

ISSUE
TWO

2008

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SPECIALIST PRINTING

GLOBAL TECHNOLOGY IN FOCUS



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Добро пожаловать

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**MESSAGE FROM BRYAN COLLINGS**

Is it just me or are we on an exhibition merry-go-round? Having just surfaced from Fespa Digital, we are now all planning how we can best survive walking round the largest show ever in Düsseldorf. At the global crossroads of printing technologies and manufacturers, how they can differentiate themselves and their processes from the many numbers of competitors all around them, trying to do just the same?

In terms of bangs for the buck, give me a highly focussed smaller event any day of the week – at least at focussed events, visitors and exhibitors know they are interested in the same thing, but we just cannot afford not to be at these big events.

Looking forward to seeing you in Düsseldorf – at least you can be sure that there will always be a warm welcome waiting for you on stands run by members of our sponsoring organisations, ESMA and NASMA.

You will notice that the magazine is still growing in terms of content and more and more copies are being circulated worldwide as our reputation grows. This is immensely satisfying to the editorial team, as is the glowing praise which we get both from readers and advertisers.

Lastly a brief reminder to you to put the dates in your diary for the seminars on Computer to Screen (4/5 November) and Membrane Switch Technology (6 November), being held in Neuss (near Düsseldorf, Germany). See pages 52-53 for more information.

Bryan Collings
Publishing Director, Specialist Printing

ESPAÑA

FOCUS SOBRE NASMA

- 4. En su quinto año, la asociación sigue madurando y evolucionando.
- FOCUS SOBRE ESMA**
- 6. La asociación sigue viento en popa.
- PRE-IMPRESIÓN**
- 9. ¿Qué está haciendo mal en su impresión serigráfica?
- 12. Serigrafía digital CTS de alta resolución: Tecnología y beneficios
- 14. Limpieza de pantallas optimizada con unidades de limpieza en línea

- 16. El programa de expansión para serigrafos
- IMPRESIÓN**
- 18. Tecnología de enjuagador para prensas de cilindros
- 20. La innovación medioambiental abre nuevas oportunidades
- 24. Impresión de gota variable: El nuevo estándar
- 26. Tecnología de aplicaciones de transferencia digital
- POST-IMPRESIÓN**
- 28. Equipos de curado UV

- SALUD, SEGURIDAD Y MEDIOAMBIENTE**
- 30. Hoja de datos de productos químicos para serigrafía
- 32. Tecnología verde en la industria gráfica
- TECNOLOGÍA EN GENERAL**
- 34. Estampados táctiles: Efectos especiales en serigrafía
- 36. Breve introducción al mundo de los formatos gráficos
- 38. La receta para la impresión de líneas finas

- 40. Infraexposición: El problema más habitual y menos comprendido de la impresión en color
- BREVES**
- 42. Un resumen de noticias y nuevas tecnologías
- FOCUS SOBRE EMPRESAS**
- 46. 172 años de evolución para VFP – Tripette & Renaud Group
- EVENTOS**
- 49. Avances y revisiones de eventos del sector, incluidos el CTS & Digital Workflow 2008 y el European Membrane Symposium 2008

FRANCE

LE POINT SUR NASMA

- 4. Forte de ses cinq ans, l'association poursuit sa croissance et son développement
- LE POINT SUR ESMA :**
- 6. L'association poursuit son ascension fulgurante
- PRE-PRESSE :**
- 9. Que faites-vous mal en sérigraphie ?
- 12. Gravure numérique des écrans (CTS) à haute résolution : technologie et avantages
- 14. Lavage d'écran optimisé dans les

- unités de lavage d'écran en ligne
- 16. Le programme d'expansion pour les machines à sérigraphier
- SOUS-PRESSE :**
- 18. Technologie raclette de presse à cylindre
- 20. L'innovation écologique ouvre de nouvelles opportunités
- 24. Impression par points variables : la nouvelle norme
- 26. Technologie des applications de transfert numérique
- POST-PRESSE :**
- 28. Matériel de polymérisation UV

- SANTÉ, SÉCURITÉ & ENVIRONNEMENT :**
- 30. Fiches de données des produits chimiques d'écran
- 32. Technologie verte dans l'industrie graphique
- TECNOLOGIE GÉNÉRALE**
- 34. Impressions tactiles – effets spéciaux en sérigraphie
- 36. Brève introduction au monde des formats graphiques
- 38. La recette de l'impression à trait fin
- 40. Sous exposition : le problème de couleur le plus courant et le plus

- méconnu
- EN BREF :**
- 42. Un résumé des informations et de la nouvelle technologie
- SOCIÉTÉ EN VUE :**
- 46. 172 années de développement pour VFP – Tripette & Renaud Group
- ÉVÉNEMENTS :**
- 49. Avant-premières et bilans des événements du secteur, notamment CTS & Digital Workflow 2008 et European Membrane Symposium 2008

ITALIA

OBIETTIVO SU NASMA:

- 4. Al suo quinto anno di attività, l'Associazione continua a maturare e a crescere.
- OBIETTIVO SU ESMA:**
- 6. L'Associazione continua a progredire
- PRESTAMPA:**
- 9. Cosa facciamo di sbagliato nella serigrafia?
- 12. Computer-to-screen ad alta risoluzione: tecnologia e benefici
- 14. Pulizia retini ottimizzata con unità di pulizia in linea

- 16. Il programma di espansione per le aziende serigrafiche
- IN MACCHINA**
- 18. Tecnologia di raclaggio delle macchine da stampa a cilindro
- 20. L'innovazione ambientale apre nuove opportunità
- 24. Stampa a punto variabile: il nuovo standard di riferimento
- 26. La tecnologia delle applicazioni a trasferimento digitali
- POSTSTAMPA:**
- 28. Apparecchiature di essiccazione UV

- SALUTE, SICUREZZA E AMBIENTE**
- 30. Prodotti chimici per serigrafia - Schede dati
- 32. La tecnologia "verde" dell'industria grafica
- TECNOLOGIA GENERALE:**
- 34. Stampe tattili: effetti speciali in serigrafia
- 36. Una breve introduzione al mondo dei formati grafici
- 38. La ricetta per la stampa di tratti finissimi
- 40. Sottoesposizione: il problema della

- riproduzione del colore più comune e meno compreso
- IN BREVE:**
- 42. Rassegna notizie e nuove tecnologie
- OBIETTIVI DELLE AZIENDE:**
- 46. 172 anni di evoluzione per VFP – Tripette & Renaud Group
- EVENTI:**
- 49. Anteprema e rassegna degli eventi più importanti del settore, compresi CTS & Digital Workflow 2008 e European Membrane Symposium 2008

DEUTSCHLAND

NASMA IM FOKUS:

- 4. Fünf Jahre danach: Fort- und Weiterentwicklung der Vereinigung ESMA IM FOKUS:
- 6. Die Vereinigung auf dem Vormarsch
- PREPRESS:**
- 9. Welche Fehler unterlaufen Ihnen beim Siebdruck?
- 12. Hochauflöslicher Computer-Bildschirm: Technologie und Vorteile
- 14. Optimierte Reinigung des Siebs von Inline-Siebreinigungseinheiten

- 16. Das Expansionsprogramm für Siebdrucker
- PRESS:**
- 18. Druckrakel-Technologie für den Zylinderdruck
- 20. Umwelt-Innovationen eröffnen neue Möglichkeiten
- 24. Variabler Rasterpunktdruck: der neue Standard
- 26. Digitale Umdruckapplikations-Technologie
- POSTPRESS:**
- 28. Geräte zur UV-Aushärtung
- GESUNDHEIT, SICHERHEIT UND**

- UMWELT:**
- 30. Informationsblatt: Chemikalien im Siebdruck
- 32. Grüne Technologie in der Grafikbranche
- TECNOLOGIE ALLGEMEIN:**
- 34. Taktile Drucke – Spezialeffekte beim Siebdruck
- 36. Kurze Einführung in die verschiedenen Grafikformate
- 38. Das Erfolgsrezept zum Drucken dünner Linien
- 40. Unterbelichtung: die häufigsten und

- mistverständlichsten Farbprobleme
- IN KÜRZE:**
- 42. Nachrichten und neue Technologie
- FIRMENFOKUS:**
- 46. VFP – Tripette & Renaud Group – 172 Jahre Entwicklungsgeschichte
- EVENTS:**
- 49. Vorschau und Rezension der Industrie-Events, u. a. CTS & Digital Workflow 2008 und European Membrane Symposium 2008

汉语

聚焦NASMA:

- 4. 协会已成立五年，正在不断成熟和发展壮
- 聚焦 ESMA:**
- 6. 协会继续奋勇前行。
- 印前:**
- 9. 您在丝网印刷方面有错过什么?
- 12. 高分辨率丝印直接制版: 技术和优势
- 14. 单列丝网清洗元件中的优化丝网清洗
- 16. 丝网印刷商的扩展计划

印中:

- 18. 滚筒印刷机刮刀技术
- 20. 环保创新开启新机遇
- 24. 变点印刷: 新标准
- 26. 数字转换应用技术
- 印后:**
- 28. 紫外线固化设备
- 健康、安全和环境:**
- 30. 丝网化学品说明
- 32. 印艺行业的环保技术

整体技术:

- 34. 触觉印刷 — 丝网印刷特效
- 36. 图像格式世界简介
- 38. 精细印刷之道
- 40. 曝光不足: 最常见和最被误解的色彩问题
- 简述:** 42. 新闻与新技术摘要
- 公司聚焦:**
- 46. VFP 172年的奋斗历程 — Tripette & Renaud Group
- 展会:** 49. 行业展会前瞻和回顾, 包括CTS & Digital Workflow 2008 和 European Membrane Symposium 2008

Россия

В ЦЕНТРЕ ВНИМАНИЯ — NASMA:

- 4. Ассоциации пошел пятый год. Она продолжает зреть и развиваться.
- В ЦЕНТРЕ ВНИМАНИЯ — ESMA:**
- 6. Ассоциация продолжает энергично двигаться вперед.
- ДОПЕЧАТЬ :**
- 9. Что не так с вашей трафаретной печатью ?
- 12. Система высокого разрешения CTS «компьютер - трафарет »: технологии и преимущества .
- 14. Оптимизированная очистка во встроенных модулях очистки трафарета .
- 16. Программа развития для машин трафаретной печати .
- ПЕЧАТЬ :**
- 18. Применение ракеля в печатных машинах .

- 20. Инновации для обеспечения экологических требований открывают новые возможности .
- 24. Печать с переменным размером точки: новый стандарт .
- 26. Технология цифрового переноса .
- ПОСЛЕПЕЧАТЬ :**
- 28. Оборудование для УФ-сушки
- ЗДОРОВЬЕ, БЕЗОПАСНОСТЬ И ОКРУЖАЮЩАЯ СРЕДА :**
- 30. Фактические данные о химических трафаретной печати .
- 32. «Зеленые » технологии в полиграфической промышленности .
- ТЕХНОЛОГИЯ В ЦЕЛОМ:**
- 34. Рельефные отпечатки : специальные эффекты и трафаретная печать .

- 36. Краткое введение в мир графических форматов .
- 38. Рецепт прецизионной печати .
- 40. Недоэкспонирование ание: самая типичная и неверно трактуемая цветовая проблема .
- КОРОТКОЙ СТРОКОЙ:**
- 42. Обзор новостей и новых технологий
- ПРЕДПРИЯТИЕ В ЦЕНТРЕ ВНИМАНИЯ :**
- 46. Группа «VFP – Tripette & Renaud Group»: 172 года развития и роста .
- СОБЫТИЯ :**
- 49. Анонсы и обзоры событий отрасли , включая конференции «CTS Digital Workflow 2008» и «European Membrane Symposium 2008».



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AN INTIMATE ASSOCIATION



IN ITS FIFTH YEAR, THE NORTH AMERICAN SPECIALTY PRINTING MANUFACTURERS ASSOCIATION (NASMA) CONTINUES TO MATURE AND EVOLVE. WITH AN INCREASINGLY COMMITTED CORE MEMBERSHIP, THE ASSOCIATION IS STRENGTHENED BY ITS RELATIVE INTIMACY, ALLOWING MEMBERS TO DIRECTLY IDENTIFY CHALLENGES COMMON TO THE SPECIALTY PRINTING INDUSTRY.

NASMA Chair, Parnell Thill, of the Ikonics Corporation, states his confidence in the organisation's primary value proposition. "NASMA, by its very nature, is a tightly constructed organisation," he says. "Like every member-supported association, NASMA is only as valuable as the input of the members. Since we're a decidedly small association, the input members give is particularly topical, relevant and actionable."

NASMA's semi-annual meetings are exceptionally well attended and the organisation's Spring Meeting, from 6-7 May in San Francisco, will feature the release of the 4th Market Study – an annual 'state-of-the-industry' report, covering screen printing emulsions, capillary films, screen chemicals, ink and mesh. The May meeting will also include guest speaker Katy Lellelid, from SGIA,



Parnell Thill, VP Marketing for Ikonics and President of NASMA

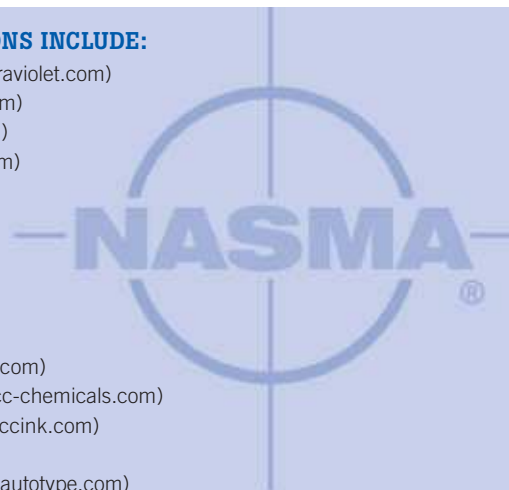
who will address the group on the topic of environmentalism as NASMA contemplates its role in the 'Sustainable Green Printing Partnership' (SGP). [\[2\]](#)

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web: www.nasmaonline.org

NASMA MEMBER ORGANISATIONS INCLUDE:

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- Avery Dennison (www.averygraphics.com)
- Brother International (www.brother.com)
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- Dynamesh (www.dynamesh.com)
- EFI Vutek (www.vutek.com)
- Fujifilm Sericol (www.sericol.com)
- HP ColorSpan (www.hp.com)
- HP Scitex (www.hp.com)
- Ikonics Corp (www.ikonics.com)
- Industrial Fabrics Corp (www.ifcfabrics.com)
- Intercontinental Chemical Corp (www.icc-chemicals.com)
- International Coatings Company (www.iccink.com)
- Kiwo / Ulano (www.kiwo.com)
- MacDermid Autotype (www.macdermidautotype.com)
- Murakami Company (www.murakamiscreen.com)
- Nazdar (www.nazdar.com)
- Pleiger Plastics (www.pleiger.com)
- Poly One Corp (www.polyone.com)
- R Tape Corp (www.rtape.com)
- Roland DGA Corp (www.rolanddga.com)
- Rutland Plastics Technologies (www.rutlandinc.com)
- Saati Print USA (www.saati.com)
- Sefar Printing Solutions (www.sefar.com)
- Sprayway (www.spraywayinc.com)
- ST Media Group International (www.stmediagroup.com)



ESMA REPORT, MARCH 2008

ESMA CONTINUES TO STORM AHEAD WITH FOUR NEW MEMBERS IN THE FIRST QUARTER OF 2008. THE CHAIRMAN, PEDRO RODRIGUEZ, COMMENTED: "IT SEEMS THAT THE NEW LIFE WHICH HAS BEEN INJECTED INTO ESMA WITH OUR NEW GENERAL MANAGER AND EXPANDING PROGRAMME OF HIGHLY FOCUSED SEMINARS IS PROVING TO BE A WINNING FORMULA. AS I TRAVEL AROUND EUROPE I AM FREQUENTLY BEING APPROACHED BY COMPANIES WHO NOW SEE ESMA AS THE ASSOCIATION OF CHOICE FOR ANY BUSINESS INVOLVED IN SUPPLYING EQUIPMENT AND SUPPLIES TO THE

SPECIALIST PRINTING INDUSTRY."

Smaller companies have also been encouraged to join ESMA now that a substantially lower subscription rate has been agreed for them. Details of this can be obtained from the General Manager (see contact details on this page).

We will be holding two seminars this year. They will be run back-to-back in Neuss (near Düsseldorf, Germany) over a three day period to help those clients wishing to attend both seminars. The first will be the CTS & Digital Workflow Forum on 4 & 5 November and the second is the European Membrane Switch Symposium on 6 November. The CTS & Digital Workflow will bring the latest

information and techniques concerning Computer-to-Screen and pre-press information. The European Membrane Switch Symposium is a new event about industrial screen printing and the electronic industry for the production of MTS. Full information can be found on pages 52-53 of this issue.

Members of ESMA are looking forward to the DRUPA show (29 May - 11 June). This promises to again be a major event with new items such as 'drupacube', which is a theme portal for everyone who works with print and wants to learn more. DRUPA is the ideal environment to meet old friends and make new business acquaintances. You can also be assured of a warm welcome on the stand of an ESMA member; these can be identified by a notice on the stand showing them to be an ESMA member.

Lastly we welcome membership enquiries from any qualifying company – either contact me or see the website for further information.

Peter Buttens
General Manager, ESMA 



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CTS & DIGITAL WORKFLOW 2008

4-5 November 2008
Neuss/Düsseldorf
Germany

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WHAT ARE YOU DOING WRONG?

Laurie Mullaney suggests some steps to help make the print match the proof

HOW MANY TIMES HAVE WE SEEN A SCREEN PRESS STOPPED AND PEOPLE BUSY MIXING INKS? HAVE YOU EVER ASKED YOURSELF WHY IT IS DONE THIS WAY? DOES THIS HAPPEN IN ANY OTHER PRINTING METHOD? WOULD THE OWNER OF A LITHOGRAPHIC-OFFSET PRESS TOLERATE THIS WASTAGE? AFTER ALL THE MIXING, DOES THE PRINTED SHEET MATCH THE PROOF? DOES ANY SCREEN PRINTER MATCH THE PROOF?

The answer to the last four questions is 'no'. The screen process begins like all other printing processes: by creating artwork. From the agreed artwork we make separations and a proof. This proof, by definition, must match the artwork. Now we have two parts of the process, as they should be. From now on everything goes wrong.

Statement: "Retouching should never take place on a printing press"; "If the picture is not matching the proof it is not the fault of the press".

Solution: Correct the reproduction. Make the film or CTS file able to be printed on the press.

This all sounds like a different world. Screen in graphics is losing business to digital. Many print buyers have no experience of screen and do not have any knowledge of the qualities screen has over its competitors. Buyers are not specifying screen because they only understand digital. Many have tried but have been disappointed with the results. Screen has many advantages over digital but its ultimate failing is the inability of screen to give consistent, repeatable work that matches the proof.

We have tried FOGRA, ISO and many other standards organisations but they have never made screen predictable. So why go this route? Save money, time and effort – use what is already there. Correct as necessary at the origination and reproduction stage and be like all the other printing processes.

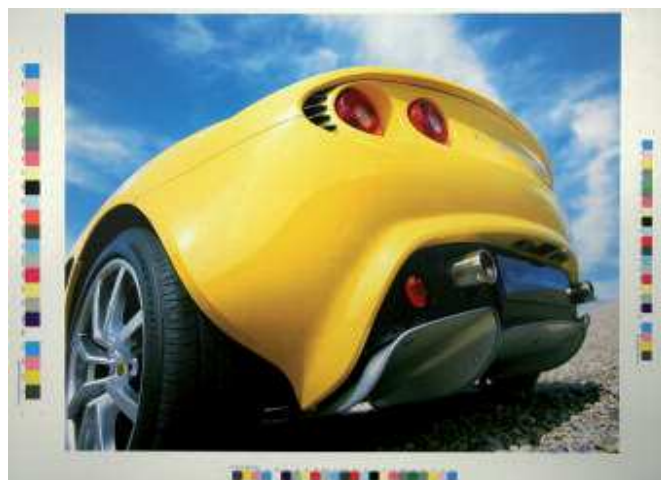
HOW CAN WE DO THIS?

The process of creating a printing plate or printing stencil is remarkably similar. The text is combined with any illustrations or pictures and the out-put is a plate or film. Remember that the plate is usually made these days as Computer to Plate (CTP, no film) and a screen stencil is still usually made by exposure to a piece of film (not forgetting that Computer to Screen or CTS is making quick inroads).

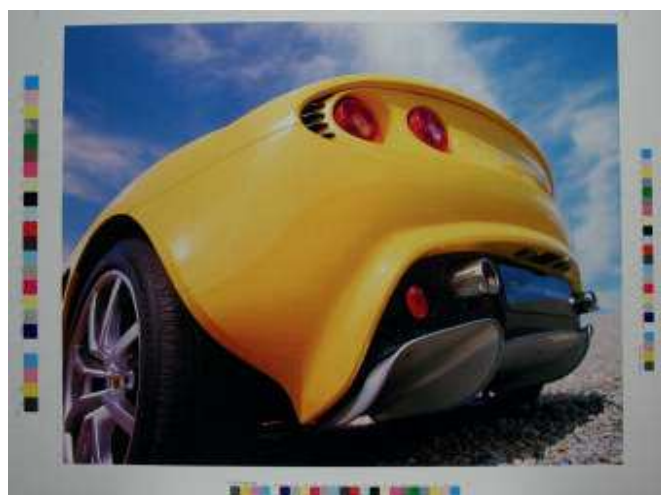
The problem with CTP is that the plate needs calibration, as there is no film. Densitometers for film are still around but they cannot measure the lithographic plate. Consequently instruments were developed that will measure the metal plates so that the linearisation of the RIP (this is the computer that converts the picture into dots) can take place.

Linearisation is to make the output device (film setter, CTP or CTS) give predictable and repeatable results. We need to be sure that 50% or 25% are actually the correct values. We need this because if they are not correct and are never measured, you will have different results every time you print. Linearisation of a CTP system is done every day. If this is done we now have a correct and predictable plate or film.

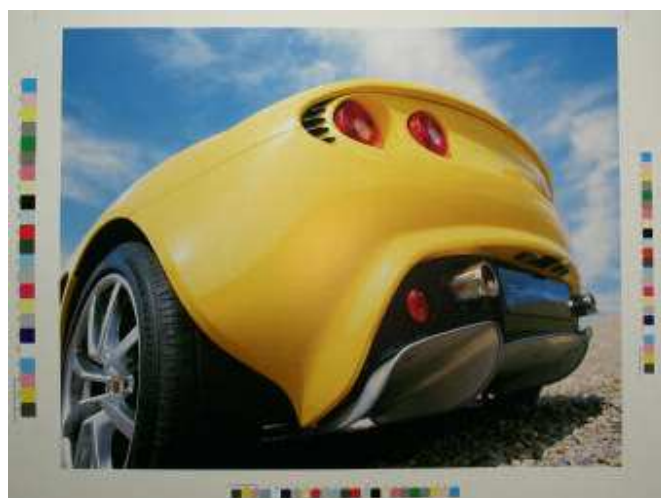
This is done using a plate-reader such as the ACME or the CCDot; you measure the values on the plate and place these actual values in the box under the nominal values (when you measure the 50% target on the plate you go to the RIP calibration screen and place the value under the 50% nominal box. It may not measure 50% – perhaps it is 45% – but from you telling the RIP that the 50% is actually 45%, the RIP can then calculate what exposure it needs to give to correct the entire scale). The Harlequin RIP has 23 patches and others like Agfa have 20 patches; all these RIPs have a test plate made once a day and the values are put into the calibration.



A digital proof to the litho iso standard



Object screen printed without tone curve correction



Object screen printed with tone curve correction to match iso standard proof

CALIBRATING SCREEN

Densitometers do not measure the image on the mesh – you need an instrument developed from the type that measures lithographic plates but takes into account the dot, mesh and coating. The use of film to manufacture a stencil is not satisfactory. We can measure film but in

chapter 5, page 86 of the Sefar Handbook you will see a schematic of the film on a mesh after exposure and development. Having a mesh degrades the image on the film to such an extent there are no dots for the first 20%.

So what do we do? We could measure the film or with CTS make a guess, but there is now an instrument that can measure an exposed and developed stencil: the ScreenReader. It is calibrated to the stencil by measuring the 0% (just the coating) and the 100% (just the mesh). It is a camera device and will ignore the mesh (even white mesh) and coating and only measure the light coming through the image area. We can now linearise our film or CTS RIP from the stencil. Now we have a predictable dot on the stencil to take the process to the next step.

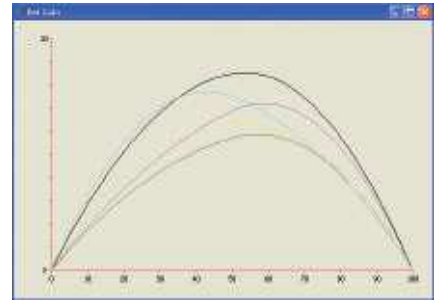
We now put our test patches onto a stencil (it can be in the waste of a production job). These patches are 30%, 70% and Solid for all four colours. We now print these targets

making sure all press settings are good and that all settings are recorded. Print the job with ink straight from the tin – do not adulterate the ink for the first five sheets. Save these five sheets and if your test targets are in the waste of a current job, you just get on with the job.

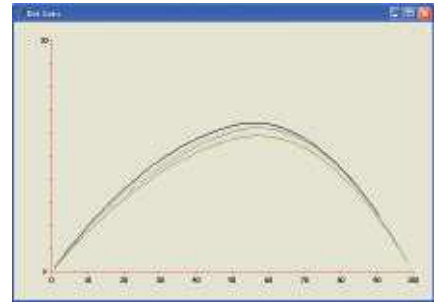
MATCHING THE DESIRED STANDARD

Once these sheets are dry we begin to measure them. Remember we know that our 30% is thirty and we know that our 70% is seventy because we calibrated the stencil! We measure the printed sheets and feed the density values into the proof match software. This now displays four print curves for CMYK. I would expect very high dot gain but this is normal.

You now choose which standard you wish to apply to your job (the same standard as the proof) and the software will print out a set of correction values for your RIP to make the variables in the stencil, ink and substrate



The tone curves of an un-corrected screen press – the green curve is the standard that is to be achieved



This is the same screen press curves after a correction via the RIP – the standard green curve is now matched by the press



This is the ScreenReader being used to measure the stencil – these values will then be entered in the RIP to linearise the stencil

match the desired standard. This process goes on in offset litho thousands of times every day and is how you make a picture printed in England match the same picture, printed in Germany.

Now we have completed our test we have a RIP profile for the press, substrate and ink combination to match a given standard. It's that easy, but does your printshop do it?

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USING HIGH RESOLUTION CTS SYSTEMS

Thomas Schweizer discusses the technology and benefits of direct UV exposure Computer-to-Screen systems for screenprinting applications

Note from Publishing Director: As a forerunner to the impending CTS and Digital Workflow seminar to be held in Neuss / Düsseldorf on 4-5 November 2008 (see pages 52-53), we are pleased to offer the following from SignTronic regarding their CTS systems. In the Spring / Summer 2007 issue of this magazine, we published a CTS article from Kiwo – please email subs@specialistprinting.com for a free copy. Future issues will cover further technological advances in computer-to-screen; if you are an expert in this field who would like to submit an article for consideration, please email editor@specialistprinting.com

THE SWISS COMPANY SIGNTRONIC MANUFACTURES A WIDE RANGE OF HIGH RESOLUTION DIRECT UV EXPOSURE COMPUTER-TO-SCREEN (CTS) SYSTEMS FOR ALL TYPES OF SCREENPRINTING APPLICATIONS. DEPENDING UPON THE SPECIFIC SCREENPRINTING APPLICATION, THE COMPANY OFFERS TWO DIFFERENT STENCILMASTER CTS EXPOSURE SYSTEMS.

When the standard output and exposure resolution is 1270 x 1270 dpi, the exposed dot size is exactly 20 microns. This type of StencilMaster machine is available for any smaller or larger exposure sizes starting from 1600 x 1200 mm up to 4100 x 3600 mm. Any larger CTS dimensions are available for large format flat glass printers, flag printing applications, for extremely large format screen stretching companies and for professional ready-to-print stencil makers.

SignTronic also offers a CTS StencilMaster with an exposure resolution of 2400 x 2400 dpi for all kinds of high resolution and top quality technical screenprinting applications, such as the finest label, name and plate printing, security cards, membrane switches and sophisticated ceramic decal printers. The exposed dot size is approximately 10 microns.

TECHNICAL ADVANTAGES

SignTronic technology, compared to other similar CtS systems, means there is no need for expensive consumables such as liquid inks or synthetic hot melt inkjet mediums – the only consumable products are UV bulbs, which have a lifetime of approximately 1,000 hours. Using any conventional exposure equipment, or even the SignTronic UV exposure system, any normal loss of UV output during the exposure process is automatically compensated via an integral UV light integrator system.

The running costs of a UV bulb can be accurately predicted to be €2.50 per hour, divided through the numbers of exposed screens during one hour of exposure. The

imaging and exposure processes are done in only one step so there is no requirement for separate stencil exposure, as with inkjet imaging.

The StencilMaster has optical lenses manufactured by Carl Zeiss in Germany. When scrolling, the exposure area allows a very fast exposure speed. The machine is designed and constructed to offer a very stable unit that is free from vibration even up to the largest screen frame dimensions, as absolute stability is necessary to avoid any vibration during high exposure resolutions of 1270 and 2400 dpi.

BI-DIRECTIONAL IMAGING

With some other CtS systems the imaging is simply in the up and down movement. The StencilMaster exposure head and image shuttle travels in a horizontal direction, using a fast bi-directional movement from the left hand to the right hand side, and returns over the screen frame surface. The horizontal exposure movement gives a very accurate screen imaging process for ultra fine lines and the finest halftones. The horizontal exposure head movement also enables the highest possible imaging pixel resolution required for the two available high standard resolutions and outputs of 1270 x 1270 dpi or 2400 x 2400 dpi.

The vertical movement of the exposure head and shuttle prior to exposure is dimensionally stable at any position to a tolerance of +/- 5 micrometres bowing tolerance over the total traversing length up to 4,100 mm. The horizontally travelling carriage bar transporting the fast moving shuttle is manufactured with friction, abrasion and maintenance-free air bearings.

EXPOSURE AND DIAGNOSTICS

Both SignTronic CtS models are equipped with an integral laser distance system to keep a constant distance from the lens to the coated mesh surface over the full stencil area. The StencilMaster is produced with a non-distortion, vibration-free stainless steel

drive system. No flexible toothed belts are used in this construction.

Both sides of the machine pillars (left and right) have mounted vertical double-sided gear rack drives to enable a precise, uniform and banding-free exposure process. All units are equipped with an integral printing frame conveyor system to allow, at any future time, an in-line connection for fully automatic screen coating, drying, imaging, developing and final drying of any wet-line manufacturer.

All machines are equipped with a diagnostic system to allow economic remote diagnostic assistance, and are manufactured with a total electrical and digital switchboard cabinet equipped with industrial computers. The StencilMaster is also available as a combi CtS and CtP system, to allow both exposure processes on screens and litho plates.

MESHES

Any mesh type, mesh count, mesh colour and mesh condition (ghost image contaminated) can be processed. White mesh is recommended for speed, although dyed and stainless steel meshes can also be used, of course, but with a reduced exposure speed. Using the direct CtS UV exposure process, there is hardly any light reflection or light undercutting visibly reflected from the undyed mesh surfaces.

With CtS screens, the light reflection that results from conventional exposure processes, using reproduction film inside a vacuum printing down frame with a glass thickness of around 12 mm including possible film montages and tapes, is not present.



SignTronic's high resolution large format CTS StencilMaster (2400 dpi)

EMULSIONS AND CAPILLARY FILMS

All standard available emulsion and film products can be used in the StencilMaster. For high quality jobs a proper coating process is recommended; this should be a minimum of 2:2 coats, wet-on-wet, or 1:2 coats, plus one or two additional coatings after drying, onto the printing side of the mesh to achieve the required Rz-value and to flatten the underneath mesh side. For poster printing, some customers use SBQ sensitised emulsions coated 1:0 for cost reasons.

RESOLUTIONS AND SCREEN RULINGS

All large format StencilMaster CtS machines work with 1270 x 1270 dpi resolution. They are also available with a real direct exposure resolution of 2400 x 2400 dpi; the exposure speed for this model is, for some emulsions, only 30% slower compared with the 1270 dpi resolution. The bulb lifetime is 1,000 hours and is controlled via an integral light integrator system, which controls the constant UV exposure performance.

Using the 1270 dpi StencilMaster model, screen rulings of up to 48 lpcm or 120 lpi are achievable, or with the 2400 dpi StencilMaster model, up around 60 lpcm or 150 lpi.

IMAGING AND EXPOSURE SPECIFICATIONS

For a correct imaging and exposure speed per screen using the 1270 dpi resolution (20 micron pixel size), the specifications are:

- imaging size: 1750 mm x 1450 mm = 2.5 square metres exposure area, or 69 x 57 inches
- white mesh: 150 threads per cm, or 380 threads per inch
- dual-cure sensitised screen emulsion: coated 2:2 wet-on-wet; EOM 6-7 microns.


The total exposure time for both sides when completely emulsion-cured is 12 minutes per (one) large format screen of 1750 x 1450 mm. In other words, a complete 4-colour set will be produced in less than one hour, including the handling for screen loading and unloading and the developing process.

HIGH PRESSURE AND LOW COSTS

An additional high pressure water gun can also be used for emulsion developing, jetted onto the printing side of the mesh, up to approximately 8-10 bars with a gun and emulsion distance of 300 mm. The emulsion on both mesh sides is completely UV cured (hardened).

The total UV lamp (consumable) cost for the exposure of a complete 4-colour halftone screen set (CMYK) is €2.50-2.70, or €0.70 for

each exposed screen (when the screen is 1750 mm x 1450 mm = 2.5 square metres exposure area, or 69 x 57 inches).

CtS systems have other great advantages besides not using film and using no separate metal halide exposure equipment. For instance, no touch-up work is necessary and film is not used, so no film distortion is possible. 

Thomas Schweizer is Director of Marketing & Sales



Large format CtS StencilMaster with standard 1270 dpi exposure resolution

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OPTIMISED SCREEN CLEANING

Manuel Schöllig outlines the points to consider when selecting screen cleaning chemicals for in-line screen cleaning units

OVER THE LAST FEW YEARS, THE CONCEPT OF AUTOMATIC SCREEN CLEANING HAS CHANGED CONSIDERABLY. WHEREAS THE STANDARD FOR EARLIER SCREEN CLEANING UNITS WAS BASED ON THE CHAMBER SYSTEM, NOW IN-LINE SCREEN CLEANING UNITS ARE BECOMING MORE POPULAR.

Here the screens are transported on a conveyor belt through the individual treatment sections (ink removal, circulatory water rinsing, screen decoating, high pressure water rinsing, degreasing / preparation, clear rinsing and drying). Cleaning times and chemical usage can be kept to a minimum during continuous screen cleaning. Nevertheless, attention must be paid to several important requirements when selecting the screen cleaning chemicals to get the best cleaning results.

BIOLOGICALLY DEGRADABLE SCREEN CLEANERS

For reasons of explosion protection, chemicals compliant with EN 1010 / BGI 801 with a flash point of >55°C must be used in non-explosion proof continuous screen cleaning units. The screen cleaning agents are rinsed with water during the cleaning process and may be carried over into the screen decoating section; they must therefore be easily biologically degradable and should not contain any aromatic or aliphatic hydrocarbons.

OPTIMAL FORMULATION

It is recommended that specially formulated screen cleaners are used, as the ink cleaning results are significantly improved and they usually last longer (with regard to the effective usage time of the screen cleaning agent) than conventional screen cleaners.

With in-line units, the cleaned screens are usually sprayed with water from the circulatory system or with aqueous screen decoating solutions. Therefore it is important

that the ink, which is softened during the cleaning process, can be easily removed from the screen with water and not absorbed again into the screen mesh (haze formation).

As the screen cleaning agents circulate in the washing section, the amount of residual ink in them increases. If there is insufficient rinsing with water of the contaminated screen cleaner, residual ink or haze will remain in the cleaned screen mesh. This hardens during the ensuing screen decoating process and can usually only be removed with aggressive haze removal agents. By using specially formulated cleaning agents, the amount of residual ink is kept to a minimum during the cleaning process and the haze formation on the screen is significantly reduced. The usable life of the screen cleaning agents is further extended through filtration.

SCREEN DECOATING CHEMICALS

Two screen decoating methods are common for continuous units. With the first, the screen decoating chemicals are mixed in a reservoir and from there the required amount is dosed, so a fresh screen decoating solution is used each time.

There are also circulatory systems used for screen decoating, where the screen decoating solution is prepared in a tank and then fed into the jets. Photoemulsion and screen cleaning agents accumulate during the decoating process in the circulatory decoating bath. For these systems, it is recommended that specially formulated decoating agents are used, as conventional decoating solutions may not be fully effective.

SCREEN DEGREASING / MESH PREPARATION

For the most part, mesh degreasing is not usually necessary when an in-line system for screen cleaning is used, due to the emulsifying agents in the cleaning agents. However, it is



The ESC Perfecta inline system



The Grünig G174 inline system



The Dane-Wash 380 inline system

recommended that the screen surface is made hydrophilic. This will improve water flow on the screen and the subsequent coating and printing results will usually be improved. Depending on the configuration of the unit, an automatic mesh preparation station can normally be retro-fitted as an in-line module.

In summary, with the use of specially formulated screen cleaning chemicals in standardised in-line screen cleaning, cycle times for cleaning and chemical usage can be reduced considerably and give excellent cleaning results. **BP**

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The SpeedLine inline system

CYLINDER PRESS SQUEEGEE TECHNOLOGY

Axel Kaiser outlines some important considerations when designing squeegee technology

ONE OF THE MAIN CHALLENGES IN SQUEEGEE DESIGN AND CONSTRUCTION FOR HIGH SPEED CYLINDER PRESSES HAS ALWAYS BEEN THE COMBINATION OF PRINT START TIMING AND AVOIDING TOUCHING THE GRIPPERS. THIS IS BECAUSE THIS WOULD CAUSE VIBRATIONS DURING THE FIRST FEW CENTIMETRES OF THE PRINT AND, AT THE SAME TIME, DAMAGE THE MESH AND THE PRINTING EDGE OF THE SQUEEGEE BLADE PROFILE. BASICALLY, THE SQUEEGEE ACTION MUST BE RELEASED ONLY AFTER THE GRIPPERS HAVE PASSED – BUT FAST ENOUGH NOT TO LOSE TOO BIG A PRINT START MARGIN.

Traditionally a mechanical system in the form of a cam, synchronised with the motion of the cylinder, is used. However as machines get faster, the drawback of this widely used system becomes apparent, mainly leading to vibrations during the first 3 cm of the print and resulting in screen damage, caused by the squeegee coming down on top of the cylinder grippers.

PROBLEMS WITH CAM-CONTROLLED SYSTEMS

In cam-controlled systems, the downwards movement of the squeegee bar begins above the grippers on account of the turning point of the movement and ends around 15 mm after this. Under high-speed conditions, however, this means that the squeegee pushes down the mesh, scratching the top side of the underlying grippers (see figure 1). At even higher running speeds, the squeegee will actually set down on the gripper tops.



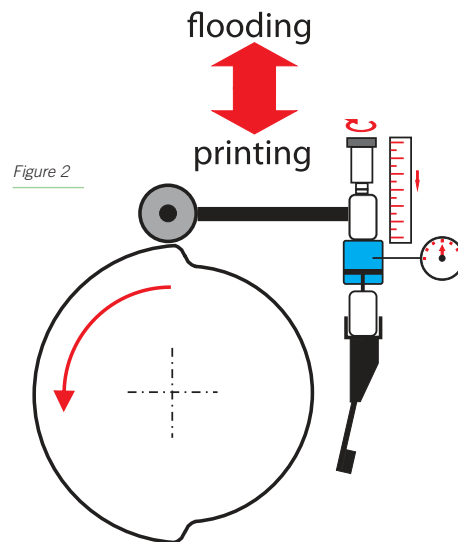
Another problem is caused by the physical influences on the roller following the squeegee drive cam itself. During the downwards movement of the squeegee (i.e. at print start), the cam control causes a very fast and sudden movement of the cam roller which transmits a certain number of vibrations to the squeegee printing edge (see figures 1 and 2).

These two major problems were solved by SPS engineers, using the technology of the hydro-pneumatic SPS PHE squeegee bridge. This completely autonomous system is synchronised with the machine – but not by means of a mechanical connection. All SPS STOP cylinder presses are equipped with the characteristic hydro-pneumatic squeegee bridge.

FEATURES OF THE BRIDGE

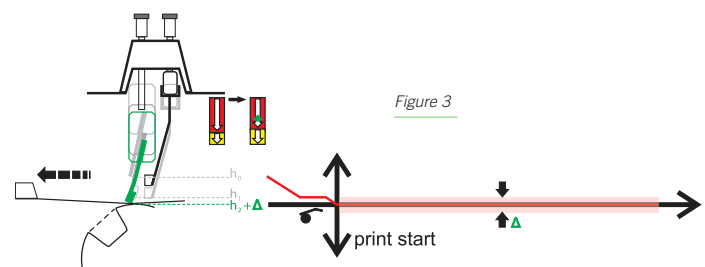
The SPS PHE bridge is based on characteristic engineering principles. The main features are:

- Using a combination of pneumatic / hydraulic actuators for the downward movement of the squeegee bar enables a perfect fine-tuning of the set-down movement. Both timing and speed can be adjusted to demand, without the restrictions otherwise given by



the interdependency between cylinder drive mechanics and squeegee movement.

- The first step of the squeegee set-down sequence is activated at the turning point of the screen carrier. At this point there is still sufficient time for the squeegee to smoothly approach the stencil, just 'kissing' the mesh, keeping good clearance to the grippers. Then, once the SPS STOP cylinder starts to rotate, the second downward step is activated, bringing the squeegee in touch with the substrate positioned on the cylinder – right behind the grippers. This important second step, initiating the actual print start, is electronically synchronised with the print cylinder rotation, thus constantly controlling the gripper margin set by the operator and keeping it in the closest tolerance (see figure 3).
- As soon as the squeegee comes down on the cylinder surface it transmits the internal pressure built up in the system to the screen – strong and defined, not influenced by any fluctuations. The pneumatic-hydraulic tandem drive causes the actuators to softly swim back into a non-compressible hydraulic buffer, floating around a medium height position with exact pressure control.



SQUEEGEE CONTROL SYSTEM

Setting the squeegee pressure and maintaining it at a constant level during the run is independent from squeegee height adjustment. As long as the squeegee level is kept within the range of the hydraulic damping cushion (i.e. within a 2-3 mm tolerance), the actual printing

pressure is system-controlled, combined with a manometer or digital pressure read-out. The operator defines the pace – the automatic system will do the rest.

Using this squeegee control system provides even more flexibility: the starting point of the print is variable, changing gripper margins can be set according to requirements. Depending on the model within the SPS STOP cylinder range, a variable squeegee active path length can also be pre-selected.

OPTIONAL EXTRAS

Further optional equipment is offered, adding to increased production output and improved print quality:

- The two-sided, fully automatic, motorised height setting of the squeegee results in excellent parallelism between printing edge and cylinder whenever the system is set to go after changing the squeegee blade, so it is fully independent of operator skills. The system is fast, accurate and it reduces wear of the squeegee rubber during the print run (see figure 4).
- The SPS C105 squeegee blade (exclusively made by RKS for SPS) is a high-tech combination of a carbon fibre back blade and a resistant squeegee rubber edge in selected quality. The

Figure 4



stability of the carbon back supports the control of the active squeegee printing angle. In combination with the SPS PHE squeegee bridge, this will result in outstanding print definition, particularly



Figure 5

with fine lines and halftone dots (see figure 5). If needed, the operator-friendly pneumatic holder can be easily exchanged for a standard squeegee profile. [SP](#)

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UNLOCKING NEW OPPORTUNITIES FOR LARGE-FORMAT PRINTERS

Nils Miller describes an environmentally responsible large-format printing alternative that is cost-comparable to solvent-based inks

THE DEMAND FOR ENVIRONMENTALLY RESPONSIBLE PRINTING SOLUTIONS IS GROWING AROUND THE WORLD. SOME LARGE-FORMAT PRINT SERVICE PROVIDERS MAY BE FACING GREATER SCRUTINY FROM ENVIRONMENTAL REGULATORS, WHILE OTHERS HAVE CUSTOMERS ASKING FOR QUALITY PRINT SOLUTIONS THAT LEAVE A HEALTHIER FOOTPRINT ON OUR PLANET. PRINT SOLUTION MANUFACTURERS, SUCH AS HP, HAVE BEEN HEAVILY INVESTING IN TECHNOLOGY DEVELOPMENT TO ADDRESS ENVIRONMENTAL CONCERNS REGARDING AIR POLLUTION, HAZARDOUS MATERIALS, RESOURCE AND WASTE EFFICIENCY, AND ENERGY CONSUMPTION.

This increased focus on environmental impact has led to new products in our industry which can potentially translate into greater efficiency and new revenue streams for large-format printers. An example of the transformation possible is the environmental advancement embodied in HP's recent technology announcement, HP Latex Printing Technologies.

COMBINING LATEX AND THERMAL INKJET TECHNOLOGY

In March this year, HP announced HP Latex Printing Technologies, which combine its latex inks with its thermal inkjet technology to offer print service providers an environmentally responsible large-format printing alternative for a wide variety of outdoor and indoor applications. This latest set of products enables printers to achieve durable output, sharp, vivid image quality, broad outdoor and indoor application versatility, high productivity

and reduced environmental impact – all at a cost to end-users similar to that obtained with existing solvent-based inks.

The key is the water-based 'latex ink', which uses a carefully selected polymer (in latex particle form) that, upon printing, forms a tough, elastic film that binds and protects the pigment colorants, adhering to the types of uncoated synthetic substrates typically used in signage and banner applications. This odourless,¹ non-toxic ink formulation eliminates the need for special ventilation systems and air discharge permitting,² which can add to installation and ongoing operational costs. The enhanced printing operating environment allows printers to consider opening or relocating their businesses to more populated areas, such as retail shopping centres or office complexes.

As environmental regulations and public demand for greener print production increases, HP Latex Printing Technologies are a viable alternative to solvent inks. The new high-performing, quality solutions reduce the total impact of printing on the environment, allowing printers to enter the new green era with confidence.

INK COMPOSITION

HP Latex Inks use aqueous-dispersed polymer ('latex') technology to provide print durability and display permanence comparable to solvent inks. They consist of a liquid ink vehicle that carries latex polymer and pigment particles to the surface of the print media. Physical and chemical properties of the ink vehicle are critical both for drop ejection performance and control of ink-media interactions. These properties are obtained by formulating the ink vehicle with a combination

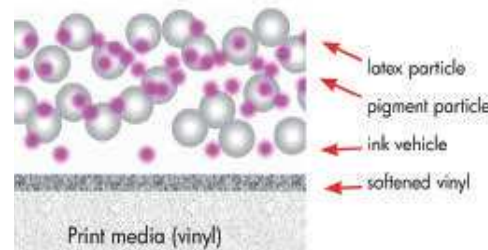


Figure 1: Liquid film of HP Latex Ink on the surface of print media – before drying and curing process (schematic representation is not to scale)

of water, co-solvents for aqueous inks and additives.

High water content gives them the high surface tension and low viscosity that are ideal for use in HP Thermal Inkjet printheads. As water is the major component, it offers important benefits to commercial and industrial production environments: it produces no VOCs, requires no special handling and is non-toxic, non-flammable and non-combustible.

Co-solvents and additives play an important role in drop ejection and ink-media interactions. They lower surface tension to wet the internal surfaces of the drop generators to keep them primed with ink. They keep the surface of the thermal inkjet heater resistor and orifice plate clean for consistent drop ejection performance, minimise viscous plugs in the nozzles that can cause missing or misdirected drops, and affect how the ink droplet wets the surface of the print media to control dot formation. Co-solvents also soften uncoated vinyl for better adhesion to the latex polymer film, and they evaporate in the printer to produce a completely dry, odourless print.¹

continued on page 23

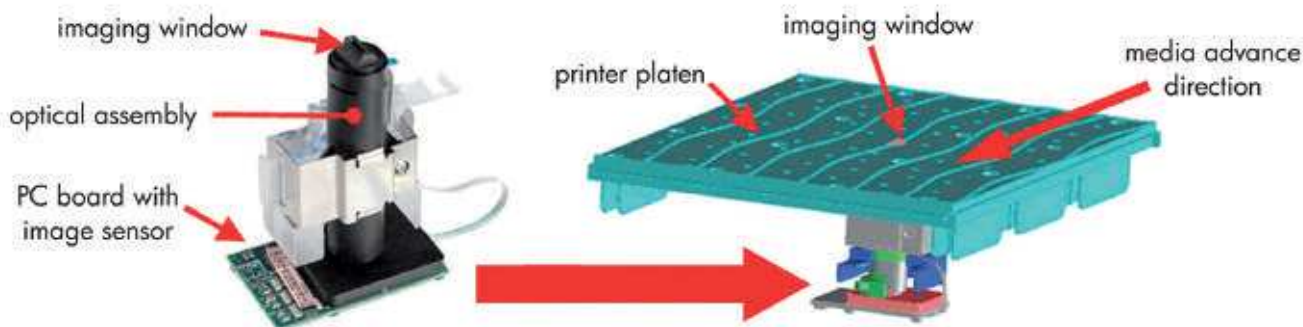


Figure 5: HP Optical Media Advance Sensor and CAD rendering of installation in the printer platen



The HP Wide Scan Printhead design supports an ink drop size as small as 12 picolitres

IMAGE FORMATION PROCESS

Inside the printer, a liquid film of HP Latex Ink on the print media is exposed to radiant heaters and airflow in the print and curing zones. No connection to special ventilation equipment, such as a vapour extraction or air purification system, is required because they emit extremely low levels of VOCs.²

This process evaporates the ink vehicle and causes the latex polymer particles to coalesce, forming a continuous polymer layer that adheres to print media and encapsulates the pigment to form a durable colorant film. Completely cured inside the printer, the prints come out ready to use, finish and prepare for shipment.

Although some solvent ink printers use in-line high-speed dryers or off-line print storage to evaporate ink solvents before handling and display, these methods still

release high VOCs into the work area. Special ventilation to meet occupational exposure requirements is often needed in these cases.

INK CARTRIDGE

The HP Latex Ink cartridge contains an outer shell and internal tray both made of recyclable cardboard. A collapsible ink bag inside the box contains the ink and provides vapour and air barriers to minimise changes in ink composition during shipping, storage and use. The ink is extracted as the bag collapses, maximising the amount of usable ink that can be delivered.

A cap with a septum assembly is attached to the spout on the ink bag (the septum is a valve that opens when the ink cartridge is connected to the printer's ink delivery system). During shipping and storage, a dust cap keeps the septum clean.

The integrated circuit makes electrical contacts with the printer when the ink cartridge is installed. Bi-directional communication with the printer provides information about the status of the ink cartridge including type of ink, ink colour and remaining ink quantity.

PERFORMANCE

HP Latex Inks deliver long-lasting, durable prints that withstand intense heat or cold, rain and snow, while also providing sharp, vibrant image quality that stands up to close inspection.

Outdoor prints achieve display permanence up to three years un laminated

and up to five years laminated and are scratch, smudge and water resistant on a range of media.³ Indoor prints achieve display permanence up to five years un laminated and up to 10 years laminated on a range of media.⁴

Good results can be achieved on most low-cost, uncoated solvent-compatible media. Even more eye-catching, consistent results can be achieved with original HP large-format media which includes a variety of speciality options, as well as a range of recyclable substrates.

In addition, a proprietary new HP media surface treatment technology produces a wide colour gamut that makes it possible to achieve both durability and sharp image quality on woven High Density Polyethylene (HDPE) and Tyvek.

SCALABLE TECHNOLOGIES

HP Wide Scan Printing Technology is based on HP Wide Scan Printheads and the HP Optical Media Advance Sensor. Working together, these scalable technologies deliver superior quality at high speeds with outdoor-quality prints at approximately 800 square feet/hour and indoor-quality prints at approximately 400 square feet/hour.⁵

When paired with HP Latex Inks, the printheads produce a wide colour spectrum, comparable to solvent-ink technology, for vivid image quality.⁶ Unlike printing systems using solvent-based inks, individual printheads are user-replaceable and do not require daily manual maintenance,⁷ eliminating the down-time and expense of a service call.

PRINT WITH THE ENVIRONMENT IN MIND

As our communities increasingly ask us to print with the environment in mind, HP is responding by designing greener solutions that are easy to adopt, reducing the total environmental impact of printing and helping print businesses flourish.

New HP Latex Printing Technologies offer environmental, health and safety advantages in comparison to solvent-based inks that can facilitate simpler and less costly printer installation and operation without compromising quality, speed or durability across a range of substrates. Environmental products such as these will continue to unlock new opportunities for large-format printers everywhere. 

Dr Nils Miller is HP Ink and Media Senior Scientist

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NOTES

- 1 Printers using HP Latex Inks use internal heaters to dry and cure the latex polymer film. Some substrates may have inherent odour.
- 2 Special ventilation is not required to meet US OSHA requirements on occupational exposure to VOCs from HP Latex Inks. Ventilation equipment installation is at the discretion of the customer – no specific HP recommendation is intended. Typically no air discharge permitting required with inks that emit extremely low levels of VOCs. Customers should consult US state and local requirements and regulations.
- 3 HP image permanence and scratch, smudge and water resistance estimates by HP Image Permanence Lab. Display permanence tested according to SAE J1960 using HP Latex and solvent inks on a range of media, including HP media; in a vertical display orientation in simulated nominal outdoor display conditions for select high and low climates, including exposure to direct sunlight and water; performance may vary as environmental conditions change. Scratch, smudge and water resistance tested using HP Latex and solvent inks on a wide range of HP media. Laminated display permanence using Neschen Solvoprint Performance Clear 80 laminate. Results may vary based on specific media performance. For more information, see www.hp.com/go/supplies/printpermanence
- 4 Interior in-window display ratings by HP Image Permanence Lab on a range of media including HP media. HP in-window predictions based on test data under Xenon-Arc illuminant. Calculation assumes 6,000 Lux/12 hr day. Laminated display permanence using Neschen Solvoprint Performance Clear 80 laminate. For details: www.hp.com/go/supplies/printpermanence
- 5 Outdoor-quality speed based on printing in 2-pass unidirectional print mode; indoor-quality speed based on printing in 4-pass unidirectional print mode.
- 6 Results are comparable across ink technologies in similar system configurations.
- 7 Printers using HP Wide Scan Printing Technology employ fully-automatic printhead testing and maintenance systems.

THE NEW STANDARD IN VARIABLE DOT PRINTING

Jeff Edwards explains why DPI is no longer the only measure of inkjet print quality

THE LARGE FORMAT DIGITAL PRINTING INDUSTRY – ALSO COMMONLY KNOWN AS DISPLAY GRAPHICS – HAS ALWAYS RELIED ON THE SPATIAL RESOLUTION MEASURED IN DOTS-PER-INCH (DPI) AS THE STANDARD FOR PRINT QUALITY; THE MORE DOTS THAT CAN BE FITTED INTO A ONE-INCH SPACE, THE GREATER THE QUALITY. THE CORRELATION OF HIGHER

QUALITY TO HIGHER DPI IS CERTAINLY DEFENSIBLE, ASSUMING ONE THING: THAT THE DOTS ARE ALL THE SAME SIZE.

Recent developments in inkjet technology have turned this standard on its side. New generations of printers using variable dot printing have proven that DPI isn't the be-all and end-all when it comes to judging print quality.

SIX-COLOUR PRINTING

Years ago, inkjet manufacturers adopted six colour (super-CMYK) printing which added light cyan and light magenta to the standard ink set, substituting the lighter colours for their darker counterparts in the highlights and quarter-tones. This tonal substitution technique was implemented to help overcome the problem of visual graininess inherent in fixed dot, large droplet inkjet technology.

The added colours helped produce smoother quarter- and mid-tones and smoother, less-grainy gradients. Over time, this complicated and expensive method became the standard, and nearly all inkjet printer manufacturers using fixed dot technology have since incorporated six colour printing.

DELIVERING SUPERIOR QUALITY

While the six colour printing technique has become accepted with manufacturers, printers and their clients, a variable dot printing has emerged that could render six colour printing obsolete. Variable dot printing enables a print head to produce dots of variable size versus print heads using fixed-droplet technology; how many dots and their sizes varies by manufacturer.

For example, the Océ Arizona 250 GT UV curable printer uses Océ VariaDot technology that can produce seven levels of grey with dot sizes varying from 6 to 42 picolitres. Recent printers from Mutoh also use variable dot technology in two modes; each produces three levels of grey: one from 7 to 21 picolitres and the other from 3.5 to 12.5 picolitres.

The ability of these printers to vary the dot size for every pixel enables them to tune the amount of ink at any location based on the area of the image being printed. Small dots can be used for areas of fine detail, larger ones for areas of solid colour.

The result of variable dot printing is near-photographic image quality with sharpness usually seen at resolutions of 1,440 dpi or higher. The quality of images printed using variable dot technology may exceed the quality of those printed on current six-colour printers using fixed-droplet-sized print head technology.

In addition to superior image quality, variable dot imaging technology with four colour inks uses less ink compared to six colour printers with fixed-droplet inkjet technology. Depending on the print head, the resulting lower ink consumption can result in ink savings of up to 50 per cent over fixed-droplet, six colour printers. **EP**

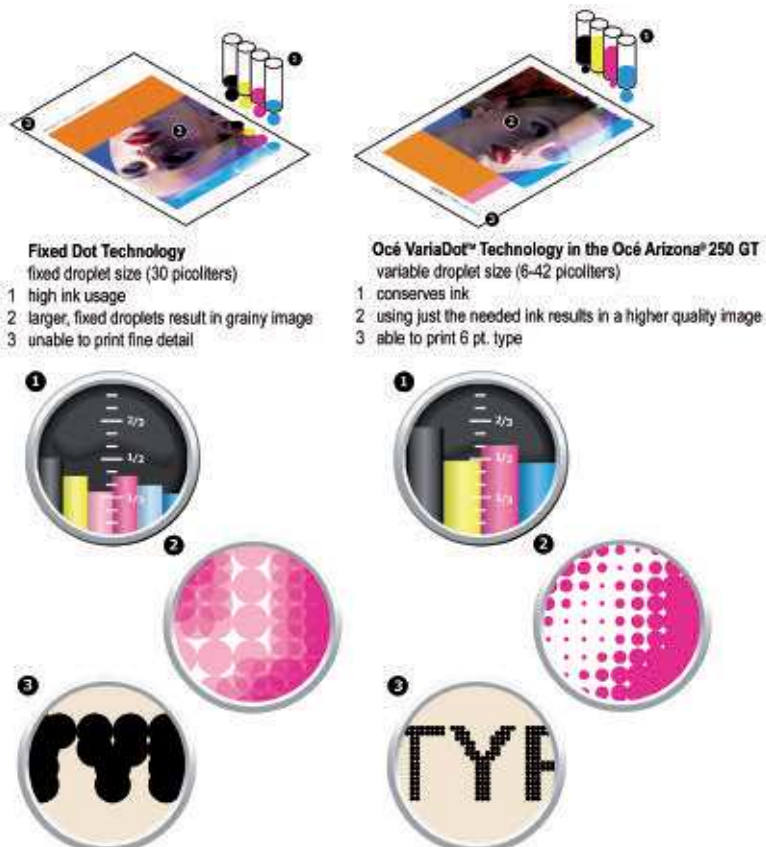
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Eyes printed with Variadot Technology



Variadot technology

SPECIALISING IN DARK

Bülent Öz explains how to overcome the problems of transfer printing on dark and white garments

FOREVER HAS BEEN DEVELOPING TRANSFER PAPER FOR THE DIGITAL PRINTING INDUSTRY FOR AROUND 20 YEARS. IT STARTED WITH THE CANON CLC 1 IN THE LATE 1980S WITH TONER TRANSFER; NOW DIGITAL TRANSFER PRINTING IS AVAILABLE WITH DIFFERENT KINDS OF SYSTEMS SUCH AS:

- Laser copiers and printers
- Pigmented and dye inks
- Sublimation inks
- Solvent / eco-solvent inks
- UV-inks
- HP-indigo printers.

The Forever Classic transfer paper, for printing white garments, was one of the first on the market. Transfer printing on white garments is not very difficult – all you need is a receptive coating which absorbs the ink (or holds the toner) that can be transferred by certain temperatures on a garment. Problems such as product differentiation regarding wash fastness, colour brilliancy, soft hand (touch) and compatibility on different printers can easily be solved.

Another very important aspect is the background of the transfer around the image. Because it is also transferred to the garment when printing white garments, preferably it should not be seen. Forever offers a variety of products as solutions.

TRANSFER PRINTING ON DARK GARMENTS

Transfer printing on dark garments has always been a challenge; there are two major difficulties compared to printing on white garments: cutting around the design, and opacity. The first problem can easily be solved by using a plotter / cutter with an optical eye (registration mark detection) – the user only has to put registration marks around the design and the plotter / cutter will do the rest automatically.

The second problem is not so easy to solve. Because the ink / toner is not opaque, the transfer paper has to be opaque to cover the dark garment, otherwise the colours will not be seen. Rather than trying to solve this problem with a 2-paper solution, Forever offers a one-paper-system – Forever Laser Dark – for laser printers. The high opacity, image sharpness, colour fastness on high wash cycles up to 60°C (warm wash cycle) has made this product a success.

RECENT DEVELOPMENTS

Following demand and with the experience gained from developing its Laser Dark product, Forever has introduced the following dark solutions over recent years:

- Forever laser dark new generation
- Forever solvent-dark
- Forever solvent-dark metallic
- Forever solvent-dark (subli-stop) 132



Cutting (process using Subli-Dark Soft 501)



The design (printed in mirror image) has to be placed on the textile upside down (process using Subli-Dark Soft 501)



After the transfer process, the backing paper has to be taken off after about 10 seconds (process using Subli-Dark Soft 501)



How it comes out of the printer (process using Subli-Dark Soft 501)

- Forever solvent-dark metallic (subli-stop) 142
- Forever ink-jet dark
- Forever digi-dark (for indigo printers).

These products fulfil expectations regarding wash fastness, high opacity, soft hand and high image sharpness.

The Forever Solvent-Dark and the Forever Solvent-Dark Metallic are the top sellers. The new Subli-Stop versions of these products, designed for polyester garments, are for customers looking for a digital solution to solve the 'bleeding' problem.

Subli-Stop versions work on polyester garments dyed with sublimation inks, and on transfer printed polyester garments (Erima)



After printing (mirror image) and weeding (process using Subli-Dark 201)

which can be identified on the white reverse of the garment. This is critical because excess sublimation inks are not washed out.

PRINTING ON DARK GARMENTS

A frequent question from customers at exhibitions is: "Why can't I print on dark garments as easily as on white garments?"

After five years of research Forever has developed a product which simplifies printing on dark garments and also has wash fastness. The problem of the 'bleed' of sublimation inks made this development possible; through this the company found that the sublimation inks can penetrate through a white opaque coating, so it developed a transfer paper for dark garments which can be printed in mirror image mode.

This simplified the transfer process, because there was no need for an application

tape and the transfer could easily be weeded after printing and cutting. It is especially easy to work with hybrid plotters from Roland because these printers print and cut the contours automatically.

SPECIAL CHARACTERISTIC

A very special characteristic of sublimation inks causes this to happen. Because sublimation inks can transform directly from solid to gas form (without going through the liquid stage), they can penetrate through a white coating, colouring the coating so evenly from the bottom to the top that even with an extreme stretching of the coating, no stretch lines (marks) can be seen.

This makes the final product hard to differentiate from a screen printed garment: the colours do not fade, the white coverage is extremely good and the image never breaks.



After 8 seconds the backing paper has to be taken off (process using Subli-Dark 201)



After the transfer process, the backing paper has to be taken off after about 10 seconds (process using Subli-Dark Soft 501)

The Subli-Dark 201 product is advised for numbers, letters and free-standing logos and can be seen as a multi-coloured flex.

If the 201 is used for photos, the image feels too hard on the garment. The Subli-Dark Soft 501 solves this problem. This hot peel transfer can't be cut by plotters and is therefore not suitable for letters, numbers and free-standing logos, but it is the right product for easily printing photos and rectangular designs on dark garments. The image is extremely soft and printing is as easy as printing white garments.

LOOKING FOR NEW HORIZONS

Forever's new development, Forever Subli-Backlight, is a product for direct printing. It has a translucent coating on a polyester film and it cannot be scratched or damaged because it is printed on the reverse of the polyester film with sublimation inks. The sublimation ink only needs to be activated by 130-140°C to pass through the translucent coating and sublimate on the polyester from the reverse. This can easily be done on a heat transfer machine, a laminator or a tunnel.

Several new developments will follow this product for large-format printing. [SP](#)

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web: www.forever-ots.com



After placing the transfer on the garment (process using Subli-BackLight)

MAKING THE MOST OF ENERGY OUTPUT

Simon Whittle discusses the effect irradiance and energy has on process results

WITH TODAY'S DEMAND FOR ENERGY-EFFICIENT PROCESSES DUE TO THE INCREASING COST OF OIL, AND BUSINESS PRESSURES TO INCREASE MANUFACTURING CAPACITIES WITHOUT ADDING EQUIPMENT AND PEOPLE, IT'S BECOMING MORE IMPORTANT FOR COMPANIES TO PROVIDE EQUIPMENT THAT WILL ANSWER THESE DEMANDS.

For ultraviolet curing this is provided by improving optics and designs. However we are still stuck in a mentality of needing more power input to meet the demands for production speeds.

We, as equipment suppliers, provide product specifications as the lamp power output, i.e. 160, 240 W/cm. This is important but we should also discuss output values for the system, e.g. irradiance and integrated energy. We should be discussing system specifications where it matters the most – as energy delivered to a substrate. Knowing why we should do this is important and is now discussed.

SOME BASIC DEFINITIONS

Ultraviolet light exists in the electromagnetic spectrum in the range of 200 to 400 nm and can be split into the following wavelength ranges:

UV A: 320-390 nm

UV B: 280-320 nm

UV C: 250-260 nm

UV V: 390-440 nm

The Radtech Organization has done an excellent job of defining energy and irradiance:

Peak Irradiance (effective): the radiant power output (photon density) of a UV lamp at the chemistry or substrate surface. Expressed in Watts/cm². It is a function of the power input to the lamp (W/in) but more importantly it is also a function of how the lamp optics are designed.

Integrated energy (effective): the radiant energy output (total photons) of a UV lamp arriving at the chemistry or substrate surface. Expressed in mJ or J/cm², it is the time integral of irradiance, i.e. 1 W/cm² for 1 second = 1 J/cm². It is also inversely proportional to speed: with a 2 times increase in speed, energy will half.

Both forms can only be considered effective when they are in the correct wavelength range to be absorbed by the chemistry and start a polymerisation reaction. Consider figure 1, which shows the absorption characteristics for the main components in a UV curable formulation.

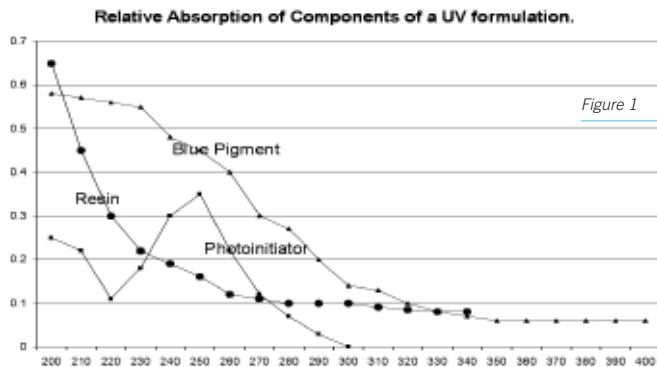


Figure 1 shows that the photoinitiator absorbs between 200 and 300 nm. Energy output in the UV A range would not be very effective as there is nothing to absorb in that range. Also, from a

chemistry perspective, the blue pigment in the formulation competes with the initiator and a different initiator that absorbs in the UV A range could be used.

WHY IT MATTERS

You'll notice that in the definition of irradiance, it is considered a function of power input. This makes sense if you take the same system and increase the power – the output to the substrate should by definition increase. But, more importantly, it is also a function of the optics design of the system which is where suppliers can make a difference.

All UV systems are not the same and we should avoid falling into the misconception that they are; one system typically is not the same as another for a varying number of reasons, but only performance will be considered.

Example 1 shows output in the four UV ranges for four different lamp systems, all operating at 160 W/cm. Measurements were taken using an EIT Power Puck at 25 fpm.

	Irradiance (W/cm ²)				Energy (mJ/cm ²)			
	UV A	UV B	UV C	UV V	UV A	UV B	UV C	UV V
System 1	1.16	0.98	0.1	0.694	766	667	72	448
System 2	1.55	1.576	0.145	0.710	788	740	74	355
System 3	2.46	2.55	0.296	1.12	860	872	98	373
System 4	3.1	3.1	0.54	0.58	795	793	138	223

Example 1: Output in four UV ranges for four different lamp systems operating at 160 W/cm

These systems are commercially available on the market today; the difference is the reflector design / geometry and bulb diameter. System 4 is a highly focused elliptical design with a smaller diameter bulb. System 1 is a semi-elliptical design with a larger diameter bulb. Even increasing the power on the first two systems to 240 W/cm, you still wouldn't get the output you see on system 4. Irradiance and energy is proportional to power input assuming everything else stays the same. For system 2, by increasing the power to 240 W/in, the irradiance in UV A will increase to 2.33 W/cm².

SEEING WHY IT MATTERS

Irradiance (W/cm ²)	Energy (J/cm ²)	Cure speed (fpm)
6.73	0.365	140
5.26	0.536	110
3.43	0.558	90
1.64	0.587	70
1.06	1.160	30

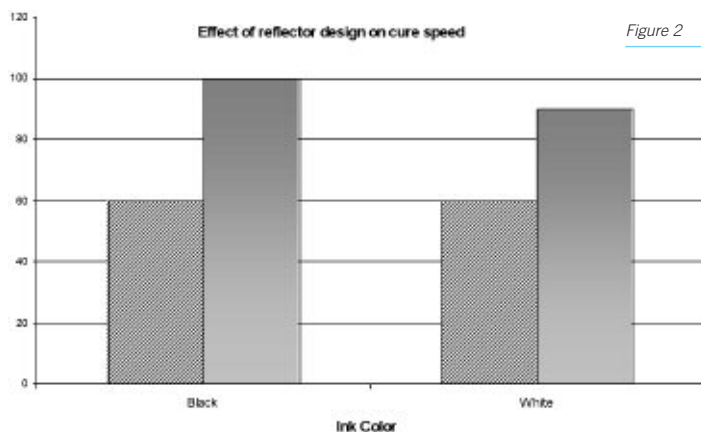
Example 2: Cure speed of a black screen ink printed at 0.7 mil film thickness

In example 2, the irradiance was varied by changing the focal distance between the bulb and the substrate and the power output of the lamp was kept constant at 240 W/cm. A black screen ink was applied to a film substrate and cure was determined by tape adhesion to the substrate. At the high irradiance the cure was four times faster than the low irradiance value. This example shows why integrated energy should be specified along with irradiance. At different irradiance values the amount of energy required to cure the ink varied with less energy being required at the high irradiance. Just specifying an ink cure specification with one value or the other doesn't provide the whole picture.

	Irradiance (W/cm ²)				Energy (mJ/cm ²)			
	UV A	UV B	UV C	UV V	UV A	UV B	UV C	UV V
System 1	1.906	1.641	0.228	0.816	938	816	122	410
System 2	3.45	3.11	0.442	1.519	1175	1025	178	516

Example 3: Comparison of two systems


Example 3 is an actual 'head to head' comparison of two systems operating at 160 W/cm. White and black screen inks were applied to the film substrate and evaluated for cure. Again, you can see that irradiance instead of W/cm would make more sense. Both systems were operating at the same power, 160 W/cm, but the second system cures the inks at a speed more than 50% higher than the first.



Both examples show there is no correlation between lamp power in W/cm and cure but there is a correlation between irradiance, integrated energy and cure, with a higher irradiance typically resulting in a better cure. Staples, Lapin et al have shown that for non-pigmented coatings, energy output is important for curing these types of chemistry.

CONCLUSION

All systems are not the same and power output in W/cm doesn't necessarily equate to faster cure. More attention should be paid to irradiance and energy and the effect it has on process results. We should also remember to include in what wavelength the output is measured, so the chemistry supplier knows which initiators to use to make the most of the energy output. Other factors such as space and sensitivity to heat should also be considered when choosing a supplier.

You can have a more informed conversation with both a UV system supplier and your chemistry supplier to get the best overall system for your process and in the long run, make more profit. 

Simon Whittle is Engineering and Operations Manager at American Ultraviolet

REFERENCES

R W Stowe: Practical aspects of irradiance and dose in UV curing (Presented at Radtech 98 North America)

S Whittle: Process control – the UV equipment manufacturer's contribution (Presented at Radtech 99 Europe)

Jacob Staples, Stephen Lapin and Simon Whittle: UV lamp configuration effects on the curing properties of clear top coatings for graphic arts applications

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HEALTH & SAFETY INFORMATION

SCREEN CHEMICALS FACT SHEET

ACRYLATES

(In photostencil emulsions)

WHERE USED	Raw material component in high quality solvent and water resistant screenprinting emulsions. (See also Fact Sheet on UV Curing Inks)								
HAZARDS	May cause irritation of skin, eyes and respiratory system May cause sensitization by skin contact Can be dangerous to aquatic organisms								
PROTECTION	Safety goggles Nitrile rubber protective gloves								
FIRST AID	<table border="0"> <tr> <td style="vertical-align: top;">Skin</td> <td>Wash away with soap and water and rinse. Do NOT use solvents or thinners!</td> </tr> <tr> <td style="vertical-align: top;">Eyes</td> <td>Flush with plenty of water (10 - 15 min.). Call a physician.</td> </tr> <tr> <td style="vertical-align: top;">Ingestion</td> <td>Call a doctor. Keep at rest. Do not induce vomiting.</td> </tr> <tr> <td style="vertical-align: top;">Inhalation</td> <td>Not applicable</td> </tr> </table>	Skin	Wash away with soap and water and rinse. Do NOT use solvents or thinners!	Eyes	Flush with plenty of water (10 - 15 min.). Call a physician.	Ingestion	Call a doctor. Keep at rest. Do not induce vomiting.	Inhalation	Not applicable
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Ingestion	Call a doctor. Keep at rest. Do not induce vomiting.								
Inhalation	Not applicable								

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HEALTH & SAFETY INFORMATION

SCREEN CHEMICALS FACT SHEET

ISOCYANATE

WHERE USED:	Catalyst/hardener for mesh adhesives and some lacquers. After mixing with the suitable/recommended adhesive/lacquer, the mixture is applied to the screen.								
HAZARDS:	Harmful by inhalation. May cause sensitization by contact with skin. Heating may generate vapours which irritate the respiratory system, cause asthmatic breathing, breathlessness and risk of development of respiratory allergy. Often diluted in ethyl acetate, which is highly flammable.								
PROTECTION:	Wear protective gloves. Use disposable gloves protecting against isocyanates along with cotton gloves closest to the skin. Laminate (PE/EVOH) gloves are recommended. Wear apron or protective clothing. Personal protection equipment should be chosen according to the CEN standards and in discussion with the supplier of the personal protective equipment								
FIRST AID:	<table border="0"> <tr> <td style="vertical-align: top;">Inhalation:</td> <td>Move injured person into fresh air, keep calm and under observation. In case of persistent throat irritation or coughing seek medical attention.</td> </tr> <tr> <td style="vertical-align: top;">Skin contact:</td> <td>Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders seek medical attention.</td> </tr> <tr> <td style="vertical-align: top;">Eye contact:</td> <td>Immediately flush with plenty of water for up to 15 minutes. Get medical attention</td> </tr> <tr> <td style="vertical-align: top;">Ingestion:</td> <td>Immediately rinse mouth and drink plenty of water. Keep person under observation. Do not induce vomiting. Get urgent medical attention</td> </tr> </table>	Inhalation:	Move injured person into fresh air, keep calm and under observation. In case of persistent throat irritation or coughing seek medical attention.	Skin contact:	Remove contaminated clothing immediately and wash skin with soap and water. In case of eczema or other skin disorders seek medical attention.	Eye contact:	Immediately flush with plenty of water for up to 15 minutes. Get medical attention	Ingestion:	Immediately rinse mouth and drink plenty of water. Keep person under observation. Do not induce vomiting. Get urgent medical attention
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SCREEN CHEMICALS FACT SHEET

SCREENWASH/CLEANERS

WHERE USED:	Used on print line to remove dried in ink during press run or in Stencil Remake department to clean off ink prior to stencil removal. May be hand or mechanically applied.								
HAZARDS:	Traditional screenwashes usually based on harmful, volatile, flammable aromatic or aliphatic hydrocarbon solvents blends. More recent screenwashes based on less hazardous, non flammable, less volatile alternative solvents. Solvents may be Harmful or Irritant by contact with skin or eyes or by inhalation. Some hydrocarbon solvents may cause neurotoxic effects from prolonged exposure. High vapour levels can be encountered when using cleaners/screenwashes. Only use in areas where there is an adequate supply of fresh air or local ventilation available.								
PROTECTION:	Safety goggles. Usually nitrile rubber protective gloves are suitable but for some substances alternatives are required. Check Suppliers MSDS for specific data.								
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Ingestion	Do not induce vomiting. Keep at rest and consult a doctor after taking note of hazard label warning phrases.								
Inhalation	Remove patient to fresh air. Call physician. Apply artificial respiration if necessary.								

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HEALTH & SAFETY INFORMATION

SCREEN CHEMICALS FACT SHEET

SOLVENT BASED INKS

WHERE USED	Used on Automatic & Semi-Automatic flat bed, Rotary screen printing presses and hand benches for four colour, poster and general display printing.								
HAZARDS	Solvents may be irritant to eyes, skin or respiratory system. Some solvents are harmful by inhalation and possibly skin absorption. Aromatic hydrocarbon solvents can have neurotoxic effects from prolonged exposures.								
PROTECTION	Safety goggles Nitrile rubber protective gloves (but check suppliers data) Good general ventilation								
FIRST AID	<table border="0"> <tr> <td style="vertical-align: top;">Skin</td> <td>Wash away with soap and water (or proprietary skin cleanser) and rinse. Do NOT use solvents or thinners!</td> </tr> <tr> <td style="vertical-align: top;">Eyes</td> <td>Flush with plenty of water (10 - 15 min.). Consult a physician if irritation persists.</td> </tr> <tr> <td style="vertical-align: top;">Ingestion</td> <td>Drink water, call a doctor. Keep at rest. Do not induce vomiting.</td> </tr> <tr> <td style="vertical-align: top;">Inhalation</td> <td>Remove patient to fresh air. Call physician, apply artificial respiration if necessary</td> </tr> </table>	Skin	Wash away with soap and water (or proprietary skin cleanser) and rinse. Do NOT use solvents or thinners!	Eyes	Flush with plenty of water (10 - 15 min.). Consult a physician if irritation persists.	Ingestion	Drink water, call a doctor. Keep at rest. Do not induce vomiting.	Inhalation	Remove patient to fresh air. Call physician, apply artificial respiration if necessary
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A further 4 screen chemical fact sheets will be published in the next issue of this magazine, or go to www.specialistprinting.com to print out at full size.

EXPLORING THE ECO JUNGLE

In the first part of their article, Robb Schneider and Paul Roba investigate green technology in the graphics industry

'GREEN' TECHNOLOGY, OR ECO-INNOVATION, HAS BEEN GROWING OVER THE LAST DECADE WITH A DRAMATIC INCREASE RECENTLY. AS MANKIND DETERMINES ITS IMPACT ON THE GLOBAL ECOSYSTEM, EFFORTS ARE UNDERWAY TO EXPLORE, MAP AND ULTIMATELY DEFINE ROLES GOING FORWARD. THE IDEA OF ECO-INNOVATION OR GREEN TECHNOLOGY, A RELATIVELY RECENT CONCEPT,¹ DESCRIBES PRODUCTS AND PROCESSES THAT DRIVE ECOLOGICALLY FRIENDLY DEVELOPMENT. IT CAN BE FURTHER DESCRIBED AS PRODUCTS, PROCESSES AND IDEAS THAT ARE BENEFICIAL TO SUSTAINING THE ENVIRONMENT.

Green technology has spread to all markets and industries as customers and suppliers begin to meet the needs of the growing demand for sustainable technology and green products and services. The graphics and printing industry is no exception to this market change. As graphics and labels are ubiquitous, they naturally cross over from small (identification labels on everyday products) to large (promotional graphics wrapping entire buildings) items in our lives.

The call for green technology originates from all end users, such as design firms, large corporate identities, government regulatory agencies, as well as the independent consumer. The demand for a green product service for the printing industry has driven technology development, from the media suppliers to the operator on the press floor.

What has emerged from the growing demand is a language of terms, statements, guidelines and regulations. This new influx of terminology has resulted in many different classifications of what 'green' means to everyone in the graphics market.

DEFINING 'GREEN'

In industry, 'green' has come to mean many things; for this article, "environmentally sound or beneficial"² will be our generic definition. As mentioned earlier, the demand for green technology or the 'greening of industry' has been driven by the activities and needs of industry, regulatory agencies, governments and the individual (the contributors).

The picture depicts the actions, activities and generalised objectives in the outer circle that are the impetus for creating a green industry. A look at this 'circle of greening' shows that the contributors (regulatory agencies, consumers, business and government) use and manage the activities of the outer circle as they become participants

in the process of greening the industry. The specific activities, when compounded upon each other, provide the framework for moving towards an eco-friendly industry.

ACTIONS AND ACTIVITIES

The actions and activities are defined as follows:

- **Recycling:** Recovering and reprocessing waste into usable products. An example would be using recyclable plastics from one form to make a new form, such as bottles to bags.
- **Stewardship:** The responsible management of resources, in order to prolong the availability and minimise the impact on the environment. An example would be replanting forest areas after harvesting timber.
- **Sustainability:** Using resources that can be renewed and will not be depleted with continued use. An example would be the use of sugar cane for fuel.
- **Landfill reduction:** Use of recyclable products and those items that are compostable, biodegradable or dissolvable in order to reduce the overall volume of material in landfill.
- **Elimination of toxic materials:** Reduction of the use of hazardous chemicals, heavy metals, toxins, chlorine compounds and other dangerous items.

As we further define the activities of the outer circle, we realise the definitions above are simplistic and the depth of activities go much further. These activities are not independent, but are interconnected at some level – hence the 'circle of greening'.

As an example, consider recycling – the feasibility of recycling the whole product itself or just components of the product, and if there are programmes in place to handle the recycling. This leads to several interesting concepts, the first of which is landfill reduction of non-recyclable materials. Landfill reduction delves into the options involved in reducing the items that enter a landfill as well as the concepts of degradation and biodegradation (to be further defined in the second article). Elimination of toxic materials is also of importance when considering the fate of materials; the concept explores which hazardous chemical components are present in a product, and how they can be eliminated or reduced.

Ultimately, when examining the components of green products, industries must consider the sustainability of the process. Sustainability focuses on the use of renewable resources and the management of



The circle of greening

resources for future use. The focus is on a constant supply and replacement of the value stream, unlike petroleum-based products.

Finally, stewardship provides the insight to establish programmes, abide by monitoring services and use each of the preceding activities in a functional format for the organisation. One needs to understand that these activities are part of an overall strategy

GREEN LANGUAGE

The following is a list of some of the common abbreviations used in many green guides³:

- CFPA: Chlorine Free Products Association (USA)
- CONEG: Confederation of Northeastern Governors (USA)
- CRS: Center for Resource Solutions (USA)
- CSA: Canadian Standard Association
- EBA: Environmentally Benign Adhesives
- ECF: Elemental Chlorine Free
- FSC: Forest Stewardship Council
- GHGA: Greenhouse Gas Emission
- ISO: International Organisation for Standardisation
- LCA: Life Cycle Assessment
- LCI: Life Cycle Inventory
- PCF: Processed Chlorine Free
- PCC: Post Consumer Content
- PCW: Post Consumer Recycled
- PLA: Polyactic Acid
- PE: Polyethylene
- PEFC: Programme for the Endorsement of Forest Certification (Europe)
- PET: Polyethylene Terephthalate
- PEST: Polyester
- PP: Polypropylene
- PVC: Polyvinyl Chloride
- RCA: Recycling Compatible Adhesive
- REACH: Registration, Evaluation and Authorisation of Chemicals (Europe)
- RoHS: Restriction of Hazardous Substances
- SFI: Sustainable Forest Initiative
- SPC: Sustainable Packaging Coalition
- TCF: Totally Chlorine Free
- VOC: Volatile Organic Compound
- WEEE: Waste and Electrical Equipment Directive (Europe)

to 'green the industry', as well as the manufacturing processes used to provide goods for the ultimate consumers.

GREEN LANGUAGE


Of course, as we look at how these activities work together, we need to understand the common language and acronyms used in the green world (see box for definitions of some common acronyms). The list and definitions can be overwhelming, and yet there are still many other directives, regulations and terms used by various industries, organisations and governments around the world that are unmentioned in this article. A green product or service is the summation of a variety of processes and raw materials, so there are many different avenues to reducing the impact of a product on our ecosystem.

As a result, many different organisations have input and impact in how we utilise and regulate the planet's limited resources. Navigating the eco jungle will be a constant journey, resulting in a 'light green' approach where the product or service is changed through small increments at a time. Through eco-innovation, the printing industry will evolve into a green industry. With an eye towards eco-friendly development, the marketplace will balance the needs to develop social, economic and environmental practices which will provide and build wealth around the world.

CORPORATE RESPONSIBILITY

Avery Dennison has a Sustainability Charter which stresses the importance of the three Ps: People, Prosperity and Planet. The company believes in achieving sustainable business success through responsible economic, social and environmental practices that help build healthy communities around the world, striving to make sustainability integral to everything it does. Its aim is to balance business activities that benefit its shareholders, customers and employees, while improving the quality of life for communities and conserving the world's natural resources.

With a focus on continuous improvement, the company seeks to increase shareholder value (Prosperity), to engage in social improvement programmes that have real impact (People) and to uphold responsible stewardship of the environment (Planet).

It becomes more and more apparent each day that every organisation and individual will need to adopt philosophies and principles to address the environment. Individual positions and roadmaps may vary, but each should understand and address the basics of the eco jungle. The second part of this article will help individuals become aware of more terms, corporate efforts, positions and how each of us can become a participant in the green technology of the graphics world. 

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The second part of this article will appear in the next issue of this magazine.

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NOTES:

- 1 Fussler, C and James, P (1996) Driving Eco-Innovation: A Breakthrough Discipline for Innovation and Sustainability, Pitman Publishing: London
- 2 Modern Language Association (MLA): 'green' Dictionary.com Unabridged (v 1.1). Random House, 31 Dec 2007 (<http://dictionary.reference.com/browse/green>)
- 3 From Fasson webpage (www.fasson.com)

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SPECIAL EFFECTS IN SCREEN PRINTING

Friedrich Goldner and Norbert Burzynski explain the theory behind tactile prints

THIS ARTICLE IS ABOUT THE PRINTING OF VERY THICK INK LAYERS, ONE OF THE CHARACTERISTIC FEATURES OF THE VERSATILE SCREEN PRINTING PROCESS. USING SCREEN PRINTING, INK DEPOSITS MAY VARY FROM 5 UP TO A FEW HUNDRED MICRONS.

The print of thick, tactile layers can have three different functions:

- as a graphical effect, often referred to as 'high built', in order to highlight specific areas
- as a readable text (Braille)
- as tactile warning symbols.

Prints with tactile applications are realised both with rotary screen and flatbed screen printing. All applications require a completely different approach concerning mesh, emulsions and inks.

MESH SELECTION

To allow very high ink deposits, a very coarse mesh for UV inks must be chosen. For flatbed applications, the following mesh types have proved to give excellent all-round results:

- Mesh 32-70 (polyester), 117 µm screen thickness
- Mesh 40-80 (polyester), 133 µm screen thickness
- Mesh 43-80 (polyester), 130 µm screen thickness

For structures such as brush strokes, water drops or other raised patterns, the mesh type used might be even coarser: mesh 24-140 (polyester), 250 µm screen thickness.

For rotary screen the recommendations are Gallus Screeny BZ 200 µm screen thickness and Stork RotaMesh 75 150 µm screen thickness.

STENCIL MAKING

A further important factor to obtain the required coating thickness is the stencil production method. The choice of the coating material, the coating technique as well as the exposure, processing and drying of the thick film stencil have a considerably high impact on the ink deposit, edge definition and print run stability. For the production of a 'thick film stencil', screen emulsions with a high solid content and capillary films of 150-300 µm thickness are used.

With large area tactile prints, often seen in graphic screen applications, the effect of the thick film emulsion is nullified except at the edges of the stencil, and it is the mesh thickness and opening only that determines the lay-down of ink.

EOM – EMULSION OVER MESH

The following specifications are real life figures out of production environments



Tactile varnish (flatbed screen)



Tactile varnish with glitter effect (flatbed screen)



Tactile varnish (rotary screen on Gallus)



Tactile varnish on pre-printed offset (rotary screen on Gallus)

proven for print reliability. For Braille as well as for tactile symbols:

- Flatbed screen: Mesh: 32-70 at 15° angle, EOM 160 to 190 µm, stencil thickness 260-300 µm
- Rotary screen: 380 µm stencil thickness with Gallus Screeny BZ mesh and 350 µm stencil thickness with Stork Rotamash 75.

INK REQUIREMENTS

All these applications have arisen after the introduction of UV ink technology which incorporated for the first time a 100% solid ink system. To provide a proper curing of high ink layers at fast production speeds, most applications are realised with clear varnishes.

The following ink characteristics are needed when printing tactile applications:



Tactile varnish on pre-printed HP indigo label (Franchini & Speri flatbed label)

Due to the thick film stencils and the primary requirement of a high ink built, the rheological features of these inks are extremely important. Viscosity levels are higher compared to standard inks. Easy release properties through the ink channels of the stencil are key. When printing Braille and warning symbols, excellent edge definition of the dots and fine lines is required. Braille dots are often printed over a design, therefore the inks should have very good transparency and non-yellowing characteristics. For graphical tactile prints, a very good surface wetting and a bubble-free finish are needed.

TACTILE VARNISHES

The varnishes were rated according to adhesion and scratch resistance to the substrate, reactivity, flexibility of the ink film and resistance to chemicals. Typical substrates to be printed on include corona pre-treated PP and PE label materials, pre-coated PET films, PVC and paper self-adhesive films, paper, card and cardboard as well as offset pre-printed materials, providing a wide material range.

Besides the clear varnishes, a highly reactive UV ink chemistry and optimised UV curing units currently allow the combination of effect pigments with tactile varnishes. This combination is described best as 'tactile print finishing'. Colourful glitter pigments, flip-flop, pearlescent effects and many others can be used to achieve high impact graphics.

Particularly in combination with standard offset or digital printing applications, this results in a wide choice of new and interesting possibilities.

Marabu's specially developed products for tactile printing include:

- Rotary screen: UltraRotaScreen 912 for tactile prints; UVLB 1 for Braille and warning symbols.
- Flatbed screen: Ultragraph UVAR 910 for tactile prints; UVLB 2 for Braille and warning symbols.

SUMMARY

Screen printing proves its strengths for tactile applications. The printing of Braille and warning symbols is well established, especially for rotary and flatbed label printing. Graphic printing using tactile finishes, either clear or with effect pigments, is getting more and more popular because it adds high value to a 'standard' print application. [52](#)

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WHAT THE JPEG IS THIS? PART 1

In the first part of his article, Michael Lackner gives us an introduction to the world of graphic formats

GRAPHIC FORMATS ARE THE RULES WITH WHICH A FILE IS STRUCTURED IN ORDER TO DIGITALLY SAVE PHOTOGRAPHS, TECHNICAL DRAWINGS, ARTISTIC DRAWINGS OR PRINT LAYOUTS. THERE ARE VERY MANY DIFFERENT GRAPHIC FORMATS WHICH HAVE MAINLY DEVELOPED DUE TO THE CREATION OF SPECIAL SOFTWARE PROGRAMMES.

Furthermore, new graphic formats were repeatedly created in order to ensure the smallest possible memory requirements, fast access by the programme, fast transport via the internet and exchangeability between the various software programmes. Grid and vector formats or graphics are distinguished as a rule.

GRID GRAPHICS

In grid graphics, images as well as photographs and scans are saved in a pointwise fashion. Digital cameras and scanners share the image motif in lines and columns and provide colour values for every point in the grid (pixels). In the grid format, the number of lines and columns are saved in pixels (resolution) and the colour values of the pixels as a rule. The colour values can be saved in various steps as simple black / white values (1-bit) through to RGB and CMYK values (24-bit, 32-bit) (colour depth).

Grid graphics require high levels of memory, which means that various compression methods are used. Here, loss-free methods, such as LZW (Lempel-Ziv-Welch), RLE (run-length encoding), and methods prone to loss, Diskrete Cosinus Transformation (DCT) as used in the JPEG method, are distinguished. For compressing prone to loss, individual pixels are dropped when saving. These pixels are then reconstructed from the remaining ones when decompressing. A JPEG-compressed image is therefore not of the same quality as the original. Depending on the application, this loss in quality can, however, be taken into account, as the memory needed is much smaller.

Well-known grid graphics formats are TIFF (Tagged Image File Format), JPEG (Joint Photographic Experts Group), BMP (Windows Bitmap), PBM (Portable Bitmap), GIF and PNG.

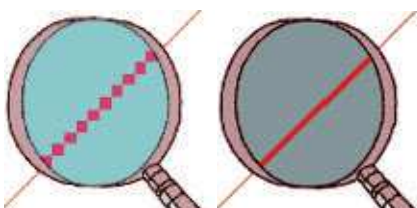


Figure 1: Example of grid graphics

Figure 2: Example of vector graphics

TIFF FORMAT

The Tagged Image File Format (TIFF) was originally developed in 1986 by the Aldus Corporation (acquired in 1994 by Adobe) as the standard method to save images (grid graphics). With the support of compressed and uncompressed RGB files, TIFF Version 4.0 (1987) gained more significance. With version 5.0 (1988) the specification was expanded by the LZW compression method and with version 6.0 (1992) by the CMYK colour range and the JPEG compression method.

As TIFF supports various colour depths (1-bit, 2-bit, 4-bit, 8-bit or 16-bit part colour), alpha channels, various colour models (RGB, CMYK, YcbCr, Lab), various compression methods (PackBits, RLE, LZW, CCITT and JPEG) and the proprietary properties (TAGs), the area of application is very big. Especially due to the support of the CMYK colour range, TIFF is often used in print shops and in pre-press.

In the basic structure of a TIFF there is always a list of individual TAGs which describe the properties of an image (number of pixels in width and length, colour depth, etc.) and the offset values for the grid data within a file. The internal offset values are defined as 32-bit values, which means that the maximum file size is limited at 4 GB. Not all software supports the entire TIFF specification.

JPEG AND BITMAPS

JPEG is the file compression method presented by the Joint Photographic Experts Group in 1992. C-Cube Microsystems used JFIF (JPEG File Interchange Format) as a method to save images; in the vernacular, JFIF images are called JPEGs. Supplements of JPEG images with EXIF information and embedded ICC profiles are not actually included in JFIFs. The size of JPEG images is limited for JFIFs to 65.535 x 65.535 pixels. JPEG images are often used for internet applications and are the quasi standard in the area of digital amateur photography.

A further development of JPEG is JPEG 2000 which provides a better image compression (DWT – Discrete Wavelet Transformation), selection between loss-free and loss-prone compression and the saving of meta data.

Windows Bitmap (BMP) was developed by Microsoft for the Windows operating system and OS/2. BMP supports several colour depths as well as alpha channels and loss-free RLE compression. It is predominantly used in Windows environments, but is supported by all standard graphics programmes.

108	110	94	92	84	89	94	89
104	104	110	101	97	103	93	93
106	104	109	100	110	113	106	108
111	100	111	112	102	106	122	125
91	117	105	96	120	112	111	111
108	113	98	97	108	101	91	102
105	94	103	96	97	100	107	113
91	105	94	86	83	100	87	83

Figure 3: Spatial coding in JPEGs

769	2	12	2	-6	-8	1	0
3	15	-1	-0	5	8	0	1
-39	16	5	1	-12	4	2	-8
-6	9	0	1	3	-9	-10	0
-8	-2	4	-4	-8	8	-15	-3
5	-11	10	-3	11	19	4	0
-10	3	0	5	-1	-11	-3	-4
1	-8	-2	5	-5	-7	-1	8

Figure 4: A Discrete Cosine Transform is applied to re-order each block into an overall luminance value for the block and a representation of the different frequencies within the remainder of the matrix

-116	2	0	0	0	0	0	0
0	1	1	0	0	0	0	0
-2	1	0	0	0	0	0	0
0	0	0	0	0	0	0	0
0	0	1	0	0	0	0	0
0	0	0	0	1	0	0	0
0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0

Figure 5: Quantised values result in one relatively high luminance value plus a range of very small numbers

PBM, GIF AND PNG FORMATS

PBM (Portable Bitmap Utilities) was developed in the 1980s by Jef Poskanzer and describes a very easy way of saving grid graphics. Black / white, grey and RGB data can be saved: grey images are called PGM and RGB images are PPM. PBM files are mainly found in Unix / Linux environments.

GIF (Graphics Interchange Format) was developed in 1987 by Compuserve to transfer image data as quickly as possible via slow modems. Colour information is saved in a colour table and can have up to 256 different entries. Furthermore, it is possible to define a colour value as transparent. In 1994 Unisys discovered that a software patent submitted in 1983 held the LZW method used in the

GIF format and demanded licence fees from CompuServe. In 2004 the patent entitlements lapsed. GIFs are often used in internet applications.

PNG (Portable Network Graphics) is less complex than a TIFF and can compress grid data without loss. The development of PNG was due to long-standing licence problems with the LZW compression method. PNG can process colour palettes further as well as grey scales and RGB images. The loss-free deflate algorithm is used as the compression method.

VECTOR GRAPHICS

A vector graphic writes on an image with lines, circles and polygons (objects). Parameters such as colour and line thickness can be stated for every object. The software to process vector graphics calculates for the runtime the individual points from the objects for illustration on the screen or for printing. This property enables representing vector graphics without loss of quality in various sizes. Famous vector graphics formats are DXF, HPGL and SVG. Postscript and PDF are regarded as vector formats but they are actually hybrid formats, as they can contain both vector and grid data.


Drawing Interchange Format (DXF, also Drawing eXchange Format) was developed by AutoDesk and serves to exchange CAD drawings between several systems. DXF is always linked with the AutoCad CAD software which means that a new DXF version was defined with every new AutoCad version. DXF can be imported into all kinds of desktop programmes.

HPGL (Hewlett Packard Graphic Language) was developed by Hewlett Packard and was originally used to control pin plotters. Typical instructions are therefore SP (Select Pen), PA (Pen Advance), DP (Pen Down) or PU (Pen Up). HPGL can, however, also be used to exchange simple line drawings and can be imported in all kinds of desktop programmes.

SVG, POSTSCRIPT AND PDFS

SVG (Scalable Vector Graphics) is a standard to write vector graphics and was published in 2001 by the World Wide Web Consortium as a recommendation for use in internet applications. SVG is based on simple geometrical elements (lines, circles, rectangles etc.) and is increasingly used in free and proprietary applications.

Postscript is a page writing language which was developed from 1984 by Adobe. It is a complete programming language which has to be interpreted on the issue device (printer or grid image processor RIP). In Postscript, vector data can be written and grid graphics can be embedded. Postscript has become a standard in the printing industry. EPS (Encapsulated Postscript) is a limitation of Postscript to make embedding documents easier. With EPS only one page can be written on.

PDF (Portable Document Format) was also developed by Adobe from 1993 as a page writing language. PDF is based on Postscript, but has a limited command scope and some extensions such as transparency effects, forms etc. To facilitate data exchange in the printing industry, PDF/X was packed into an ISO norm. PDF was designed to exchange finished documents and usually cannot be edited by the viewer. 

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The second part of this article will appear in the next issue of this magazine. To make sure you get your FREE copy, please email subs@specialistprinting.com

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THE RECIPE FOR FINE-LINE PRINTING

Steven Abbott offers his recipe for the best chance of success

AS MANY PRINTERS ARE STRUGGLING WITH THE CHALLENGE OF GOING DOWN TO 50 µM (2-MIL) AND LOWER, I'D LIKE TO PRESENT A RECIPE FOR SUCCESS. WELL, NOT QUITE – IT'S A RECIPE FOR GIVING YOU THE BEST CHANCE OF SUCCESS. WHAT'S IMPORTANT IS THAT THOSE WHO DON'T FOLLOW THIS RECIPE ARE GUARANTEED FAILURE.

I'm very happy to offer this advice, and very sad that each time it has been ignored, failure is inevitable. I learned all the mistakes the hard way when my colleagues and I embarked some years ago on our '50 µm project' adventure. That's how we became so confident in the recipe.

The reasons for each component of the recipe have been described at great length in my other articles. I offer only a short summary here as this is a recipe intended for quick reading. If anyone wants to know more about any of the aspects they can email me (sabbott@macdermid.com) and I will be happy to email a copy of the relevant article(s).

1. Use the finest stainless mesh possible. We've loved using 16 µm and have heard of lucky printers who have access to 13 µm.
Why? Because a thick PET or liquid-crystal mesh simply gets in the way.
2. Use blackened stainless to ensure optimum print exposure without losing resolution from scattering. It's hard to get hold of, but worth it.
Why? Because you want a sharp stencil profile and reflections from the mesh give you a loss of resolution and acuity.
3. Use a specialist low-Rz, low-EOM stencil – either Capillex CX or a multi-coat wet-on-dry emulsion (if you have the time

and patience).


Why? Because, as we've shown countless times, high Rz gives a wavy edge and high EOM causes numerous problems such as negative sawtoothing and increased slump.

4. Use a clean-room environment.
Why? Because even small amounts of dirt will compromise the quality of your stencil and your print.
5. Find a reliable source of beautifully sharpened medium-to-hard sharp-profile squeegees.
Why? Because if you have to use anything else, something is very wrong with your setup and you're guaranteed to fail.
6. Set up your press with minimum snap-off (off-contact), minimum squeegee pressure.
Why? Because you've got a delicate mesh and an exquisite squeegee.
7. Insist that your ink supplier gives you a high-low-high, rapid recovery ink – as close as possible to the printing behaviour of the cermet inks that are routinely used in ceramic-based electronic printing.
Why? You need a high viscosity ink which rapidly shears to a low viscosity for easy squeegee filling / scraping, remains low viscosity during shear as the mesh comes out of the ink (to give the least possible resistance), then returns rapidly to a high viscosity to avoid ink slump and loss of resolution.
8. Control slump through (a) the rapid-recovery ink, (b) a controlled (relatively high) static contact angle of the ink with the substrate,



Professor Steven Abbott

and (c) as rapid a 'cure' (UV, solvent evaporation, solvent absorption) as possible.
Why? The science of slump is described in one of my articles and a software modeller is available to confirm that these are the secrets of success.

9. When you can't reduce the slump any further, reduce the width of the line in the film positive by the amount of the slump.
Why? Because there's no alternative! 

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UNDERSTANDING UNDEREXPOSURE

Mike Ruff examines the most common and most misunderstood colour issue

MANY YEARS AGO, AFTER I SOLD MY SCREEN PRINTING BUSINESS, I HAD A BRILLIANT IDEA OF DEVELOPING A PRE-PRESS COMPANY THAT SPECIALISED IN MAKING PROOFS AND FILM FOR LARGE FORMAT SCREEN PRINTING COMPANIES. I ABSOLUTELY KNEW WHAT THEY NEEDED AND I BELIEVED THAT IF SCREEN PRINTERS WERE FURNISHED WITH GOOD QUALITY, PROPERLY COMPENSATED FILM AND AN ACCURATE PROOF THEY COULD PRODUCE PREDICTABLE AND CONSISTENT PRINTS.

I was wrong – only a few of the very best printers even appreciated what properly produced film positives could do. More than half of my client base was not consistent or accurate, even though film was prepared specifically for their press, their mesh, their line count, their ink and their substrate. They would call me up and say things like: “That last set of film you sent didn’t work as well as the set you sent the time before.”

One thing I was very good at was record-keeping. I kept a colour bar sample of every job I ever shipped. I knew exactly what the client received. By knowing this I realised it wasn’t the film, it was inconsistency on their part. Most of the time I would go to the chronic complainers on a mission to identify and fix the problem. I soon noticed one common error: they knew how to make screens but they did not understand all the issues of quality screen making.

QUALITY SCREEN MAKING

When one job prints great and the next job doesn’t, you can almost bet that the problem is not addressing all the issues of quality screen making. Many well-meaning colour management experts have walked away from consulting projects with egg on their face because they did not verify or know how to fix the quality and stability of the screen before attempting to adjust colour values.

There are many common screen making issues that cause unstable results such as low tension, improper drying, poor developing, high Rz and low EOM. But I have found that the most common, the most misunderstood and most overlooked issue is ‘underexposure’.

So, let’s just assume that good screen printers already know how to achieve and maintain proper tension. They know how to choose the correct mesh type and mesh count, produce a low Rz and good EOM.

Even if they are doing many things right, they will probably still struggle with colour control if they underexpose. Most of the time, by just addressing underexposure, I see colour results stabilise. The sad fact is that almost every 4-colour process screen printer underexposes.

UNDEREXPOSURE

Underexposure is the number one screen quality issue in the industry today. I have been to literally hundreds of shops in the last few years. I have only found a handful of four-colour process screen printers that do not underexpose. The reason for this quality-challenging mistake is simple: exposures are being set by how well the emulsion resolves small highlight dots. This is not the correct way to set exposure time.

Figure 1 shows two common exposure calculators. Both have resolution data on them, but for four colour process exposures you actually only need the ‘density filter’. Exposure time should be set by the amount of light it takes to fully crosslink the emulsion. Therefore, you should set exposure only by looking for the point the emulsion is fully cross-linked. Cross-linking is a chemical reaction that occurs when the emulsion is fully exposed but more importantly, when the emulsion becomes stable.

COLOUR CHANGE ON DIFFERENT EMULSIONS

The most common 4-colour process emulsion used today is dual cure emulsion, which is simply emulsion that is sensitised with a mix of diazo and photopolymers. It is very easy to know when dual curves are fully exposed – you just look for the point that the density filter is the same colour as the background with no filter covering it (see Figure 2).

With pure photopolymer emulsion it is much more difficult to see the colour change but you can see it by looking closely with a soft light for a backlight. Be sure to look at the screen while it is wet. The reason for setting exposure from a wet screen is that you can see the colour change better. You want to see emulsion not cross-linked, so use every advantage you can to see it.

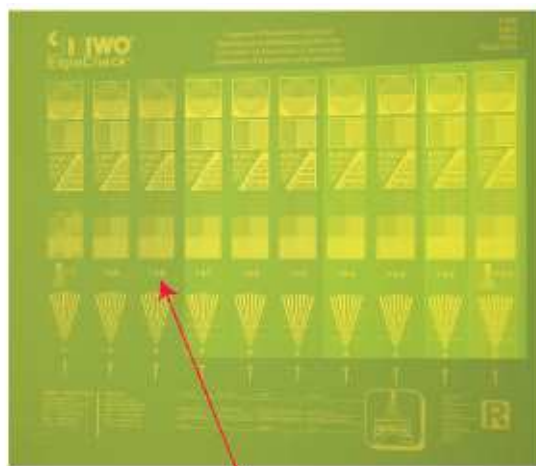
Many experts set exposures from a dry screen; I used to do the same thing until an emulsion expert proved to me I was underexposing my screen. Try it both ways, you will see that you will have much better print results if you set the exposure by looking at a wet screen.



EVALUATION MUST BE DONE WHILE THE SCREEN IS WET TO PROPERLY SEE THE COLOR CHANGE.

Each resolution section has a density filter behind it. The density progressively becomes stronger left to right. Testing is executed by doubling the exposure, looking for the point that the color blends with the background and then multiplying the doubled exposure by the factor indicated where the color blends.

Figure 1: Exposure calculators



Current Exposure= 100 Light Units
 Test was shot at 200 Light Units
 Results of "no color change" on a wet screen = .8
 $.8 \times 200 = 160$ Units is the correct exposure

Figure 2: Evaluation of exposure test

The only thing different in these two prints is the print on the left was exposed at 150 Light Units and the print on the right was exposed at 210 light units.

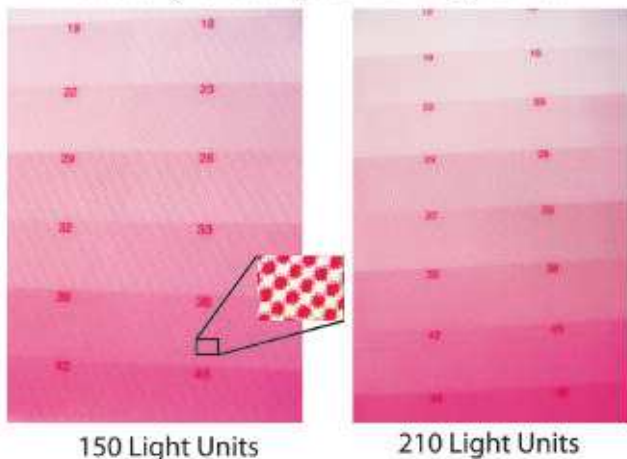


Figure 3: Underexposure moiré

FOCUS ON THE FUNCTIONS

In using dual cures or pure photopolymers just remember it is not the function of the emulsion to hold detail – the emulsion is manufactured to ‘block’ the ink from passing through the mesh. It is the responsibility of the film or direct to screen image to create the shape of the dot. The light that exposes the emulsion is not a tool to use in holding detail.

I would rather lose the dot than have the dot show up on some jobs and not show up on others, or worse, show up on the left side of the sheet and not on the right side. Don't be afraid of losing dots. If you lose the dots at full exposure, just make them bigger or change mesh or screen coating but never underexpose to hold them – you will never be consistent or predictable.

THE NEGATIVE EFFECTS OF UNDEREXPOSURE

If you ‘underexpose’ to print a 2% or 3% dot, it works, but underexposure causes three major problems:

- Moiré: Yes, one of the major causes of global moiré is underexposure. The reason is that the edge of the dot loses its sharp edge. The shape produced by the underexposed edge is the ‘mesh’. The mesh adds two undesired angles to the image (90 degrees and 0 degrees), producing a global moiré (see Figure 3).
- Screen staining: The second result of underexposure is screen staining. Threads are not protected from ink as a high speed

This staining was caused by under exposed emulsion allowing the ink to penetrate the mesh.



Figure 4: Underexposure staining



Figure 5: Opposite effects of underexposure

squeegee drives the UV chemicals into the unexposed and soft stencil (see Figure 4).

- Instability of print results: This is the third and worst effect. The results on press from an underexposed screen will be tonal value differences side-to-side, end-to-end and even job-to-job. Too much or too little water pressure can change tonal values on a screen that is underexposed.

So the question is: “With all these negative effects, why do printers still underexpose?” The argument for underexposure is that they believe it will produce a full tonal range without a compensation curve. In reality, it only holds the highlight dots better. Underexposure will lose the shadow dots and destroy the sharpness of all the dots. The worst effect is the shadow dots, which are hanging onto the mesh for life after developing as 1200+ pounds of water pressure comes pounding down (see figure 5).

Therefore, do not underexpose. Full exposure will resolve the 98% dot better and you will need to compensate the file or film to hold the highlight dots. Accept the reality that you will need to build a file or film curve for every different line count, press and substrate and never underexpose if you want stable and repeatable results (see figure 6).

IN CONCLUSION

I hope I have communicated that the odds that you are underexposing are very good. Check it out for yourself with the density filter on your exposure calculator. Be sure to look at the test shot while the screen is still wet. If you correct the exposure then reset your curves to produce a full tonal range, I guarantee you will see less moiré, better dot quality, less screen staining and amazing predictability. [EP](#)

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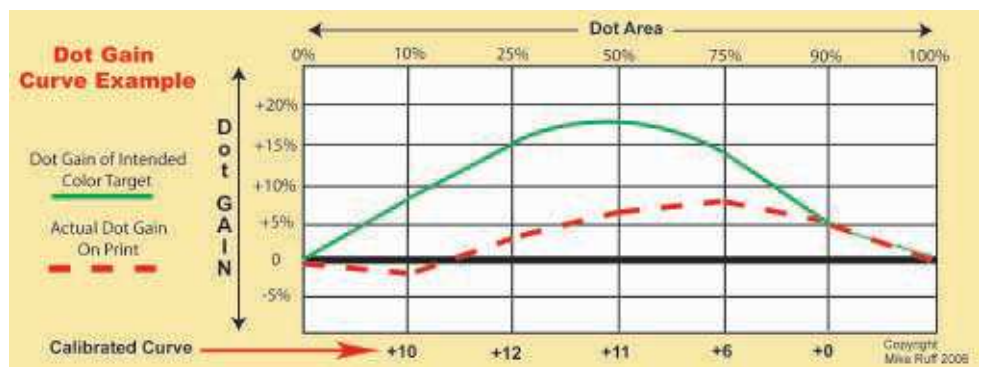



Figure 6: Typical curve with full exposure

Dual head printer debuts at ISA

Mutoh America introduced its new versatile high performance dual headed printer, ValueJet 1618 - 64", at ISA in Orlando (USA) earlier this year. The roll to roll with optional HD take-up system can reach speeds of up to 334 square feet per hour in production mode.

It can be used for durable graphics on coated and uncoated substrates up to 63.97 inches wide with a maximum media weight / rigid of 67 lbs, and prints directly onto full-colour posters, banners, backlit panels, POS displays, notices, signs and stickers.

The ValueJet 1618 uses Mutoh's Intelligent Interweaving Print Technology so ink is laid down carefully in optimised wave forms rather than in straight lines, allowing for increased print speeds and much less banding and ink mottle. In addition, increased dot gain control allows more latitude in profile settings. The ValueJet 1618- 64" printer will be available in July. 




The ValueJet 1618 - 64" made its debut at ISA

Film for effective display

Sihl has designed its new Backlit Film Front Print WR 145 for picture presentations in illuminated poster displays. The polyester film is transparent and matt-coated on one side, whilst the printable surface on the front has Sihl's special inkjet coating which is resistant to environmental influences and produces high-contrast, brilliant coloured images.

When combined with pigmented inks, water-resistant prints can be produced, making the film excellent for environments with a high humidity, fluctuating temperatures and condensation. The surface protects against smudging, scratching and rapid fading and for additional surface protection, cold laminates may be used.


Sihl's Backlit Film can be used with pigment inks or dye-based inks. Apart from use in illuminated display cases, possible applications include poster and sign production. 

SGIA members decorate New Orleans

Members and business partners of the Specialty Graphic Imaging Association (SGIA) recently combined to brighten up parts of New Orleans, USA, that are undergoing rebuilding projects as part of the city's reconstruction. Large-format graphic panels were added to temporary construction areas along Canal Street, a central thoroughfare in downtown New Orleans.

The SGIA Canal Street Initiative was made possible by contributions from more than 40 member companies and affiliates. Volunteers installed more than 100 large-format graphic panels over several storefronts, including one 'super graphic' installation that covered 2,420 square feet of the historic Audubon building.


The speciality imagers provided high-quality graphics to grace several storefronts, much to the delight of residents, local businesses and tourists. "SGIA and our volunteer members were excited to show during the installation phases of the initiative how speciality imaging can enhance any urban landscape in the midst of renovations," commented Michael Robertson, President and CEO of the SGIA.

"We are so grateful to SGIA for this extremely generous donation, and for their support of New Orleans," said Stephen Perry, President and CEO of the New Orleans Metropolitan Convention and Visitors Bureau. "These beautiful graphic panels are a much-welcome addition to the urban landscape." 

Durst appoints senior technician

Eddie Tucker has joined Durst in the UK as a senior service engineer. Eddie, who will be based in the north of England, brings the total number of factory-trained technicians for the UK and Ireland to eight. He joins Durst with a background of 18 years experience in a service role and as a technical and highly qualified sales engineer.

Throughout his career Eddie has received training from manufacturers on wide format digital printers, electro mechanical equipment, UV and flatbed printers and computer software. For the last four years he has concentrated on wide and grand format printers specialising in colour consultation installations and account management.


"I am very proud to have been able to join a company with such a strong reputation for excellent products and the highest levels of servicing expertise," he said. 



Eddie Tucker

FESPA acquires Mexican trade show

FESPA has acquired the rights to imageWorld, the Mexican trade show for the signage and speciality printing industries. The show, which will now be known as FESPA Mexico World Expo, is to be held 21-23 August 2008 at Centro Banamex in Mexico City. Under the agreement FESPA assumes responsibility for sales, marketing and operations of the event whilst previous owners ST Media Group will remain involved with the show in a consulting capacity for five years.

"FESPA is very well positioned to build the international representation at the show and expand the breadth of imaging technologies displayed there," said Tedd Swormstedt, president of Cincinnati-based ST Media Group International. "We are very pleased to be working with them in our continuing efforts to provide information to Latin American signage and imaging professionals, a market we have served for over 15 years." 

Marabu to take legal action against trademark infringement

German company Marabu GmbH & Co KG is taking "all legal steps" to stop the infringement of its copyright by a Chinese Company calling itself Marabu Printing Machines Co Ltd. The Chinese company is producing pad and screen printing machines and is using identical branding to that which Marabu Printing Inks has used for decades and which is known to be the trademark for Marabu GmbH & Co KG within the global printing industry.

"Marabu wants to clearly confirm that Marabu Printing Machines Co Ltd has never and does not currently belong to the Marabu Group of Companies, nor is having any other business relationship with Marabu GmbH & Co KG," a company statement said. "As a result, Marabu is taking all legal steps to stop the use of its trademark by Marabu Printing Machines Co Ltd."

Marabu sees the Chinese company's production and distribution of pad and screen machinery with the same trademark which Marabu GmbH & Co KG uses as an infringement of its long-established trademark rights.

"Marabu GmbH & Co KG will act in any corresponding country against companies which act to promote, sell, or produce the machines manufactured by Marabu Printing Machines Co Ltd using the Marabu GmbH & Co KG trademark with all legally applicable sanctions and measures," the company concluded. 




Marabu

New RIP software features cost estimation


After a period of intense development and testing, ErgoSoft has launched its new, completely revised RIP software. PosterPrint v.2008 is for applications such as LFP, sublimation, flag&banner, sign making and more.

PosterPrint's intuitive user interface and usability have been enhanced and enlarged with new functions and with the integration of the multi-core CPU technology, it is said to be up to 30% faster. The JobQueueViewer production tool, which gives the user a summary of the current print information, is now the new JobCenter, giving a fast overview of the status of the printer, cutter and the RIP.

The JobTicket function gives detailed information about every job, which can be recalled later. The PrintClient allows on-the-fly changes to print parameters. It is also possible to print white ink and spot colours, and a new feature enables the user to estimate costs.

The new ErgoSoft products, StudioPrint v.2008, PosterPrint v.2008, TexPrint v.2008 and ColorGPS v.2008, are exclusively distributed by selected resellers around the world. 

SignTronic adds to management team

Thomas Schweizer has joined SignTronic as Director for Marketing and Sales Distribution. His responsibilities include all public relation activities, international markets within the wide graphic, textile and industrial screen printing applications field, and acting as intermediary for commercial collaboration between Sefar and SignTronic. 



The new promotional film has been specifically engineered for screen printing



Werner Thieme

Werner Thieme celebrates 80th birthday

Werner Thieme, founder of German print specialists Thieme, recently celebrated his 80th birthday. After working as an apprentice fitter, draughtsman and wholesale merchant he set up Thieme Maschinenfabrik in 1960 and Kunststoffe Werner Thieme five years later.

Still headquartered in Werner's home town of Teningen, Breisgau (Germany) and with sales and service locations in France, the UK and the USA, Thieme currently employs about 500 people around the world and achieves annual sales of approximately €85 million. Werner remains at the company as an adviser to his son, Frank Thieme, who now manages the company.

New promotional film specially for screen printing

Avery Dennison Graphics & Reflective Products Division, provider of vinyl and screen print film products for the sign and graphics industry, has launched its new SX ReadyCal 1001 Promotional Film.

SX ReadyCal 1001 Promotional Film is a tough, scuff-resistant, flexible, white calendared vinyl film specifically engineered for screen printing. It is for novelty and promotional decals, product identification labels, nameplates, POP, bumper stickers, floor and window graphics as well as short-term OEM decals and poster needs.

Its permanent adhesive bonds quickly to plastics, glass and metals including aluminium, and it can be used in variable temperatures. Although sold in 100-sheet cartons, custom-sized sheets can be ordered.

"SX ReadyCal 1001 Promotional Film offers exceptional performance, works with a variety of ink systems and is a high quality economical choice for printing new promotional materials," said Michael Eyman, Business Unit Manager for Promotional Films at Avery Dennison Graphics & Reflective Products Division. "The film is designed to show off colourful and bright promotional graphics and make messaging stand out."

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Partnership launches eco-friendly inks

International Coatings and Zydex Industries have launched the GEN IV Series of PVC-free, Phthalate-free, eco-friendly inks for the textile screen printing industry. Following the creation of the partnership between the companies, GEN IV marks the line's first product introduction. The initial GEN IV line is comprised of 19 primary colours as well as several speciality inks, such as a Clear Base, Puff Additive, Foil/Transfer Adhesive and Glitter Base. International Coatings and Zydex plan to develop and add other new products to the line in the near future.

International Coatings has also added four new fashion colours to its Metallic Shimmer line. The pre-mixed colours are 146 Ruby Red Metallic, 148 Royal Metallic, 149 Purple Metallic and 147 Green Metallic. The new Metallic Shimmers add a bright, non-tarnishing metallic sparkle to printed garments. The inks contain fine, shimmering glitter flake in a low bleed, low fusion, easy-to-print base that performs well on automatic and manual printers. The range of Metallic Shimmers also includes 156 Metallic Silver, 157 Metallic Gold and 158 Metallic Copper.

The company has also introduced the new water-based 3707 Discharge Base and 3709 Discharge Activator for use on 100% cotton dischargeable fabrics. The Discharge ink can be used as a stand-alone, as an under-base or in combination with other inks for a variety of textures and looks. The discharged area has virtually no hand, even on black fabrics. It can be mixed with discharge-compatible pigments to leave a bright colour tint after discharge, or print over a discharged area with plastisol or water-based inks for more effects.




John Keith, business manager for prism

DSPA relaunches as prism


The UK specialist imaging association previously known as the DSPA has relaunched as prism and has extended its membership to include suppliers within the digital, screen and pad printing markets throughout England, Wales, Scotland and Ireland.

Prism aims to promote the breadth of opportunities available to print buyers and end users by highlighting the creativity and unique opportunities provided by specialist imaging technology and services. HP will be the association's sole Digital Technology Partner.

"UK business challenges such as overcapacity and response to environmental concerns are seriously impacting their profitability and future success," commented John Keith, prism's business manager. "To address this, prism is unveiling its new membership package, delivering the tools and knowledge to meet these challenges head-on and enable sustained competitiveness and growth." 

High-speed printer launched

KIP UK, a manufacturer of wide-format digital reprographic systems, has launched the KIP9000, which is designed to meet the challenges of high demand printing requirements. The KIP9000 offers 600 x 600 DPI printing with advanced imaging algorithms for high quality reproduction of modern CAD information, combined with high-speed conversion and processing for immediate high speed delivery.


It prints from all major software packages on Windows, Linux, Mac or Unix platforms and includes native DWF batch processing to print complex drawings at optimum quality. Its high speed output delivers 22 A1 prints per minute. 

Commercial release of new ink series

EFI has announced the commercial release of its new 3M Piezo Inkjet Ink Series 2800 UV for use with EFI's VUTEk QS2000 and QS3200 superwide printers and a wide range of opaque, clear and translucent 3M media.

Acting as a system, 3M Piezo Inkjet Inks and 3M media give vibrant, long-lasting four- or six-colour graphics when used with the VUTEK printers. The inks are specifically designed for use with 2- and 4-mil 3M Controltac Graphic Films and 3M Scotchlite Reflective Graphic Films, as well as with a wide range of rigid materials. The UV-cured inks are durable, weather resistant and have good colour retention. They are suitable for use on curved, corrugated or flat surfaces, with or without rivets, when producing fleet and vehicle graphics, indoor and outdoor signs, banners and flexible sign faces.

EFI has also announced the availability of two new models in its QS superwide format printer range. The addition of 4- and 6- colour configurations to the QS2000 and QS3200 printer product range is for ease-of-entry options for sign printers and graphic display manufacturers who wish to add digital UV production to their product mix.

The 3M Piezo Inkjet Ink Series 2800 UV comes in cyan, magenta, yellow, black, light magenta, light cyan and white. 

FROM MILLING STONES TO NEW TECHNOLOGIES

Marc Doligé describes 172 years of evolution for VFP – Tripette & Renaud



The VFP factory is in Ales, near Montpellier in the south of France

THE TRIPETTE & RENAUD COMPANY WAS FOUNDED IN FRANCE IN 1836, AT A TIME WHEN FRANCE WAS LED BY LOUIS-NAPOLÉON BONAPARTE, NEPHEW OF NAPOLEON 1ST, WHEN GERMANY WAS A FEDERATION LED BY 39 PRINCES, QUEEN VICTORIA WAS ABOUT TO ACCEDE TO THE THRONE OF THE UNITED KINGDOM AND GREGORIAN 16TH WAS POPE IN THE VATICAN.

Tripette & Renaud's original activity was the manufacture of stones for flour milling. A natural evolution brought the company into the next step of the flour production process, flour sieving, by producing woven mesh, grain sifters, conveyors and elevators. At that time mesh was exclusively made of silk, so the shelf-life of the product was fairly short. This guaranteed the company a good market over several decades.

MOVING AWAY FROM MESH

The Tripette & Renaud factory and all its records were completely destroyed during the First World War, leading to complete reconstruction prior to the Second World War, which the company fortunately survived.

In the early 1950s, polyester and polyamide started to replace the traditional silk in the mesh weaving process. These new raw materials greatly increased the shelf-life of the mesh and therefore decreased the market volume. It became necessary for the company to find new applications and the new arrival in France of the screen printing process appeared as a very good opportunity.

From then until now, Tripette & Renaud has run two different businesses in two very different markets. "There are major advantages of not having all our eggs in one

basket," explains Jean Pierre Doligé, President of the Tripette & Renaud group. "One of them is that our two markets are operating under very different economic drivers. The printing market is very much linked to the general economic situation, while the flour and grain market is more linked to the weather and the political environment."

FROM MESH WEAVING TO INK MANUFACTURING

By dedicating a part of its Research & Development (R&D) and production to the screen printing market, Tripette & Renaud contributed to the introduction of this new technique in France in the 1950s. In parallel



The Saillly Saillisel, France, production unit is located 100 km north of Paris

to its own production, the company started the distribution of a complete range of screen printing consumables, from emulsions with Ulano products (still distributed by Tripette & Renaud in France today) to inks, introducing Sericol to the French market. This distribution activity has been developed through a dedicated company, Tripette & Renaud Serigraphie, which later became Tripette & Renaud Image.

At that time, Tripette & Renaud also started the manufacturing of ink with a small



Tripette & Renaud Image has three production units for industrial frame stretching and stencil making



The Tripette & Renaud headquarters are in Villeneuve la Garenne, in the Paris area of France

production of paper and board ink for the French large format advertising market. The company was also present in the equipment business, introducing many major manufacturers to the French market, such as Svecia, Thieme, M&R and Atma, and manufacturing its own flatbed screen printing machines in the late 1980s and early 1990s.

Being involved in three very different kinds of manufacturing – mesh, inks and equipment – it rapidly became clear that

Tripette & Renaud had to specialise in one specific manufacturing branch and continue its distribution activity in the others.

In 1991 Tripette & Renaud acquired a French production unit of Visprox, VFP (Visprox France Production). By joining the Tripette & Renaud Group, VFP became an independent ink manufacturer and a new brand on the market. In the meantime, Tripette & Renaud sold its mesh manufacturing unit to concentrate on the development and manufacturing of inks.

ACTIVITY IN THE PRINTING INDUSTRY

Tripette & Renaud is today involved in the printing activity through two companies. Tripette & Renaud Image is a major player on the French market with three branches:

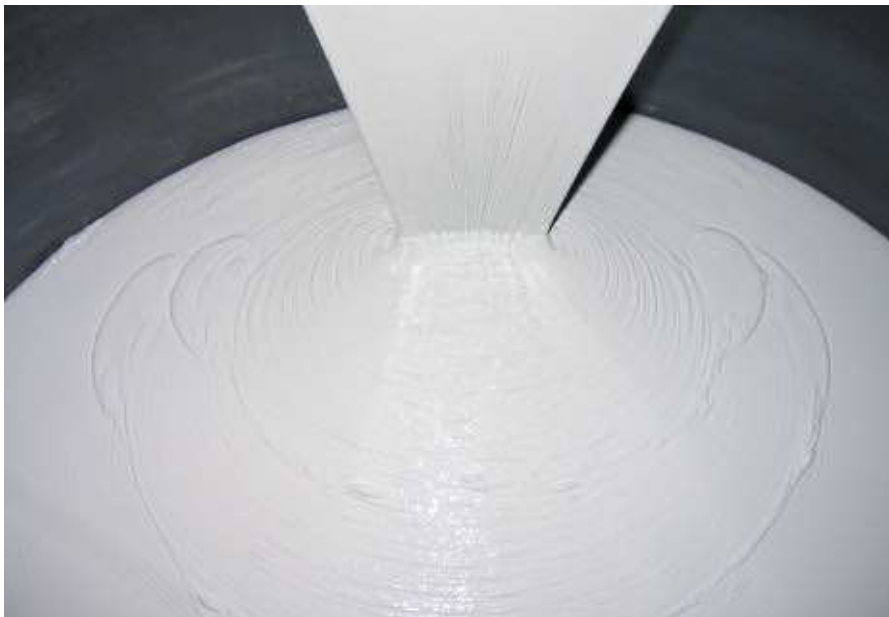
- Distribution of screen printing consumables, being the distributor in France for NBC Mesh (Japan), Ulano Emulsions and films (USA), Union Ink plastisol textile inks (USA) and VFP graphic and industrial screen printing inks (its sister company).
- Stretching and stencil making with three production units in France (Rennes, Périgueux and Saily Saillisel).
- Distribution of EFI-Vutek wide format inkjet printing machines.

VFP, located in the south of France, is dedicated to R&D and the production of screen printing and inkjet printing inks.

FAMILY BUSINESS

Three generations of the Doligé family have been shareholders and managers of the Tripette & Renaud company since 1966, and in 1998 it became the sole owner after acquiring the shares from the Renaud family.

Jean Pierre Doligé has been working in the Group for the last 35 years and has been President for 25 years. He is directly involved



Since 1991, Tripette & Renaud printing supplies division has concentrated its manufacturing activity on screen printing and digital printing inks

in the executive management of Chopin Technologies, the quality flour and grain equipment business.

His son, Marc, runs the Printing Supplies activity and has been CEO of both Tripette & Renaud Image and VFP since 2000. He joined the company in 1998 after first gaining five years professional experience outside the group in a different business activity.

Father and son have worked together now for 10 years. Their skills complement one another and they enjoy a good and constructive relationship. Family business conditions are ideal; lots of time is saved because there is no need to build the trust that has existed over the 30 years they spent together before working together. It is also very easy for father and son to understand each other quickly, and many things do not need to be said.

DEVELOPING INKS

Over 15 years VFP, which originally specialised in graphic inks for the local market, has developed its activities in both technical and sales matters by developing a full range of solvent-based and UV ink products for graphic and industrial applications – from large format advertisement printing to IMD, membrane switch, automotive and many other applications – and by building an export distribution network.

Today the company's focus is around four major issues:

- To fully support graphic screen printing in its domestic market by developing inks that give competitiveness to industrial graphic screen printers at a time when inkjet technology is becoming a very competitive alternative.
- To help its customers to diversify into



Marc Doligé has been CEO of both Tripette & Renaud Image and VFP since 2000

inkjet technologies by offering them high quality and competitive solvent-based and UV inkjet inks.

- To develop special application inks for screen printing industrial applications. Most of those industrial applications are located in countries outside VFP's domestic market, and especially in Asia. For this reason, VFP has opened a representation office in Shenzhen, China.
- Environmental respect is VFP's major concern and developing environmentally-friendly products is VFP's priority. Therefore all VFP's newly developed products are environmentally-friendly, such as Biostar, a solvent-based inkjet ink which uses biodegradable solvent.

ESMA MEMBERSHIP

Tripette & Renaud and VFP have been members of ESMA since the Association's creation in the early 1990s. ESMA has played a great part in the promotion of the screen printing technique throughout Europe and the world, and the companies believe that it is a very good tool for major European manufacturers of this industry to work together in reaching common goals.

One of ESMA's major actions has been the standardisation and exchange of technical information between complementary product manufacturers, such as printing machines, inks, chemicals and squeegees.

Embracing digital printing into the organisation has been a very good decision from ESMA members. It is a good way to have these two complementary techniques acting together, pushing the industry in the same direction for the benefit of all clients. 

Marc Doligé is CEO of the VFP – Tripette & Renaud Group

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 web: www.vfp-ink.com / www.tripette.com



Jean Pierre Doligé, President of the Tripette & Renaud group, with his son Marc

DRUPA 2008

Düsseldorf, Germany; 29 May – 11 June 2008

DRUPA 2008, ONE OF THE MOST IMPORTANT EVENTS FOR PRINT MEDIA, IS TAKING PLACE AT MESSE DÜSSELDORF IN GERMANY FOR TWO WEEKS IN MAY AND JUNE. THE ORGANISERS ANTICIPATE THAT THERE WILL BE OVER 1800 EXHIBITORS FROM 50 COUNTRIES, WITH VISITORS FROM 122 COUNTRIES AROUND THE WORLD.

A wide range of products from the global print media industry will be exhibited in 19 exhibition halls, from pre-print and pre-media through to offset printing, digital or hybrid printing and complete processing. Many high-tech systems will be in action, including materials, machines, accessories, appliances, services and software.

SPECIAL EXHIBITIONS

There will be a range of special exhibitions at Drupa 2008, presenting a detailed overview of the innovative nature of the print media industry, with revolutionary solutions for print buyers, publishers, creative designers and printers. These include the innovation parc presented by Hewlett Packard, and Compass sessions to help visitors prepare for their day at the exhibition. There will also be daily guided tours.

Tickets can be bought online in advance from the website for €37 (day ticket) or €120 (4-day ticket). Prices on the door will be €55 (day ticket) or €180 (4-day ticket). Concessionary tickets are available for students and trainees. [EP](#)

EXHIBITORS

ESMA members and advertisers in this magazine who will be exhibiting at DRUPA include:

- Colour Scanner Technology GmbH: 4 / F17
- Durst Phototechnik Digital Technology GmbH: 7a / D13
- ESC Europa-Siebdruckmaschinen-Centrum GmbH & Co KG: 3 / C14
- Fimor SAS: 3 / A92
- Fotec AG: 3 / D92
- Gallus Ferd Rüesch: 3 / F17
- Grünig-Interscreen AG: 3 / C92
- Hewlett-Packard: 7 / O7
- K-Flow GmbH: 9 / D76
- Kissel + Wolf GmbH / KIWO: 3 / A92
- Lüscher AG: 5 / D38
- MacDermid: 5 / A37
- Marabu GmbH & Co KG: 3 / A92
- Mutoh Europe NV: 9 / B43
- Océ: 6 / A44
- Remco Chemie Rentsch GmbH: 3 / D92
- Roland DG Benelux NV: 5 / B37
- Sefar AG: 3 / A69
- SignTronic AG: 3 / A69
- SPS Rehms GmbH & Co KG: 3 / D04
- Staedtler Mars GmbH & Co KG: 5 / A44
- Sun Chemical Corporation: 6 / B75
- Technigraf GmbH: 3 / A93
- VUTEK (part of EFI): 5 / C01
- Xaar Plc: 4 / E10

Further information:

web: www.drupa.de

ADVANCED SPECIALIST PRINTING AT DRUPA 2008

FOR THE SECOND TIME, THREE LEADING SPECIALIST PRINTING SUPPLIERS IN THEIR RESPECTIVE AREAS, FIMOR SQUEEGEES, KIWO EMULSIONS AND MARABU INKS, WILL SHARE A JOINT BOOTH AT DRUPA 2008 IN DÜSSELDORF. ADDITIONALLY, THE COMPANIES ARE LINKED THROUGH THEIR MEMBERSHIP OF ESMA, THE EUROPEAN SPECIALITY PRINTING MANUFACTURING ASSOCIATION, INCLUDING SCREEN, DIGITAL, AND PAD PRINTING.

The goal for DRUPA 2008, being the largest printing show in the world, is to give interested visitors a single location to address all their speciality printing needs. By joining forces, the print specialists provide not only visibility for their own products, but also a complete picture of the specialist printing processes.

"The slogan 'Advanced Specialist Printing' reflects our intention to give visitors information about latest product introductions in many graphical and industrial segments," explains Friedrich Goldner, Director of Marketing for Marabu.

Specialist printing applications include labels, graphics, containers, optical discs, membrane switches, textiles and many more. "Even if our customer base and distribution channels around the globe differ, the screen printing community will certainly be pleased to receive a special welcome to our 120 m² floor space," adds Manuel Zuckerman, General Manager of Fimor.

And Rudi Röller of KIWO / Kissel+Wolf concludes: "We'll ensure that no questions remain unanswered. Visitors to our joint booth will have the latest updates on three of the most important parameters in screen printing: inks, squeegees and stencil making, including the latest pre-press developments in CTS (Computer-to-Screen) technology."

The companies will be in Hall 3 / A92. [EP](#)

newly designed EQ (Equalizer) stretching method, which can be used on the majority of Grünig stretching machines.

Grünig will show four coating machines: the G-Coat 404 is designed for various screen formats and the Swiss-Coater, Euro-Coater and US-Coater special models are capable of automatically coating smaller and medium-sized screens up to a maximum format of 1250 x 1600 mm.

Grünig-Interscreen will be exhibiting at Booth 3C92 - Hall 3. [EP](#)

WASHING, STRETCHING AND COATING MACHINES

GRÜNIG-INTERSCREEN IS A SPECIALIST IN PROFESSIONALLY PREPARED SCREENS FOR THE SERIGRAPHY

INDUSTRY AND WILL BE HIGHLIGHTING ITS PRODUCTS IN THE WASHING, STRETCHING AND COATING SECTORS.

In the washing sector Grünig is exhibiting the G-Wash 104 'Plug&Wash' designed for screen cleaning, as well as the G-Wash 112 'Plug&Strip' for screen de-coating, de-greasing and developing. Both models automate the wet processes, enhancing cleaning results and lowering operating costs. The G-Wash 040 filtering system is an option for both models. The inclined filtering technique can be used for cleaning all types of closed circuit systems, whether they contain solvents, recycled de-coating chemicals or water used for the various processes.

From its wide range of stretching equipment, the company will be showing its G-Stretch 210, designed for screen sizes of 1250 x 1250 mm, and for the first time, the



G-Wash 104

VERSATILE PRINTING SOLUTIONS FROM ESC

ESC EUROPA-SIEBDRUCKMASCHINEN-CENTRUM WILL BE SHOWING ITS WIDE RANGE OF SCREEN AND DIGITAL PRINTING MACHINES AT DRUPA 2008. THE MAIN FOCUS WILL BE ON ESC'S FULLY-AUTOMATIC CYLINDER SCREEN PRINTING MACHINE, THE ESC-HIGH PRESS 'S' WITH FEEDER. WITH MODERN ELECTRONIC CONTROLS AND AUTOMATIC REGISTRATION, IT CAN REACH HIGH PRINTING SPEEDS OF UP TO 3,300 PRINTS PER HOUR, DEPENDING ON THE MATERIAL AND PRINTING SIZE. IT FEATURES AUTOMATED PROCEDURES AND TOUCH-SCREEN OPERATION.

The new ESC-Daytona T600UV digital printing machine is a large-format digital flat bed printer which can print on a variety of rigid and flexible material with a maximum thickness of 50 mm, such as PVC, aluminium, acrylic, styrene, plywood, ceramics, glass and paper. It can be printed with UV-inks in 5-colour mode (CMYK + white). Maximum printing size is 1210 x 1520 mm. It features integrated UV curing and automatic printhead cleaning.

The ESC-Perfecta IC InLine is a compact screen washing system in modular design, which features high-grade construction, chemicals and water saving opportunities,



The new Daytona T600UV

speed and a substantial reduction of maintenance cost.

ESC-Germany will be exhibiting in Hall 3, Stand C14. [E](#)

ENGINEERING EXPERTISE

SEFAR PRINTING DIVISION MANUFACTURES A WIDE RANGE OF HIGH QUALITY PRECISION MESH FOR SCREEN PRINTING. 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 TECHNICAL SUPPORT. THE SEFAR LDS AND STENCILMASTER FROM SIGNTRONIC COMPUTER-TO-SCREEN IMAGING SYSTEMS IDEALLY COMPLEMENT AND EXTEND THE SEFAR PRODUCT RANGE.

The focus of this year's presentation is to provide solutions to the customer in industrial screen printing. Sefar now offers fully automated screen pre-press solutions for the medium to large format market with the SignTronic StencilMaster Imaging Systems.

Combined with the Sefar LDS laser imaging machines for the small format screen market, Sefar can provide a digital imaging solution up to frame sizes of 280 x 460 cm. All of these systems can be fully integrated with well-known manufacturers of automated screen preparation, developing and drying equipment.

Sefar and SignTronic will be exhibiting in Hall 3, Booth A69. [E](#)



Sefar LDS 1330 with in-line developing unit

DELIVERING EFFICIENCIES

ROLAND DG WILL DISPLAY ITS PORTFOLIO OF LARGE FORMAT PRINTERS AND INTEGRATED PRINTER / CUTTERS AND INTRODUCE A NEW PRINTING SOLUTION WHICH HERALDS THE COMPANY'S ENTRANCE INTO NEW MARKET SEGMENTS.

It will demonstrate applications and solutions for a range of markets and prove how its proprietary hardware, software and inks combine to deliver efficiencies that give its customers a competitive advantage. Roland DG's booth will feature the VersaCAMM VP-300/540 and the newest models in the SolJet Pro III series including the XC-540, XC-540W and the XJ-640, as well as the AdvancedJet AJ-740.

With these machines, sign makers are able to produce high quality decals, vehicle

graphics, banners, posters and billboards. Industrial clients will receive demonstrations of proofing, short-run labels and prototyping, while canvas and photo printing will be of interest to fine art printers.

As Roland DG manufactures all its wide format technologies, hardware, software and ink, it will show how these can be used in conjunction. Roland's Intelligent Pass Control, which is a combination of Roland's VersaWorks RIP software and printer firmware, can improve the XC-540's quality, even in higher speed modes, and it also precisely controls dot placement to enhance print quality in every print mode by creating even smoother gradations and flawless solid colours.

Roland DG will be exhibiting in Hall 5, Booth B37. [E](#)

CUSTOMISED CLEANING

WHAT DO YOU EXPECT FROM FORWARD-LOOKING TECHNOLOGY? REMCO CHEMIE THINKS THAT AUTOMATIC SCREEN-CLEANING CONCEPTS HAVE TO BE COMBINED WITH SCREEN CLEANING CHEMICALS WHICH ARE ECONOMICALLY AND ENVIRONMENTALLY FRIENDLY.

Customised cleaning concepts enable the screen printer to comply with authoritative conditions and operating efficiency even in the future. Remco Chemie concepts are multi-functional and are suitable for all applications and branches of the screen printing industry.

The Varioclean product line offers effective cleaning concepts to screen printers and lends these companies its future support.

To find out more, visit Remco Chemie in Hall 3, Booth D92. [E](#)

ADDED CUSTOMER FOCUS

SUN CHEMICAL WILL BE DEMONSTRATING HOW THE COMPANY IS WORKING FOR ITS CUSTOMERS TO DELIVER QUALITY, SERVICE AND INNOVATION. WITH 12,000 EMPLOYEES IN 56 COUNTRIES, SUN CHEMICAL HAS A GLOBAL REACH INTO LOCAL MARKETS TO ENSURE ITS CUSTOMERS HAVE THE REQUIRED PRINTING INKS, PIGMENTS AND ASSOCIATED SERVICES.

Sun Chemical, which is a member of the DIC Corporation, will be showcasing numerous industry-leading products and services, as well as its environmental offerings, under its new strapline 'working for you', covering its wide-ranging markets.

Sun Chemical will be exhibiting at Stand B75, Hall 6. [E](#)

SGIA '08 Atlanta, USA; 15-18 October 2008

SGIA '08 WILL FEATURE A BROAD AND INNOVATIVE RANGE OF SPECIALITY IMAGING TECHNOLOGIES AND APPLICATIONS, ACCORDING TO THE ORGANISERS, WHO ADD THAT THE EXPO FLOOR IS CURRENTLY 91 PER CENT SOLD OUT, AND DUE TO HIGH DEMAND A FURTHER 50 BOOTHS HAVE BEEN ADDED TO THE EXPO FLOOR.

SGIA has just launched the Expo website complete with easy-to-use online registration, descriptions of the 50+ educational sessions and, as they become available, exhibitors' new product announcements.

The headquarter hotel for the event will


be the Westin Peachtree Plaza. The SGIA-secured hotel rooms can be reserved with no pre-payment, and complimentary shuttle-bus service will be offered to and from the Georgia World Congress Center. Attendees can secure their accommodation using SGIA's official housing partner, Travel Planners (see the website for more details).

SPONSORS

This year, EFI VUTEK, Gandinnovations, 3M Graphics Market Center, Hewlett Packard and US Screen Print & Inkjet Technology are platinum sponsors, while Intelicoat Technologies, Roland DGA and Sun Chemical-

Specialty Inks Group are gold sponsors.

"SGIA is seen as the biggest show in North America for the sign and graphics industry," said Tom Reilly, Vice President of Marketing and Advertising at Gandinnovations.

"We always look forward to the SGIA show to showcase and introduce new products and see customers from around the world," said Scott Fresener, CEO of US Screen Print & Inkjet Technology. "SGIA continues to bring in the 'who's who' of the industry." 

Further information:

tel: +1 703 359 1328
email: jean@sgia.org
web: www.SGIA.org

SCREEN PRINT INDIA 2008 Mumbai, India; 5-7 September 2008


THE SCREEN PRINT INDIA 2008 SHOW, TO BE HELD IN SEPTEMBER THIS YEAR, PROMISES TO BE BIGGER AND BETTER THAN ALL ITS PREDECESSORS, ACCORDING TO THE ORGANISERS.

The 8th International Exhibition on Screen Printing Materials, Equipments and Auxiliaries has a special focus on textile printing. A new venue, the Bombay Exhibition Centre, has been selected in order to accommodate the greater capacity requirements – the show will

cover an area of 4,000 sq metres and comprise about 200 stalls.

Industry associations from India and abroad are supporting Screen Print India 2008; they include Screen Printing & Graphics Association of India (SGAI), China Screen Printing Industry Association (CSPIA), Tirupur Export Knit Printers Association (TEKPA) and Gujarat Silk Screen Materials Dealers Association (GSSMDA).

Anil Brahmabhatt, President of SGAI, said

that this is one of the most eagerly anticipated events, which brings together all the major players and also attracts a quality crowd. T R Shrikant, President of TEKPA, emphasised that the show is extremely relevant in light of the textile industry being one of the key aspects of the screen printing industry. 

Further information:

web: www.spi2008.com / www.adityaexpo.com

CTS AND DIGITAL WORKFLOW 2008

Neuss / Düsseldorf, Germany; 4-5 November 2008

CTS AND DIGITAL WORKFLOW 2008 IS A TWO DAY CONFERENCE WHICH WILL PROVIDE PRINTERS WITH THE LATEST ADVANCED TECHNOLOGIES FOR COMPUTER-TO-SCREEN (CTS) APPLICATIONS AND ACHIEVING A BETTER DIGITAL WORKFLOW.

CTS imaging systems have allowed printers to vastly increase screen production and increase quality at reduced costs, whilst repeat jobs are made easier and exposure time is decreased. However there is still much to consider and evaluate for first time investors and those looking to upgrade their present CTS system.

CTS and Digital Workflow 2008 is the leading supplier of technology information in this developing and expanding sector. Delegates from around the world will be given an insight into the systems available, the screen and stencil considerations and the in-house requirements. Industry experts will provide printers, managers, owners, designers, print buyers and suppliers with answers to the following questions and more:

- How do I benefit from CTS?
- What's the payback time?
- Do I need to change my existing system?
- Inkjet, wax, laser LED?
- Is it faster to get a print job done than with my present system?
- What guarantees do I have that my investment will be sound?
- Do I need to employ more people?
- Can I reuse the screens?
- What training support can a supplier give me?
- What if it goes wrong?

The event will be staged in Neuss (Germany) from 4-5 November 2008 in the easily accessible Swissotel Hotel, located conveniently close to the well-connected Düsseldorf Airport. Special room rates have been negotiated and an evening dinner reception at the hotel will offer an excellent networking opportunity.



The 2007 event attracted 130 delegates

GROWTH FROM THE PREVIOUS EVENT

The 2008 conference will grow from the inaugural CTS event staged in February 2007 and will also cover digital work flow specifically for screen printing and CTS. The 2007 event exceeded the expectations of delegates and exhibitors who were keen to see a follow-up event.

David Zamith, an attendee, commented: "For us it was good value ... the forum was excellent as almost all the CTS producers could talk about their position, technology and approach. We use different CTS technologies and we also have completely different dimensions and industrial segments. It was also excellent in terms of dialogue between the subjects as well as between members and also the Table Top room was an excellent idea."

CONFERENCE PROGRAMME

To ensure that presentations are impartial and offer the latest reliable information, presenters will not only be suppliers to the industry, but also printers using the technology. Suggestions from 2007 attendees have also been acted upon, and this year's conference programme will include more coverage on all aspects supporting and using CTS. At the time of going to press, the programme will include specific presentations covering:

Process calibration and characterisation

- Stencil and RIP calibration
- CMYK profiling – matching colours between printing systems

Process and quality control

- Choosing the right chemicals for the right CTS system
- Choosing the right fabric, frame and squeegee
- Standardising the production environment

Applications for CTS technology

- Graphics
- Industrial
- PCB, photovoltaic

Financial benefits and costs

- CTS saves – consumables and time
- ROI and TCO of CTS systems

Screen versus digital

- Can screen and digital co-exist
- What can CTS do to my screen printing



The Seminar at last year's event included a room with tabletop displays for manufacturers

- process to make it more efficient?
- Raster technologies

HSEP issues

- Chemical-free process benefits
- Recommendations for laser and UV light exposure

Case studies

- The same job on screen and digital – how can they match?
- Using CTS for large screens – a user experience.

To ensure that the event appeals to both the domestic German market and an international audience, all presentations will be simultaneously presented in English and German languages. The programme is subject to change; for the latest updates, visit the website.


EXHIBITION

The conference will be accompanied by an exhibition of specialist suppliers of:

- CTS machinery
- Photo emulsions
- Mesh
- Inks
- Dataflow software.

REDUCED 'EARLY BIRD' DELEGATE REGISTRATION

Delegates registering before 4 July 2008 will qualify for the 'early bird' reduced delegate fee of only €395. Applications after this time will be invoiced for the normal fee of €495. Registration includes access to the keynote presentations, technical papers, exhibition, refreshments, dinner and lunch.

Delegates can complete their registration online at the website or by emailing info@specialistprinting.com 

CTS & DIGITAL WORKFLOW 2008

Further information:
web: www.ctsforum.org

EUROPEAN MEMBRANE SWITCH SYMPOSIUM 2008

Neuss / Düsseldorf, Germany; 6 November 2008

EUROPEAN MEMBRANE SWITCH SYMPOSIUM 2008 IS A ONE DAY CONFERENCE PROVIDING PRINTERS AND MANUFACTURERS IN THIS IMPORTANT NICHE INDUSTRY WITH THE LATEST ADVANCED TECHNOLOGIES FOR THE MANUFACTURE OF MEMBRANE SWITCHES AND INDUSTRIAL GRAPHICS.

In recent years, processes, supplier capabilities and competitive pricing have established membrane switches as the preferred technology across a wide range of applications, covering many different products and industries.

European Membrane Switch Symposium 2008 will recognise the functional, aesthetic and integration advantages of membrane switches by offering a series of educational presentations covering market trends, current technologies and future opportunities. Delegates will also benefit from sessions covering best practice in operating and

production for lean manufacturing.

The event will be staged in Neuss (Germany) on 6 November 2008 – a day after the CTS and Digital Work Flow 2008 event.

CONFERENCE PROGRAMME

Printers, managers, owners, designers, OEMs and suppliers from around the world will be presented with a conference programme that includes:

- Keynote addresses
- Routes to best practice in production
- Advances in functional coatings
- Advanced machinery technology
- Pre-press technology
- Advanced post-press testing
- Process control
- Environmental issues.

At the time of going to press, the conference programme will include specific presentations covering:

- Substrates – Selection, designs, end use, applications, influences, coatings, functionality and environmental factors.
- Pre-press – Computer-to-screen, stencil technology, mesh selection and environmental factors.
- On press – Machinery advances, drying technology, squeegees, print technology and environmental factors.
- Inks / Adhesives / Conductives – Graphic inks, conductive inks, dielectric inks, functional coatings, adhesives (wet and tape) and environmental factors.
- Post press – Drying, curing, finishing, cleaning, reclamation, testing and environmental factors.

All presentations will be simultaneously presented in the English and German languages. The programme is subject to change; for the latest updates, visit the website.



The Symposium will include a series of educational presentations

EXHIBITION

The conference will be accompanied by an exhibition of specialist suppliers who will be displaying the latest developments in:

- Pre- and post-press technology
- Inks and substrates
- Printing and finishing equipment.

REDUCED 'EARLY BIRD' DELEGATE REGISTRATION

Delegates registering before the 4 July 2008 will qualify for the 'early bird' reduced delegate fee of only €295. Applications after this time will be invoiced for the normal fee of €395. Registration includes access to the keynote presentations, technical papers, exhibition, refreshments and lunch. Delegates attending both CTS and Digital Workflow 2008 and European Membrane Switch Symposium 2008 will qualify for a 10% discount for both events.

Delegates can complete their registration on the website or by emailing info@specialistprinting.com



Further information:

web: www.euromembraneswitch.org

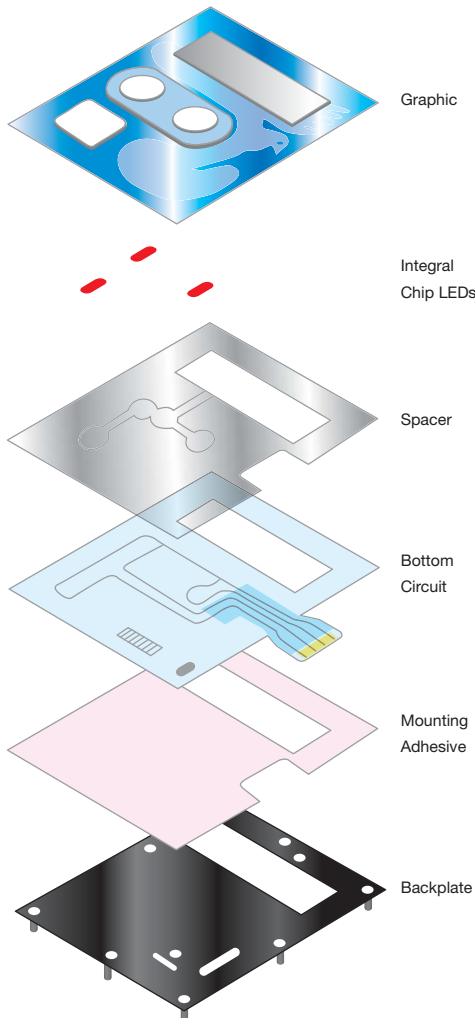
ORGANISERS OF CTS AND DIGITAL WORK FLOW 2008 AND EUROPEAN MEMBRANE SWITCH SYMPOSIUM 2008:



ESMA is an Association of European Manufacturers of machinery and consumables for the specialist printing industry, including screen, digital and pad printing processes



Chameleon Business Media is a dynamic provider of global solutions in business to business media, and is publisher of this and Glass Worldwide magazines



FESPA DIGITAL ATTRACTS FRESH VISITORS



FESPA's second Digital Printing Europe exhibition attracted a diverse international audience

FESPA'S SECOND DIGITAL PRINTING EUROPE EXHIBITION, WHICH TOOK PLACE IN APRIL AT GENEVA'S PALEXPO EXHIBITION CENTRE, ATTRACTED A DIVERSE INTERNATIONAL AUDIENCE OF DIGITAL WIDE FORMAT PRINTERS TO EXPLORE THE LATEST INNOVATIONS IN THE SECTOR.

The choice of Geneva (Switzerland) as the destination for the event led to a significant increase in visitor numbers from France, Italy and Iberia over previous FESPA events, according to the organisers. This country 'cluster' accounted for almost 30% of visitors to the show, compared with 12% in 2006. Germany, Austria and Switzerland also gave

strong backing to the event, making up 38% of visitors compared with 18% in 2006. Among these were 1,763 Swiss visitors from the 'home' market.

VISITOR DATA

There was also good attendance from other parts of Europe, as well as the Middle East, Africa, Asia-Pacific and the Americas. The

show attracted very similar visitor numbers to the inaugural event in 2006, with 12,817 visits recorded over the three days. With just under 8,000 individual visitors, more than 50% devoted two or more days to the show, which offered 25% more exhibitors than in 2006 and a 40% larger exhibition space compared with the launch event.

Visitor data indicates that over 40% of individual visitors to the show were owners or general managers of their businesses. A range of new event features, navigational aids and educational initiatives helped to optimise the visitor experience this year.

THE NEXT EVENT

The next FESPA Digital Printing Europe event will return to Amsterdam (The Netherlands) and will take place from 13-15 May 2009. [E](#)

Further information:

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There now follows a gallery of pictures of the stands of advertisers in this magazine and members of ESMA at the time of the event (for a full list of exhibitors at FESPA Digital 2008, please visit the website):



www.durst-online.at (Durst)



www.encredubuit.com (Encre Dubuit)



www.hp.com (HP)



www.ergosoft.ch (Ergosoft)



www.kian.it (Kian)



www.efi.com (Efi Vutek)



www.sericol.co.uk (Fujifilm Sericol)



www.mactacdigital.com (Mactac)



www.marabu-inks.com (Marabu)



www.oce.com (Océ)



www.rtape.com (R Tape)



www.mutoh.com (Mutoh)



www.printcolor.ch (Printcolor)



www.spuhl.ch (Spuhl)



www.nazdar.com (Nazdar)



www.rolanddg.be (Roland)



www.sunchemical.com (Sun Chemical)

ISA WRAPS UP ITS BIGGEST EVER SIGN EXPO

THE INTERNATIONAL SIGN ASSOCIATION (ISA) HAS HAILED ITS 2008 INTERNATIONAL SIGN EXPO AS ITS BIGGEST SIGN SHOW EVER. HELD IN MARCH AT THE ORANGE COUNTY CONVENTION CENTER IN ORLANDO, FLORIDA (USA), THE EVENT DREW LARGE CROWDS AND HAD MORE EXHIBIT BOOTHS THAN ANY PREVIOUS EXPO. IN ADDITION, THIS YEAR'S EVENT HAD A TOTAL OF 3,723 INDIVIDUALS REPRESENTING 111 COUNTRIES OUTSIDE THE USA.

ISA Sign Expo 2008 attracted nearly

20,000 attendees and showcased 1,952 exhibit booths, representing 563 companies demonstrating the newest technologies in the electronic sign, printing and graphics industries. The exhibit hall featured 130 more booths than in 2007.

EDUCATION AND DISCUSSION

ISA delivered educational sessions through its Discovery Seminar Series at the Expo, with 1,733 seats sold for 36 educational sessions and discussion forums. Nearly 100 people arrived early to ISA's Pre-Conference Workshops that took place a day before the

exhibit hall opened.

"The feedback I received from exhibitors this year was overwhelmingly positive," commented Lori Anderson, ISA President and CEO. "The quantity and quality of exhibitors reflects a diverse and thriving industry."

The 2009 International Sign Expo is scheduled for 15-18 April 2009 and will take place at the Mandalay Bay Convention Center in Las Vegas (Nevada), USA. [EN](#)

Further information:

web: www.signexpo.org

SGI 2008 ATTRACTS INTERNATIONAL VISITORS

THE SIGN & GRAPHIC IMAGING MIDDLE EAST 2008 SHOW, SUPPORTED BY ESMA, TOOK PLACE IN DUBAI (UAE) IN FEBRUARY. THE EXHIBITION, WHICH IS FOR THE SIGNAGE, GRAPHIC IMAGING AND SCREEN PRINTING INDUSTRIES, ATTRACTED 300 EXHIBITORS FROM 28 COUNTRIES, INCLUDING THE PARTICIPATION FOR

THE FIRST TIME OF COMPANIES FROM SOUTH AFRICA.

Organisers say that SGI 2008 was the biggest show so far in terms of space taken, exhibitors and leads generated, which they estimate were worth over US \$800 million. They also state that 90% of exhibitors have said they will be back at the show to exhibit with larger spaces next year.

The 11th Annual Sign and Graphic Imaging Middle East 2009 will be held from 15-17 February 2009 at the Dubai World Trade Centre in Dubai, United Arab Emirates (UAE). [EN](#)

Further information:

web: www.signmiddleeast.com

ESMA EVENTS IN 2008

ESMA is pleased to announce that the following events, to be staged in cooperation with Chameleon Business Media, will take place in 2008:

CTS and Digital Workflow 2008: 4-5 November 2008 in Neuss (Düsseldorf)

European Membrane Switch Symposium 2008: 6 November in Neuss (Düsseldorf)

FUTURE EVENTS

MAY

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

AUGUST

21-23 FESPA Mexico World Expo (Mexico City, Mexico)

SEPTEMBER

5-7 Screen Print India 2008 (Mumbai, India)
23-25 Viscom France (Paris, France)

OCTOBER

15-18 SGIA '08 (Atlanta, GA, USA)
30 October-1 November Viscom Europe Germany 2008 (Frankfurt, Germany)

NOVEMBER

4-5 CTS and Digital Workflow 2008 (Düsseldorf, Germany)
6 European Membrane Switch Symposium 2008 (Düsseldorf, Germany)
13-15 Viscom Italia (Milan, Italy)
14-17 All in Print China (Shanghai, China)
28-30 FESPA World Expo Asia-Pacific (Bangkok, Thailand)

DECEMBER

14-16 FESPA Digital Printing India (Mumbai, India)

For more event listings, visit the Events page on www.esma.com

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