MANAGER OF THE SCREEN PRINTING DIVISION. HE NOW CHAIRS FIMOR AND THE HOLDING COMPANY.

His son, Manuel, is 36, married and living between Le Mans and Paris. After studying in France and Canada, where he graduated with an MBA, he gained experience in Fimor's US division before joining the export department of Encres Dubuit, a French screen ink manufacturer, where he worked for four years. He then spent three years at Autotype (now MacDermid Autotype) before returning to Fimor in 2000.

"This gave me the opportunity to deal with some of the many aspects of screen printing, from textile to electronics, from graphics to labelling, from packaging to ceramics," Manuel explains. "I had not anticipated a career in the screen printing industry, but I have always enjoyed its many facets, the variety of the company profiles and the fact it is present in every country in the world."

On rejoining Fimor, Manuel became more involved with European screen product manufacturers as well as becoming an active participant in the 'French Island', a group of four French companies involved in screen printing who exhibited together at international shows to maximise exposure.

"This was an informal link outside ESMA but it showed me that partners facing the same challenge in the industry could benefit from working together," he says.

Alex Zuckerman, co-founder of Fimor and former Vice-President of ESMA

INVOLVEMENT WITH ESMA

The Zuckermans have been involved with ESMA since its early days. In the early 1990s Michel Caza, the former Fespa Chairman, suggested Alex join the Association; he became Vice-President a decade later. "At the time only screen printing supply manufacturers were involved," Alex recalls. "Now digital technologies are involved too."

During his time on the ESMA committee, Alex created and chaired the Industrial Applications Committee. "ESMA could have done even more for the benefit of European and world users of the screen printing technique," he says, "but ESMA developed a few years too late when screen printing started declining in graphic applications."

Manuel got involved with ESMA from 2001 when he took over some management duties from Alex. "Fimor and its management has actively participated in ESMA since its early days to support our industry," Manuel says. He was elected the EPP Committee Chairman in 2005.

Manuel believes that ESMA has matured in the last few years. "It had to confront the slow but solid international growth of screen printing with the fast but shaky pace of digital," he says. "A key recent development has been a more recent trend to move towards strong industrial screen printing, possibly at the expense of graphic-only areas. The new initiative of collating industry statistics is also a very important development for ESMA."

THE VALUE OF MEMBERSHIP

Both father and son see one of the key benefits of ESMA membership as having the opportunity to network with associates in the same industry. "ESMA is a unique place for the leading industry players to meet and address all the issues that can or must be handled as a group," Manuel explains. Alex agrees: "ESMA is important to us all to network with each other, and also to consolidate Europe as the leading continent for decoration products, whilst the users are mostly in Asia and America!"

"It is a gauge of credibility to third parties because it shows your commitment to the industry and the respect of certain rules, as the Association has a code of conduct which members adhere to," Manuel continues.

Manuel Zuckerman followed in his father's footsteps by running the company and becoming involved with ESMA

"It is also a source of valuable information and is an effective way to approach new markets through preferential relations with other international associations, exhibition organisers or our own technical seminars."

It isn't only ESMA members who benefit from being a part of an association of leading industry players – so do their customers. "ESMA members' customers should know that their suppliers are committed to respecting certain rules and in particular environmental laws," Manuel states. "They can also access updated technical information through the website and through events sanctioned by ESMA."

And what does the future hold for ESMA? "ESMA will continue to represent the leading European players in specialist printing," Manuel asserts. "It will become more visible internationally, in partnership with trade associations, show organisers and our media partner Chameleon Business Media. Following the trend in the printing business, it will become more involved with various specialist markets like the glass industry."

WORKING FOR THE FAMILY COMPANY

Manuel is now General Manager of Fimor. "My hardest task is to create the conditions for my colleagues to be efficient in their work, whether in sales, production or administration," he says. "I have to follow the market closely so I am directly involved with several key accounts worldwide. I regularly follow the actions of our three international subsidiaries, including a plant in the US and an office in China. With over 85% of our sales exported worldwide, we must deal with fluctuating exchange rates, local regulations, copyright infringements in Asia and so on."

Fimor squeegees are present in all screen printing markets. "The squeegee is often not considered by the end user because of their overall low value in the production chain," Manuel explains, "but it is really the link between the machine and the printed object so if you don't choose it well and don't maintain it well, you will not profit from all the other expensive products you're set up to use!"

ATTENDING INDUSTRY CONFERENCES

One area that has grown over the years that father and son have been in business is the trade exhibition arena. However Manuel attaches great value to selecting the right event for a particular market sector.

"For Fimor, trade events are very important," he says. "We have put a lot of emphasis into participating at many local shows to be close to our end user customers. Because we work on a strict basis with distributors only, it is important that we keep a direct contact with end users, to hear what they think about our products or squeegees in general. Along with personal visits, such discussions during trade events help us to understand the market we are in and to be more than just a supplier of polyurethane parts. We participate at general screen printing shows such as FESPA and SGIA, and we now try to be present at specialist shows such as GlassPrint to meet industrial printers."

Following on from the successful Computer to Screen Seminar held in Frankfurt, Germany in February 2007, ESMA is planning to stage more conferences in the next year to spread technical knowledge. Organised jointly by ESMA and Chameleon Business Media, the GlassPrint 2007 conference and exhibition will take place in November, also in Frankfurt.

"There are many fairs and conferences for the glass industry, and many others for specialist printing, but to my knowledge, GlassPrint is the only one combining both worlds," Manuel explains. "Glass manufacturers can send their production teams involved with printing at a very reasonable cost to a focused event where they will meet experts in a convenient and productive session. I think the name 'GlassPrint' says it all!" SP

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FESPA 2007 attracted over 24,000 international visitors

Hellmuth Frey, outgoing President of FESPA, opens the 2007 show

FESPA 2007 BREAKS PREVIOUS FESPA RECORDS

OFFICIAL STATISTICS FROM FESPA 2007, HELD IN BERLIN, GERMANY, FROM 5-9 JUNE, SHOW THAT THE EXHIBITION SUCCEEDED IN BREAKING ALL PREVIOUS RECORDS FOR FESPA SHOWS. OVER 661 EXHIBITORS SHOWCASED THEIR PRODUCTS, AND A RECORD 24,232 INDIVIDUAL VISITORS ATTENDED THE FIVE-DAY SHOW – AN INCREASE OF 20% ON FESPA 2005 FIGURES. A SIGNIFICANT PROPORTION OF VISITORS RETURNED TO THE HALLS ON CONSECUTIVE DAYS, RESULTING IN OVER 37,500 VISITS.

Visitors came from over 125 countries; around 60% of visitors came from outside Germany, the top visitor nationality attendance being Italy, Poland, Netherlands, United Kingdom and Spain. Visitors from eastern European countries represented 12% of the show's overall attendance.

Visitors were able to experience many new products and developing technologies at the show. Exhibitors were impressed with the volume of traffic to their stands and with the international profile of visitors.

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FORTHCOMING FESPA EVENTS

FESPA World Expo India
(7-9 December 2007, New Delhi, India)

FESPA Digital Printing Europe 2008
(1-3 April 2008, Geneva, Switzerland)

FESPA World Expo Asia-Pacific
(27-29 November 2008, Bangkok, Thailand)

FESPA 2010
(8 -12 June 2010, Munich, Germany)

www.c-s-t.de

www.ergosoft.net

www.durstonline.com

www.esma.com

www.cbm-ltd.com

www.encresdubuit.net

www.serilor.com

www.fotec.com


www.kamman.de

www.hmantel.ch

www.sericol.com

www.kiian.it


www.marabu-inks.com

www.grunig.ch


www.kiwo.de


www.mhm.at

www.harlacher.ch

www.lmal.co.uk


www.nazdar.com

www.hp.com/go/scitex

www.luescher.com


www.nur.com

www.hurtz.de

www.macdermidautotype.com


www.oce.com

For a full list of companies who exhibited at FESPA 2007 visit www.fespa2007.com

www.printcolor.ch

www.sign-tronic.ch

www.tiflex.fr

www.quimovil.com

www.sps-rehmus.de

www.ulano.com

www.remco-chemie.de

www.staedtler-inkjet.com


www.vfp-sa.com

www.ruco.de

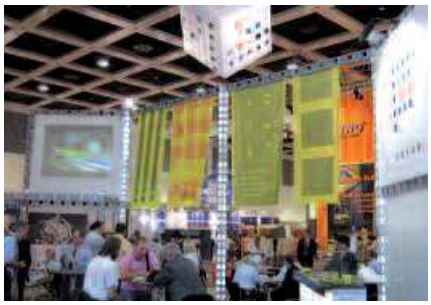
www.sunchemical.com

www.visprox.nl

www.saati.com

www.technigraf.de

www.efi.com


www.sefar.com

www.thieme-products.com


www.waengi-mesh.ch

For a full list of companies who exhibited at FESPA 2007 visit www.fespa2007.com

GLASSPRINT 2007

21–22 November 2007; Frankfurt, Germany

GLASSPRINT 2007, EUROPE'S LEADING EVENT FOR THE DECORATION OF GLASS, RETURNS TO FRANKFURT, GERMANY IN NOVEMBER 2007.

Decoration is a key process in the manufacture of architectural, automotive and hollow glass and adds considerably more value to the end product. GlassPrint 2007 is a two-day conference that will recognise the importance of this expanding and developing sector and will present glassmakers and glass decorators with the latest trends and new developments for the decoration of container and flat glass.

Incorporating screen, digital and pad printing, delegates from around the world will be offered English language sessions covering:

- Keynote addresses
- New directions in heavy metal-free inks
- Innovation in digital printing
- Advanced machinery technology
- Efficient pre-press technology
- Group discussions.

PRESENTATIONS

Confirmed individual presentations at the time of going to press include:

- Flat glass keynote presentation: Architectural printing flat glass – trends and requirements
- Container glass keynote presentation: Challenges on how we improve printing on glass and more importantly, printing on the glass line of the glass manufacturer without incurring high cost
- Production of screenprinting stencils for flat and hollow glass printing, using high resolution UV light based Computer-To-Screen technology
- From hot to cold – improvement in stencil preparation procedure and printing quality in UV glass bottles printing
- Organic inks – screen and digital applications
- UV lamp meets chemistry
- Environmentally friendly custom decoration and functionalization of glass surfaces
- How can screen printed glass bottles maintain or gain new market shares
- Set your package designers free with new UV-printing ink effects onto glass
- Screen printing onto complex-shaped items
- Printing conductive elements in consideration of economical guidelines
- Advanced thermoplastic organic ink technology eliminates heavy metals from glass decorating
- Future oriented screen cleaning according to the new EU regulations.

DELEGATES

Delegates can still register for the rate of only €495 (approximately $625 / £330) by visiting www.glassprint.org or emailing sales@glassworldwide.co.uk – registration includes access to the keynote speeches, technical papers, exhibition access, refreshments, lunch and dinner. The location of the event is the NH Moerfelden hotel, conveniently located very close to Frankfurt Airport.

ORGANISERS

The event is jointly organised by ESMA and Chameleon Business Media, publishers of this magazine and *Glass Worldwide*, the leading bi-monthly journal for all sectors and regions of the glass industry. Please email subs@glassworldwide.co.uk for a free copy of the Annual ESMA Glass Publication 2007, including 28 pages dedicated to printing on glass.

EXHIBITORS

The conference is accompanied by an exhibition of specialist suppliers of equipment, consumables, technology and services. Exhibitors who will display the latest developments in inks, pre-press technology, printing equipment and supplies include: K H Bailey & Sons, DIP Tech, Durst Phototechnik Digital Technology, Fimor, Fusion UV Systems, Grünig-Intersceen, Isimat, Werner Kammann Maschinenfabrik, Kissel + Wolf / Kiwo, Lüscher, MacDermid Autotype, Machines Dubuit, Marabuwerke, PPG Industries, Printcolor Screen, Remco Chemie Rentzsch, Ruco Druckfarben, Saati, Sefar, Sun Chemical / Coates Screen, TCG Technology Communication Group and Tiflex.

Further information:
web: www.glassprint.org

FUTURE EVENTS

OCTOBER 2007
24-27 SGIA '07 (Orlando, FL, USA)

NOVEMBER 2007
21-22 GlassPrint 2007 (Frankfurt, Germany)

DECEMBER 2007
7-9 FESPA World Expo India (New Delhi, India)

JANUARY 2008
8-9 Glass World Expo 2008 (Mumbai, India)

FEBRUARY 2008
17-19 Sign & Graphic Imaging Middle East (Dubai, UAE)

MARCH 2008
26-29 International Sign Expo 2008 (Orlando, FL, USA)

APRIL 2008
1-3 FESPA Digital 2008 (Geneva, Switzerland)

MAY-JUNE 2008
29 May-11 June Drupa 2008 (Düsseldorf, Germany)

SGIA '07

24–27 October 2007; Orlando (Florida), USA

SGIA '07 WILL GIVE SPECIALITY IMAGERS AN IMPORTANT LOOK AT TRENDS SHAPING GRAPHICS PRODUCTION, INDUSTRIAL PRINTING AND GARMENT DECORATION.

For graphics producers, developments in inkjet flatbed technology are among the biggest technical trends – especially single-pass inkjet and variable dot inkjet print heads. Ink technologies, such as UV inkjet, and new media are also pushing the market forward.

So far, more than 500 exhibitors have taken space for SGIA '07. Visitors can use the dynamic tools on the SGIA website to research technologies and suppliers and plan their visit. The website also contains new product releases and preview webinars, which outline the equipment, services and materials featured at the show. Other online tools include the SGIA '07 Conference Planner, to navigate the 54 educational sessions planned, and the Expo Planner.

SGIA '07 will also feature demonstration areas where exhibitors will demonstrate the latest technologies and techniques at the Wrap Display Area and the DTG production zone. There are three free educational sessions: Introduction to Digital Imaging, Introduction to Direct-to-Garment Printing and Understanding ROI for Major Equipment Purchases are from 9.30-10.15 am on 24 September.

Further information:
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