ISSUE 3
2015

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WELCOME


Bryan Collings


Graham Lovell

I am pleased to announce that the highly-experienced *Specialist Printing Worldwide* team has recently been further strengthened by the addition of Graham Lovell, new Senior Sales & Marketing Manager.

With Frazer Campbell becoming the dedicated contact for North America, Graham will be focusing on all other regions, using his extensive experience to provide new opportunities to manufacturers of machinery, consumables and technology to reach our ever-growing global readership. Alongside Dave Fordham, Frazer and myself, Graham will be visible in the future at key industry events, including of course InPrint 2015.

Specialist Printing Worldwide is official international journal and media partner of InPrint, as well as exclusive publisher of the official InPrint 2015 Show Catalogue that is located in the middle of this issue between our broad selection of technical articles covering the industrial, graphic and textile sectors. We wish InPrint 2015 the best of success and look forward to meeting readers and advertisers alike there.

The expanding glass market is certainly deemed to be an important sector in industrial printing. GlassPrint 2015 in Germany in November will be a must-attend event, as will ESMA's other autumn conferences, The IJC and Direct Container Print. Read on for more information on GlassPrint and all the autumn conferences and exhibitions.

These events follow in the footsteps of the highly-successful FESPA 2015 that took place in the spring, and it won't be long before we are focussing on the SGIA Expo on the other side of the Atlantic. Alongside the normal high quality technical content, an SGIA preview will follow in the next issue, which can only be received by subscribing now at www.specialistprinting.com

Bryan Collings, Publishing Director, Specialist Printing Worldwide

A TRIP DOWN MEMORY LANE

Sophie Matthews-Paul reflects on her recent talk in Cambridge

At the end of July I made the arduous trek across country to talk to the Cambridge Inkjet Interest Group as one of two invited speakers. The invitation came as a bit of a surprise, and addressing a room filled with luminaries and those of high academic stand made me feel rather honoured and humbled. But, fortunately for the assembled company, the intention was that my contribution would cover a more generalised overview of ink-jet – with a small quiz thrown in for good measure.

First up to speak was Professor Bartek Glowacki whose specialist knowledge covered the ink-jet printing of functional materials for energy applications and, although this topic might have sounded daunting, the content certainly wasn't. His audience stuck to his every word, and even I was able to understand much of what was being discussed, even though it was at a highly specialist level.

As a complete contrast, as the second speaker of the evening, my presentation was intended to give a very light-hearted look at the development and manufacture of primarily wide-format ink-jet devices during the past couple of decades. This was based around the question of whether producers of printers were sometimes responsible for bringing out an engine that was neither market-ready nor able to suit the working purpose for which it was originally intended. As a result, although my plan was to look at how digital technology has transformed the concept of print from its former staid ethos into a dynamic yet practical communicative medium, the stronger element that generated several questions was following my trip down memory lane.

A USEFUL OVERVIEW

There's an advantage to growing old if for no other reason than having the chance to be in at the start of the commercialisation of ink-jet print engines. As a result, my years within the ink-jet industry have given me the opportunity to propagate chunks of specific knowledge that turn into a useful overview of how technologies can be used in practical environments. To this end, going back through the years of wide-format platforms in particular, there was a fascinating list that included some tough work-horses but, alas, also featured a cornucopia of some astonishing concepts that never made it to market. The reasons for failure tended to vary – some machines were simply ahead of their time and really had no potential for being taken up by companies anxious to move to newer digital technologies. Others seemed to be knitted together with little consideration about what end users actually needed, and this included obvious, remarkable elements such as print width, ink chemistry and material handling. A further collection of behemoths offered complex components leading to extortionate primary investment and running costs, and adding difficult operating conditions into the mix.

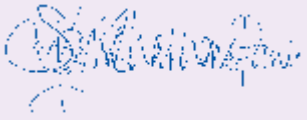
Not every printing machine was destined to make it to market

Sifting back through the many years of introductions of printing machines, the story of the emperor's new clothes came to mind several times and, now, it is remarkable to assess how many engines never made it to market in a production context. What's even more intriguing are the development costs and techniques that must have gone into many of these devices, with manufacturers giving scant attention to their potential end customers, and bringing out printers that served no valuable purpose to anyone.

LEARNING A LESSON

Although many of the non-starters that have crossed the industry's path were from some years ago, recently there have been newer introductions that, too, might not necessarily prove to add value to the digital printing manifesto of essential capabilities. Today's refinements should serve to confirm that days of optimistic folly in development terms have long gone, yet still common-sense sometimes fails to prevail in new equipment coming to market. Certainly, technological advances have seen greater diversity in production devices, with a dichotomy between conventional commercial use and that which falls under the specialist, industrial umbrella.

But insistence that PSPs, display producers and others in the wide-format sector need the continued modifications and refinements that increasingly are on offer might be pure folly. This particular segment requires print platforms that are fit-for-purpose and produce good quality from an appearance perspective. The finer tolerances and critical construction of devices employed in other areas where ink-jet manufacture is growing in popularity, with versatility being key, are the engines where absolute precision is the vital element in the overall functionality and methodology. How many lessons have been learned to remove the risk of failure is anyone's guess but, hopefully, ink-jet's foundations are now based on a solid footing that incorporates common-sense as well as technological know-how.



Sophie Matthews-Paul is an independent analyst and editorial consultant to Specialist Printing Worldwide

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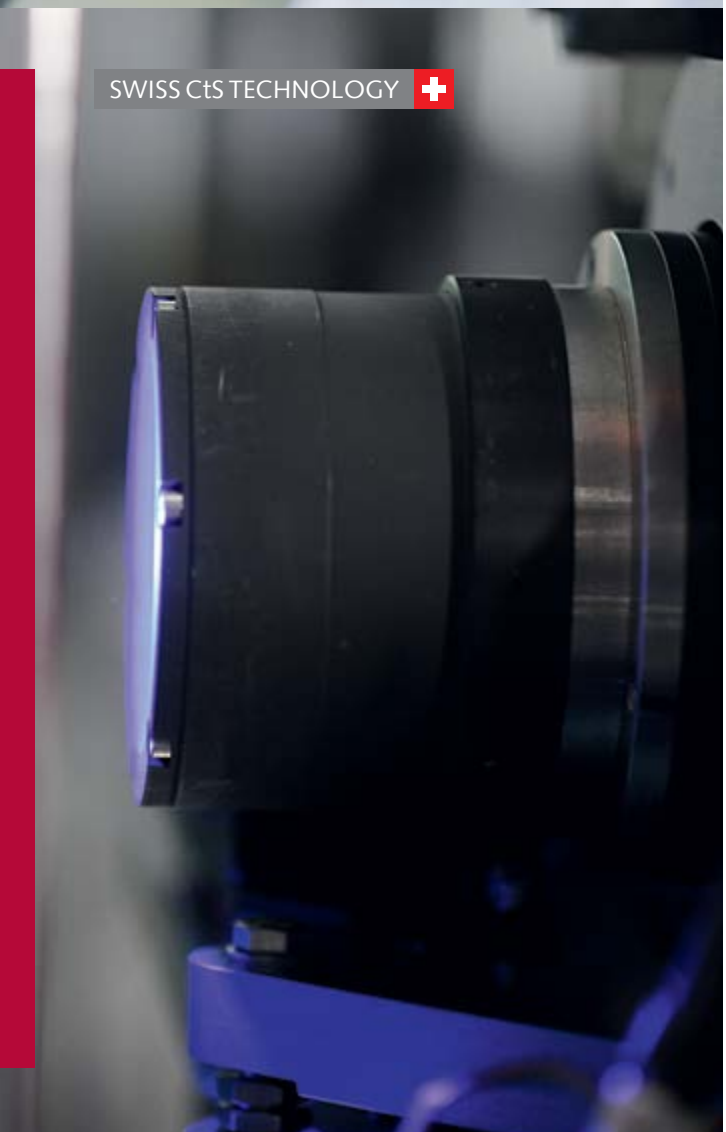

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- How process standardisation can increase hollow glass printing efficiency (SEFAR)
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- Messe Düsseldorf (organisers of glasstec 2016)
- VDMA (Glass Forum)

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"GlassPrint 2013 was an interesting event." STEPHEN DAY, NSG PILKINGTON

Good overview of trends and the possibility for direct contact with manufacturers." RALF BONITZ, SCHOTT

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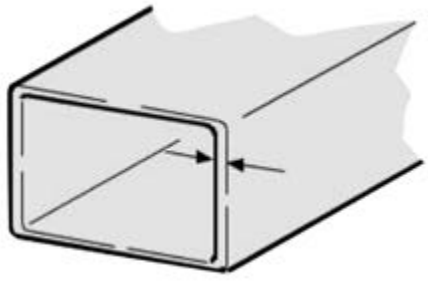
THE IMPORTANCE OF HARMONISING SCREEN COMPONENTS

Art Dobie provides a closer look at matching parameters for high resolution screen-printing applications

When preparing printing screens for high resolution printing applications, it is smart to think three-dimensionally. Even when an ink film is printed thin, it is still a three-dimensional volume of ink that has been deposited onto our substrate. The length, width, and height (or volume) of our printed ink film is critical to achieving desired results. In the case of graphic or decorative printing applications, the deposited ink volume will relate to opacity, tone and colour, as well as the ability to be properly cured. In the case of electronics or functional printing applications, printed ink film volume will influence electronic properties such as conductivity, resistance, or dielectric strength.

In screen making for high resolution printing, harmonising screen parameters such as mesh, emulsion type and screen stencil characteristics to the targeted ink type and artwork design is critical to successfully achieving the correct ink film deposit needed to satisfy the requirements of the intended application.

Often easy to overlook, the screen frame needs to fulfil a few important requirements – be structurally stable, be flat and parallel on the top and bottom surfaces, and in particular it needs to be the appropriate size for the intended print area. If using static extruded aluminium frames, be absolutely sure to pay attention to the wall thickness of the extrusion. Considering the total cost of mesh bonded to a screen frame over the course of its lifetime, it is always a better investment to purchase the heaviest wall thickness available for the size of your frame profile.



The screen frame needs to fulfil important requirements

THE FRAME IS THE BACKBONE

This is typically around .125" for most common frame sizes. The screen frame is the backbone of our printing plate and a heavier wall thickness helps the frame maintain dimensional stability when under the stress of mesh tension. The more stable your screen frame is, the better it can assist in holding pattern registration and dimensional accuracy.

With respect to size, the minimum inside dimension of any screen frame should be approximately 1.54 times larger than the intended print area to provide sufficient margin for proper mesh deflection. Having proper screen margin helps minimise screen stretch and image distortion when off-contact printing.

In screen-printing, mesh is key to getting ink to transfer from the screen and onto our substrate. In contact printing processes, ink transfers from printing plate to substrate at the moment the printing plate separates from the substrate. In offset and gravure printing processes, a natural, built-in plate-from-substrate separation occurs when the cylindrical printing plates utilised in those printing methods rotate away from the substrate surface.

While some screen-printing methods do take advantage of cylinders (rotary and cylindrical screen-printing come to mind), the vast majority of screen-printing applications utilise a flat screen to print onto a flat substrate. Successful flat-bed screen-printing still requires a timely separation of the screen from substrate for proper ink transfer. However, this necessary separation has to be artificially generated since it will not occur naturally when no rotating cylinders are involved.

ELASTIC MEMORY

When a tensioned screen is deflected downward by squeegee force in an off-contact printing set-up, the mesh retains the elastic memory required to lift the screen up from the substrate at the rear side of the moving squeegee. This creates the separation needed to remove the screen from the wet ink film remaining on the substrate.

In order to utilise the elastic property of screen mesh, the mesh needs to be properly tensioned prior to being securely attached across the surface of the screen frame. Mesh tension provides the counter-force needed to overcome any tack down generated by the wet ink. The higher the tension level, the greater the counterforce the screen has to peel up and out of the printed ink film during the print cycle.

Of course every screen mesh type has its tension limit, based on the make-up of the mesh filaments, the mesh count, and filament diameter size. In today's mesh selections

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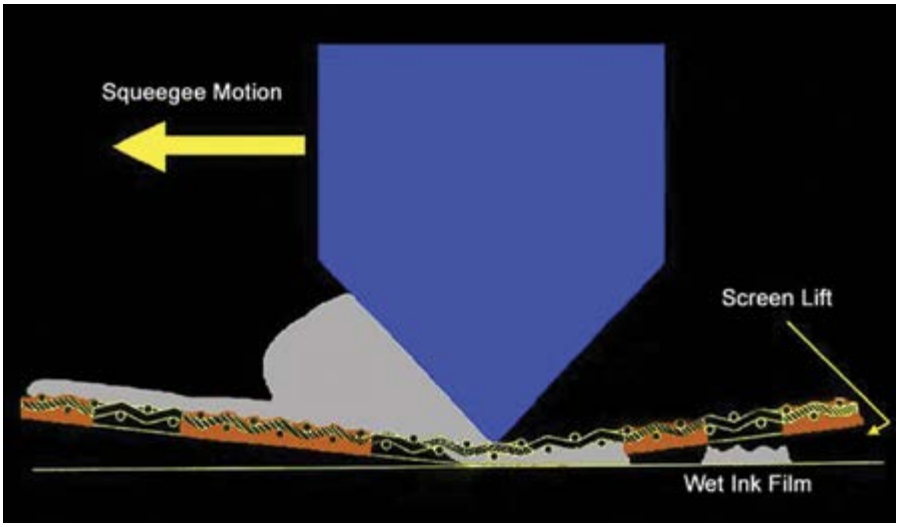

Separation is needed to remove the screen from the wet ink film

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there are a number of high tensile strength/high modulus mesh types offered which allow for increased tension levels while still taking advantage of the smaller thread and wire diameter sizes beneficial to high resolution applications.

In any printing application, screen mesh has to successfully satisfy three requirements:

1) it has to be capable of printing the finest feature size in the design
2) it needs to deposit an ink film thickness that is appropriate for the intended application
3) and, in the case of speciality inks, the mesh openings need to be big enough to allow the largest solids particles contained in the ink to easily pass without sifting

Mesh is the screen component which meters the wet ink film thickness. Finer, thinner mesh types lay down shallower ink films than coarser mesh types. Mesh types are identified by the combination of material type, mesh count (number of filaments/in or cm) and filament diameter size.

FILAMENT MESH DIAMETER IS CRITICAL

When setting up screen specifications for high resolution printing, the filament diameter of the mesh selected plays a critical role. Wire or thread diameter determines the overall mesh thickness and, in conjunction with mesh count, diameter controls the mesh opening size and sets the resulting open area percentage in woven mesh.

In high resolution printing applications, the aspect ratio between overall screen thickness and pattern feature size comes to the forefront. Attempting to print a particular feature size taller than it is wide can be exceptionally challenging, and can be greatly influenced by the ink's rheological properties. When attempting to print fine features or circuitry, it is helpful to select a screen mesh with a wire or thread diameter that is approximately 25% to 30% of the width of the smallest image size. The chart above lists some guidelines for matching mesh wire/thread diameter to targeted line width. (Note that while smaller diameters are possible, 16µm is one of the smallest wire diameters that is commonly available.)

Line Width (µm)	Recommended Wire Diameter (µm)
100	23 to 25
75	23
50	18
40	16

Guidelines for line width diameters

Most mesh types incorporating these smaller sub-25µm diameter filaments are typically comprised of a higher tensile strength alloy or higher modulus polymer to increase tension capability. The increased tension capability assists in generating the screen's necessary uplifting counterforce discussed earlier.

These finer mesh diameters are frequently paired with specific mesh counts to yield higher open area (porosity) percentages. Not only does ink release easier through mesh with higher open area, but the woven mesh itself is thinner, which helps in reducing aspect ratio concerns between screen thickness and line width.

Higher open area in a woven mesh results in a lower weave angle of the filaments in the mesh. Lower mesh weave angle creates a smoother surface profile in the mesh compared to its lower open area counterparts. Smoother mesh surface often equates to smoother emulsion and printed ink surface profiles.

SPECIFIC PATTERN GEOMETRY

A specific pattern geometry is reproduced and controlled by the stencil component of a printing screen. The screen stencil is created using a photosensitive coating which is applied directly to the tensioned screen mesh. This material can be in either fluid or dry film format.

The fluid version, called 'direct emulsion', is coated in wet layers onto the screen mesh.

This can be performed manually or with automatic screen coating equipment. Additional wet-on-dry layers can be applied to increase the thickness of the coating.

The emulsion solids content, the coating thickness, the mesh weave profile, and the screen drying position all have effect on the smoothness of the coated screen surface. The smoother a screen stencil surface is, the better it can seal or 'gasket' to the substrate and provide sharp definition to the printed image edges. A rough or wavy coating surface will hinder the screen from sealing to the substrate surface and can result in 'saw-toothed' or postage stamp-like edges to the printed features.

The dry film form of screen emulsion is

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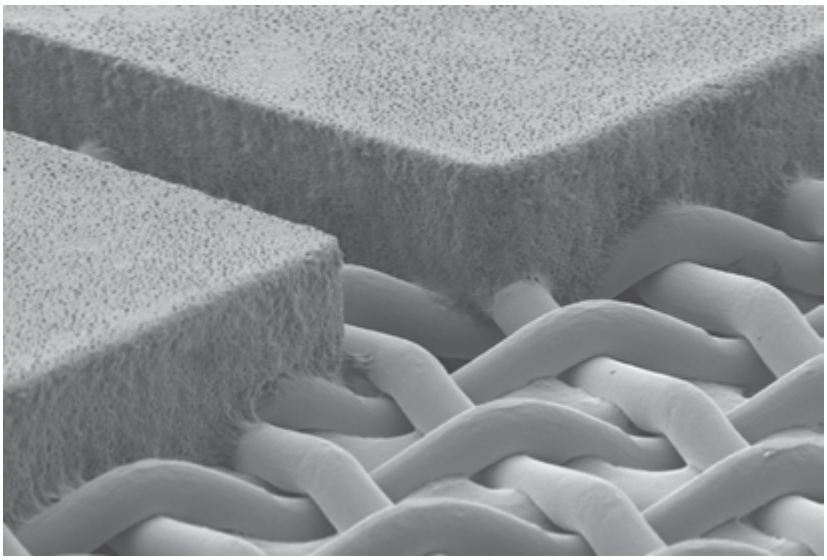

IMAGING HIGH RESOLUTION SCREEN STENCILS

When imaging high resolution screen stencils, absolute care must be taken to reproduce the image sizes within the tolerance permitted for the application while still achieving sufficient photo-hardening of the stencil. Thorough cross-linking of the stencil can be easily achieved, but this commonly chokes the resulting image sizes in the stencil as a result of light-undercutting those same images on phototool during the UV exposure cycle. Methods used to help reduce or eliminate this reduction in feature size or linewidth are the use of a Fresnel lens or specially curved mirror positioned at the right focal point between the light source and the screen to semi-collimate the light emitting from the UV lamp system. Other methodologies include artwork compensation to allow the anticipated undercutting light to burn the image back down to target size. When using photographic silver halide film positives to image your screens, all high resolution and critical registration artwork should be photo-plotted onto stable, industrial photo film using a laser photoplotting system set to 20,000lpi. It is extremely important that all coated screens be completely dry prior to exposure. Emulsions are hydroscopic and will reabsorb moisture directly from the ambient room air. Exposure and screen storage areas should be kept at 40% relative humidity or less, and staging screens to be imaged in a dry box or low temp oven will prep them to properly crosslink by driving out any internal moisture.

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Direct emulsion is coated in wet layers onto the screen mesh

Capillary Film, or Cap Film for short. Cap Film is manufactured as a coated film layer of a specific thickness on a transparent backing sheet (it is typically provided in roll format but can also be converted to sheets).

Cap Film is applied to the substrate side of a tensioned screen mesh by solubilising the film to soften it, which permits the softened coating to penetrate into the screen mesh. Cap Films can be softened with water or by using them in combination with direct emulsion, which contain a specific percentage of water content.

Capillary film is coated to a specific thickness

The amount a given Cap Film penetrates into screen mesh depends on the solubility of the particular film and how much it was softened, the type of screen mesh involved, and the pressure applied during the application process. The Cap Film is applied to the screen mesh and allowed to dry. Once thoroughly dried, the backing sheet can be peeled away from the Cap Film layer. Because the Cap Film coating dried on the screen with its backing sheet still in place, the surface of the dried Cap Film layer is normally smooth and mirrors that of the backing sheet. The smooth stencil surface typically achieved with a Cap Film stencil tends to gasket well to provide sharp print definition. The amount of stencil coating thickness remaining above the mesh plane is identified as EOM, or 'emulsion-over-mesh'.

THE CORRECT ASPECT RATIO

As mentioned earlier, aspect ratio in high resolution screen-printing refers to the overall screen thickness (tensioned mesh thickness + EOM) versus the width of the smallest feature or line in the print pattern. In order to achieve acceptable ink release when screen-printing, it is recommended to maintain a 1:1 aspect ratio between overall screen thickness and minimum line width. When a screen is thicker than the width of the print features, the substrate competes for ink adhesion versus all of the surface area within the print cavities that the ink is attracted to as flows through the screen.

To help minimise mesh interference in high resolution images, some filament diameter recommendations based on minimum image size were provided earlier in this article. Because of their high open area, the thickness of the woven screen meshes containing these wire diameters would be approximately equal to (2 x diameter). With thickness of these mesh types under tension running between 32µm and 50µm, there is little room left within the overall screen thickness factor for high EOM coating values when attempting to print images containing 50µm and smaller feature sizes.

For these applications, EOMs should be targeted between 8µm and 12 µm. The typically smooth surface profile of a Cap Film stencil can be beneficial in fine line printing to assist in sharp edge definition, even when the EOM is required to be low. Additional wet-on-dry 'face-coat' layers of direct emulsion can be applied with a 0.5mm edge coating trough to smooth out any existing variation in direct emulsion stencil surfaces.

RESOLVING POWER OF THE STENCIL

In addition to the format of the stencil material (direct emulsion or Cap Film), one of the most important characteristics required for high resolution screen-printing applications is the resolving power of the stencil. The emulsion

Emulsion over mesh

coating material must be able to resolve the smallest features of the artwork with acutance and clarity or it cannot be successfully printed. While the screen specifications used (mesh type, diameter size, EOM, overall screen thickness, etc.) must be carefully selected so that is it possible for any stencil material to reproduce the artwork in question, the emulsion coating itself still requires high powered photochemistry capable of imaging high resolution artworks with sub-50µm feature sizes.

Following exposure, screen pattern development is performed by solubilising the unexposed images in the stencil using a fine water spray to dissolve and rinse away all of the unhardened emulsion that was masked by the photopositive during the exposure cycle. A handy tool for developing high resolution screen stencils is a compressed air paint spray gun typically marketing for auto body shop use. These devices utilise an attached canister or connect directly to a water source using a siphon hose to emit a fine water mist combined with pressure provided by a compressed air line. Care should always be taken when developing fine line images to avoid over saturating or abrading the emulsion by excessive concentration in a specific location.

Not all stencil materials have similar resolving capabilities and many are not suited or even intended for high resolution printing requirements. Product data sheets can be used to initially identify potential emulsions specifically formulated for fine line printing applications. This should be followed up by a discussion with your emulsion supplier's technical representatives. Final stencil material selection should be based on both screen-making trials and print tests.

Carefully matching fine diameter mesh types with smooth, high resolving screen stencils of appropriate EOM thickness to the intended image feature size creates a realistic opportunity to successfully screen print high resolution images in the 50 micron range, provided your ink and press are up to the challenge. ■

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THE ROUTE TO TOP PRINTING STENCIL QUALITY

Denis Kastner reviews a screen-printing mesh that claims to deliver the best performance

Sefar has partnered the industry for many years to assist manufacturers of stencils and printed materials in their efforts to develop better products and make production processes more efficient and sustainable. As the global market leader for screen-printing mesh, Sefar offers solutions along the entire value chain in screen-printing production.

Premium, dimensionally stable screen-printing stencils that offer long lifetimes must pass through many processing stages before they are completed and ready for use in industrial printing environments. As well as the frame quality, the mesh characteristics exert a critical influence on print quality and efficiency. By drawing on its extensive expertise and experience, Sefar can ensure that all the steps in the value chain are co-ordinated with one another. This makes it possible to maximise the potential of stencil manufacture and print production. Sefar's product portfolio includes high-performance screen-printing meshes such as Sefar PME as well as Sefar clamps and measuring instruments.

THE INNOVATIVE MESH FOR FUNCTIONAL AND DECORATIVE PRINTING

In Sefar PME, the company has developed a screen-printing mesh that delivers the highest

Mesh features	Screen/stencil maker benefit	Printer benefit
High modulus polyester yarn with increased tensile strength	• Higher peak tension achievable • Reduction of the risk of mesh tearing • Safe and efficient stretching operation • Process and product reliability	• Accurate reproduction of fine structures with demanding ink and paste systems on print- critical substrates • Improved dimensional accuracy in the production-run because of higher tensions • Reduction of the risk of stencils tearing
Balanced and low mesh elongation	• Stable mesh geometry during stretching • Rapid achievement of stable tension • High reproducibility of specified mesh tension values • Standardisation of the stretching process	• Lowest image distortion • Dimensionally precise reproduction behavior in the printing process • Reduction of risk of moiré because of balanced mesh count ratio
Minimal loss of tension	• Reduced relaxation times result in increased utilisation of clamping systems • Predictable, minimal tension loss between stretching and printing process • Process and product reliability • Increased productivity	• Increased printing speed because of reduced snap off and squeegee pressure • Constantly accurate reproduction of fine structures at the highest quality level • Increased number of stencil decoating cycles and screen reutilisation rate
Adhesion optimised surface treatment	• Homogeneous coating and constant application of all emulsions • Easy and safe capillary film application because of excellent wetting properties • Superior stencil adhesion expands resolution capabilities of fine details	• Outstanding stencil adhesion expands printable range of fine details • Constant line widths and clear detail reproduction even during high print runs • Increased stencil lifetime due to optimised adhesion properties
Resolution optimised mesh color	• Accurate transfer of the printing image on the stencil • Absorption range matched to the exposure spectrum for a good detail resolution	• Faithful and less-loss reproduction of the printed image
Uncompromised paste and ink release	• Homogenous and constant adhesive application	• Maintenance of the tightest color tolerances and the required electrical conductivities • Able to print higher viscous ink or paste systems due to increased open mesh area
Good antistatic properties	• Simple, reliable and user-friendly screen production • Reduced susceptibility to dust in the stencil production • Reduction of pinholes and retouching	• Production reliability thanks to reduced risk of pinholes • Error-free, smooth and clean printing • Reduction of waste and increased production efficiency
Knot and fault indication	• Efficient, rational stencil production and quality control • Optimised mesh utilisation • Reduction of the mesh waste and stencil rejections	• Reduced downtime of the printing press • Increased production efficiency • Waste and cost reduction
Developed and manufactured to meet the highest industry standards	• Most consistent mesh and stencil measurement • Process reliability through consistent quality control	• Process reliability because of high quality stencils • Repeatable and uncompromising reproduction performance and printing quality

performance when it comes to industrial production of decorative components and functional coatings for the automotive, electronics, home appliance, IMD and membrane switch applications.

The launch of the Sefar PME product line marked the arrival of a high-performance mesh that offers numerous advantages and benefits for stencil manufacturers and printing houses. It was developed on the basis of a new high-strength polyester yarn technology – the first time that technology of this sort has been used for screen-printing. The high-modulus polyester yarn makes it possible to produce yarns with extremely fine diameters that also offer higher tear resistance. So in practice, a Sefar PME 150-30Y can be tensioned 30% more than a standard screen-printing mesh of the same type (in relation to one square meter). The result is that Sefar PME delivers maximum stencil tension values combined with an efficient stretching process.

MAXIMUM PRODUCTIVITY FROM THE STRETCHING PROCESS

Thanks to the reduced elongation of the yarn material and the mesh technology, Sefar PME can be stretched faster and more easily, with greater safety and reliability – advantages that add up to increased efficiency. The low elongation and the higher mesh strength result in less loss of tension after gluing than with normal commercial polyester screen-printing meshes. Sefar PME thus makes it easier to repeat high tension values during stencil manufacture.

MOST EFFICIENT STENCIL PRODUCTION

The optimised yellow of the mesh provides another advantage in the actual process of stencil manufacture. Sefar has successfully reduced the exposure times for the yellow mesh by up to 30% on average. This innovation by the company makes higher throughput rates possible with conventional exposure, and also ensures improved hardening of the stencil material for CtS imaging – even with low-light systems.

IMPRESSIVE RESULTS

Sefar PME's low elongation favours dimensional stability during the printing process. Furthermore, the snap-off distance can be reduced for stencils with higher mesh tension. The result is ultra-precise printed products with registration accuracy that has never been achieved before. Sefar PME provides convincing results, all along the line! ■

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KEEPING IT CLEAN

Simon Jones tackles the topic of waste water and screen making chemicals

Clean water and good sanitation are taken for granted by millions of people in the 'developed' world. We simply turn on a tap for clean drinking water and allow it to wash into a sewer for treatment in some unseen facility. We also expect to walk alongside unpolluted rivers and waterways that are full of fish and wildlife.

This has certainly not always been the case and, during periods of industrialisation, our environment and waterways have suffered from the effects of pollution. Waste water is now a hot topic but legislation and policies on this subject are also some of the most difficult to understand. The purpose of this article is to offer a practical guide on some of the issues related to screen making chemicals and how they can impact on waste water.

WHAT REGULATIONS APPLY?

Waste water regulations are probably the most diverse set of 'environmental' standards, as different rules apply at EU, country, regional and local authority levels, they also differ by water company and even individual building. From our own experience we've established that the closer you are to the waste water treatment plant the stricter these limits can be. It is also likely that your business has different 'consent limits' for waste water compared to your neighbours, depending on the nature of their work.

A top tip is to consider colour-coding your drains to identify between a domestic waste water drain and a trade effluent waste water drain

The most important thing is to establish exactly what regulations apply to your business and your water company can advise you on this. If you are discharging effluent into a sewer you will require a 'trade effluent consent' and you will be given strict 'consent limits' for a range of parameters. Your water company may require you to conduct periodical monitoring of your waste water or they may choose to conduct their own 'spot checks'.

Needless to say, non-compliance is a very serious issue and penalties can range from improvement notices, fines, or prevention from discharge into the drains which would necessitate all water being collected for disposal as 'chemical waste' at huge cost and inconvenience to the business.

MAKING SENSE OF THE TERMINOLOGY

The consent limit stipulates what and how much 'trade effluent' you are allowed to discharge into the drains. This is made up of many key properties of waste water that the water company treating the water will be concerned about, such as maximum daily volumes and discharge rate, pH, COD (Chemical Oxygen Demand), solids, temperature etc. It will also stipulate the types of chemicals that are allowed down the drain, for example any substance likely to produce flammable or harmful vapours (such as petroleum spirits and some aromatic hydrocarbons) are unlikely to be permitted to enter a public sewer.

Additionally, the consent limit typically applies to the specific source of 'industrial effluent' which in the case of screen-printers may be a screen cleaning machine or the booth used to develop stencils. Therefore, other waste water from sources such as toilets, kitchens and wash rooms are excluded and it is not possible to 'dilute' the trade effluent with these other sources, even though they will most likely end up in the same sewer.

Typical example of consent limits values could be:-

COD:	*<2,000 mg/litre*
pH:	*5 to 10.*
Water temperature:	*<43 degrees C.*
Solids:	*<1,000mg/litre (i.e. 1 gram/litre)*

In our experience COD (Chemical Oxygen Demand) is the most misunderstood parameter and the one that causes most problems with effluent from the screen making process. It is a measure of how much oxygen is required to break down the 'waste'

Stencil removers do not contribute to COD of waste water although dissolved emulsions do

materials in the water at the treatment plant. Many sewage treatment facilities use a cocktail of bio-organisms to 'feed' on the waste but, if the COD in the water is too high, they will run out of oxygen and die. Different treatment plants have different requirements and one of the issues the water company needs to deal with is optimising the incoming COD levels to ensure the bio-organisms are 'fed' at the right level. In Scandinavian regions, for example, many treatment plants are optimised for high COD levels and other factors such as 'nitrification' of the water are highly critical. In other regions low COD values are preferred.

Unfortunately, screen making materials such as emulsions and fillers have a relatively high COD of around 1,500,000 mg/litre. So each litre of emulsion that goes down the drain needs 750 litres of clean water to reduce the COD to 2,000mg/litre, which is a common industrial effluent limit! Simple measures, such as scraping as much out of the coating troughs prior to cleaning, will reduce the amount that goes down the drain and lowers your COD and solids.

pH is a measure of acidity or alkalinity and is a number on a logarithmic scale from 0 to 14, with 0 being highly acidic and 14 being highly alkaline. Water and 'neutral' materials have a pH close to 7. Acids and Alkali's neutralise each other so it is possible to use different materials with high and low pH and achieve a 'balanced' neutral discharge – more of that later.

Solids' content in waste water is a simple measure and not normally an issue within our industry.

Always think twice about your cleaning process, ensuring waste water regulations are followed

DRAIN SAFE IS OKAY, RIGHT? WRONG!

'Drain Safe' actually means the product does not knowingly contain any chemicals that are banned from entering the waste water system; it doesn't guarantee compliance and therefore should not be assumed is okay. For example, releasing too much hot water into the drains would be non-compliant, even through the water itself is 100% 'drain safe'! Don't panic, there are simple measures to minimise any possibility of a non-compliance, especially if you understand how the processes of screen cleaning and screen making affects the waste water and you select the correct cleaning chemicals.

SCREEN MAKING

All emulsions, capillary films and fillers coated onto the screen will eventually end up in the waste water, either as unexposed emulsion washed out after exposure, or during the decoating process after printing. They also have high COD values. A single screen with one square m coating of emulsion on a 120/cm mesh would have a COD of up to 150,000mg/litre and would require around 75 litres of water during washout and decoating to get the waste water COD to below 2,000mg/litre.

SCREEN CLEANING AND INK REMOVAL

The waste water from this process may be neutral, acidic or alkali, dependent on the ink type. The ink and screen wash used will contribute to the COD, with both individually having a COD of approximately 1,500,000 mg/litre. The ink will also contribute to the solids content of the waste water. The most important step you can take is to scrape as much of the ink from the screen before cleaning, particularly if using plastisol inks. This will reduce the COD, the amount of solvent needed to clean the screen (also reducing the COD), and the solids' content of the waste water.

Using a water dilutable cleaning solvent such as an Aquawash, offers a significantly lower COD level than a general purpose screen wash. An Aquawash diluted at 1:1 with water will have a typical COD value of 750,000mg/litre, diluting at 2:1 with water will reduce this to 500,000mg/litre. Processes where the cleaning solvent is recirculated in automatic cleaning machines and manual cleaning booths can also significantly reduce COD levels in waste water.

STENCIL REMOVAL

The waste water from this process will always be acidic. This is due to the nature of the raw materials in the stencil remover used to breakdown the emulsion. The pH of stencil remover once diluted (at the correct ratio) or in a ready to use format will typically have a pH of 2. However, as the chemicals used in the stencil remover are inorganic, they will not contribute to the COD of the waste water. If pH is an issue, the waste water from the stencil removal stage can be 'neutralised' by holding back the water in a tank and adding waste water from the haze removal stage prior to discharging to the sewer.

Continued over

Practical Guide to Screen Making Products and Waste Water

Parameter	Biological Properties		Physical Properties			Chemical Properties		Environmental Classifications	
Description	COD	BOD	Solids	pH	Flash Point	Aromatic Hydrocarbons	Heavy Metals, Pesticides, etc.	Toxic to the Aquatic Environment	Harmful to the Aquatic Environment
Units	mg/Litre	mg/Litre	mg/Litre	0-14	°C	ppm	ppm	-	-
Description	Chemical Oxygen Demand. A measure of the Oxygen required to break down the organic material at the waste water plant. Calculated from the chemical components	Biological Oxygen Demand. A measure of the Oxygen required to break down the organic material at the waste water plant. Determined by decomposing the material under controlled conditions	The amount of solid, un-dissolved materials in the waste water	A measure of how acidic or alkaline the water is	A measure of how flammable a material may be. A material flammable at room temperature would have a flash point of 250C or less	Typically found in petroleum distillates	Typically elements such as Lead and Chromium. Pesticides are those that can affect the bio organisms in waste water plants or other aquatic life	Very toxic to aquatic life with long lasting effects / Toxic to aquatic life with long lasting effects	Harmful to aquatic life with long lasting effects / May cause long lasting harmful effects to aquatic life
Effect on Waste Water	High COD levels can cause bio-organisms in the waste water treatment plant to die	High COD levels can cause bio-organisms in the waste water treatment plant to die	High solids can cause discoloration of water and also lead to sedimentation and blockage of pipes	High or low pH can cause the bio organisms at the waste water treatment plant to die	Can lead to the acccumulation of explosive vapours within the waste water system	Can cause the bio organisms in the waste water treatment plant to die and are generally harmful to aquatic life	Can cause the bio organisms in the waste water treatment plant to die and are generally harmful to aquatic life	May be fatal to aquatic life	May be harmful to aquatic life
Ready-to-use Degreaser									
Concentrated Degreaser									
Cyclohexanone									
Butoxyethanol									
White Spirit									
Screen Wash (>10% aromatics)									
Screen Wash (<10% aromatics)									
Screen Wash (0% aromatics)									
Aquawash (high surfactant)									
Aquawash (diluted in-use)									
Stencil Remover (concentrate)									
Stencil Remover (diluted in-use)									
Haze Remover <5% caustic									
Haze Remover >10% caustic									
Dual Cure Emulsion									
Blockout Filler									

Low Impact

Increase impact on Waste Water Quality

HAZE REMOVAL

The waste water from this process will always be alkali due to the caustic chemicals used in these types of cleaning products. Using lower caustic haze removers, and those that can be left on the mesh overnight to dry, can minimise the pH of the waste water from this process. If you want to reduce the COD, apply the minimum amount of haze remover and, if possible, use a coating trough to apply the haze remover to the mesh. The pH of this process can be neutralised by holding back the waste water in a tank along with water from washing out and decoating screens prior to discharging to the sewer.

EQUIPMENT SOLUTIONS AND WASTE WATER TREATMENT

"Prevention is better than cure" and treating your own waste water on-site should be seen as a last resort if all other steps have been taken to meet consent levels. Many print facilities have been forced to install waste water treatment for different stages of the process due to high volumes or very demanding local regulations.

Always take expert advice and be clear on what you are trying to achieve and why. Again, your local water company can probably offer good and impartial advice.

Various approaches can be used to treat waste water in-house, prior to discharge. These include settlement tanks, chemical treatment (pH adjustment, flocculation and coagulation), filtration and carbon absorption of organic materials. Many printers fall into the trap of purchasing complex equipment which will 'over-treat' their waste water, such as remove solids through flocculation/coagulation and filtration and adjust the pH level when all that is required is pH adjustment to ensure compliance.

REVIEW YOUR PROCESSES

Even through you may have never had a problem with your water company in the past, regulations are becoming tougher and more efforts are being made to enforce them. Take an honest look and appraisal of your cleaning operation. If you have concerns or "think it looks wrong" then it probably is. Better to take steps now than wait for a knock on the door telling you that you need to clean up your act!

Understanding and knowledge is key to this and a few small changes to the products you use or the processes you follow can make a significant difference. Who knows? You might even save yourself some time and money in the process.

To help with the review we have produced our own table as a guide, a copy of which can be downloaded from website www.cps.eu. It details generic screen making and screen cleaning products and what properties they have with respect to waste water. Products used should be compared to the 'generic' classification in the table; in many cases, it may be possible to select an alternative one with lower impact on waste water.

KEEP IT CLEAN

Hopefully this article has helped you understand some of the factors that affect your waste water and how the cleaning process can be optimised.

Water quality and the environment is something we need to manage carefully and history shows how easy it is to get it wrong.

For us at CPS solving waste water issues are an everyday challenge. From our inception, our ethos has been to provide screen-printers with the safest and most environmentally friendly products available. Anything that can improve regulatory transparency and ease of use, at the same time enhancing safety while protecting the environment, will always receive our wholehearted endorsement. ■

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MAKING A PROFIT FROM NON T-SHIRT PRINTING

Mark Bagley explains how to open the door to extra revenues

In the second issue of Specialist Printing Worldwide this year, I discussed the potential of using a direct-to-garment printer to print other things beside T-shirts and how to determine if you can print on them successfully. However, just because you print on something does not mean it will help maximise the return on investment (ROI) on the equipment you purchased.

T-shirts are by far the most popular items printed with direct-to-garment printers. You will typically find more printed T-shirts hanging in closets or folded in drawers than any other types of garments. Thus, there is a high demand for printed T-shirts. But that does not necessarily mean they are the most profitable to print or the only thing to print. The price range for a custom printed shirt can range dramatically, depending on what your customers are willing to pay. But, often, garment decorators will get into bidding wars with each other and drive down the profits to get a job.

So finding unique products that can be printed using a direct-to-garment printer can open the door to more revenues and possibly higher profits than printing T-shirts. But this is not always the case. Paying close attention to key factors will help you make good decisions on whether you should print on something and if so, at what price.

PROFIT CALCULATION

There are multiple ways to calculate profit. A simple formula one can use is to take the potential revenues generated from selling the printed item (such as price) and subtract the costs as well as paying for the labour cost or time it takes to print.

Price – (Cost + Time) = Profits

Most garment decorators have an idea of what amount they need to profit in order to cover their bills, pay off equipment, pay salaries and put extra money into a bank account. "For my shop, we need to make a minimum of $50.00 an hour on average for an employee's time in order generate the profits we desire," says Marc Bryan of Big Idea Printing in Jackson, Tennessee (USA). "Our pricing is set up so that we generate more than this to help offset down-time and any potential misprints."

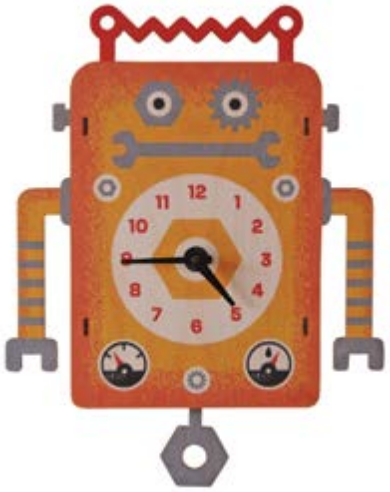
The easiest way to justify a higher price is to provide the customers with something that is unique or generates a higher value to the customers. When printing T-shirts, the best way to do this is to create custom artwork that customers will want and other garment decorators don't have the ability to create. With other substrates, the uniqueness of the item by itself can potentially justify a higher price. In my previous article, a custom wooden clock printed by Modern Mouse out of Massachusetts (USA) using a direct-to-garment printer was shown and is a perfect example of this.

Next, we should look at what the costs are for creating the finished item. Usually, the primary costs associated with printing an item includes the following:

1 Cost of the blank substrate
2 Shipping cost to get the blank substrate
3 Ink and any other coating (such as pre-treatment and clear coat)

However, you should also take into account any maintenance costs associated with maintaining your direct-to-garment printer. This amount may vary depending on the equipment being used, the environment it is in and how often it is used. Consult with the manufacturer of the equipment to get an idea of what this cost would be and keep your own records to ensure you are using accurate numbers for your business.

In addition, printing on something new should require some basic testing. When it comes to printing on new types of fabrics, David Anderson from Imprint Revolution in Los Angeles, California (USA) recommends creating a standard price/hour for testing and experimentation (similar to the $50/hr suggested above) and charging customers for this necessary first step. "Make sure you are reimbursed for the time and materials you use to experiment – whether you charge a flat fee up front, or incorporate this into your per-unit pricing, you can't be profitable without



This pendulum robot clock sells for $43.99 on www.modmoose.com. (Image courtesy Modern Moose)

In Part 1, I suggested that stone coasters are the best-printed sample to provide to a company you are trying to sell printed apparel to. The reason for this is a printed stone coaster cost substantially less than a printed shirt, you can print multiple coasters at the same time (which results in a lower labour cost) and it typically will get more exposure sitting on a desk or table everyday compared to a T-shirt that is only periodically worn at best. It is recommended to print a design on the coaster that relates to the company you are trying to sell to so the coaster will be prominently displayed for maximum exposure for as long as possible.

Nine stone coasters printed at one time on a Brother GT-3 direct-to-garment printer. (Image courtesy of Brother International Corporation)

A printed shoe on a speciality shoe platen at FESPA 2015.
(Image courtesy Brother Internationale Industriemaschinen GmbH).

charging for your necessary pre-production time."

When you look at the time associated with printing an item, you should take into account how long it takes to do the following tasks:

1 Preparing an item for printing (such as pretreating)
2 Getting the printer ready to print
3 Printing the item
4 Curing the ink and any potential post treatment

If a new platen is required, you should determine how many items you will need to print to recoup the cost of purchasing or making the platen. A specialised platen may allow you to print on new items and print more items in a faster time frame. This can help minimise your labour cost in the long run.

So let's apply the principles stated above to a specific example that I am regularly asked about – printing custom shoes. In the USA, custom printed shoes are regularly sold at $100.00 to $150.00 or per a pair depending on the artwork. This typically includes the cost of the shoes – which will vary depending on the brand of the shoes and access to purchasing them. For this exercise, let's say the blank shoes cost between $25.00 and $50.00 a pair. The next step in printing shoes is masking off the area of the shoes where you don't want to print on using tape. This process can take between five and ten minutes per pair of shoes and just about any type of tape will work.

The shoes then need to be placed on the direct-to-garment printer and the artwork aligned to print in the proper location. This process can take up to 15 minutes per pair of shoes. The printing time is rather quick, less than five minutes, per each side of the shoes and the ink used can be less than $2.00. However, most direct-to-garment printers will only print two to three pairs of shoes an hour. Thus, the estimated cost of printing custom shoes can range around $30.00 to $55.00 plus labour.

If the garment decorator desires to make a minimum of $50.00 per an hour on labour, then $25.00 per a pair of shoes should be added. Thus making the potential profit of printing customised shoes would be between $45.00 and $70.00 for a pair of shoes. By going through the process outlined above, garment decorators can help to determine if direct-to-garment printing on to other items besides T-shirts will help generate more profits for their business. If so, it can help contribute to a higher return on investment on the purchase of a direct-to-garment printer. ■

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MAKING IN-ROADS INTO PRINT TECHNOLOGIES

Rich Dunklee and Laura Maybaum explore the benefits of LED curing

Throughout the past decade, the use of LED (Light Emitting Diode) curing for energy curable inks and coatings has been gaining inroads into the graphic display, label, packaging, industrial, container, and other commercial printing sectors. In the last two years, we have seen a significant increase in the number of commercially available ink-jet printers equipped with some form of LED/UV curing systems, narrow web presses with LED/UV pin and final curing, and screen presses with LED/UV curing systems. Nazdar has developed a wide range of inks for use with LED-curing technology for digital, screen, and narrow web printers.

The benefits of LED curing are well documented and explored later in this article, but one factor that has recently come into play has pushed print equipment manufacturers to accelerate their research into LED curing. On April 13th 2015, an EU ban came into force that prohibits the use of mercury in lighting, causing concern amongst some in the print industry that printers using mercury vapour for ink curing will also be affected. While it seems this is not on the cards just yet, the EU's focus on the metal suggests it may be worthwhile looking at the alternatives when choosing new equipment.

ALL THE BENEFITS OF LEDS

Luckily, LED curing technology offers more benefits than just escaping the attention of EU regulators. LED curing is less energy intensive than mercury vapour, as lamps not only need less power to run but also need much less warm-up and cool-down time. Therefore the lamps can simply be switched on when needed, rather than left on stand-by throughout working hours. Most machines can be plugged into standard electrical sockets, making installation easier and cheaper, while the cooler LED light source does not produce ozone, a by-product of mercury lamps that require ventilation. LEDs last significantly longer than mercury lamps too – lifetimes can be ten times greater – again saving money, time and maintenance. Additionally, print companies report shorter drying times for LED-cured output compared to prints completed on mercury vapour machines, and many are finding they can use thinner and more heat-sensitive substrates thanks to lower temperatures, thus reducing material costs. To businesses and customers looking for cheaper, more environmentally-friendly products, there are plenty of advantages.

LEDs have a much longer lifespan than a traditional bulb, typically 20,000 hours (courtesy Phoseon Technology)

LED lamps have proven to have tremendous benefits over the mercury arc lamps that have traditionally been used for UV curing. Several ink-jet printer manufacturers are claiming power reductions of their UV curing systems in the 65 to 75% range. Studies done by Nazdar on LED/UV curing system in the screen print industry support the assertions made by inkjet printer manufacturers. Beyond the reductions in power consumption by the curing systems, studies have also shown a reduction in the energy needed to cool the print environment when LED lamps are used in place of mercury arc lamps. While not as significant in the enclosed confines of an ink-jet printer, the reduction in overall heat and ozone produced can lead to additional energy savings in the shop environment.

FEWER DRAWBACKS

Because LEDs are solid-state devices that use semiconducting technology to produce their output, they do not share some of the drawbacks of traditional mercury lamps. LEDs have a much longer lifespan than a traditional bulb – 20,000 hours for an LED vs 800 to 1000 hours for a mercury arc bulb. The diodes in an LED also provide consistent output throughout the life of the lamp. While a mercury bulb will show a marked decrease in output intensity over its lifespan, a LED will provide the same level of power through its entire life.

LED technology also allows for the lamps to be switched on and off as needed with no warm-up or cool-down periods required, further enhancing their energy saving properties. Much of the efficiency in LED lamps is due to the fact that 100% of the energy emitted is used for curing. LEDs are monochromatic, which means that all of their energy is emitted in a very narrow spectral band; typically 395 nanometers. We also see LED systems emitting their energy in the 365nm or 405nm range. With mercury arc lamps, a great deal of the energy emitted is lost to the visible spectrum or to heat, neither of which aids in the curing of the deposited material.

While LED lamps do produce heat, the fact that an LED is very similar in its construction to a printed circuit board allows the use of heat syncs, air cooling and even water cooling to help draw heat away from energy emitting components of the LED. This allows for very little of the heat generated by the LED unit to be transmitted to the substrate being printed. For ink-jet printers producing jobs on heat sensitive films or on substrates that tend to buckle under the high heat of mercury arc lamps, LED lamps can greatly improve the efficiency of the print operation.

PRESENTING THE CHALLENGES

With all the efficiencies we see today, LED/UV curing has not been without its challenges. The high cost when compared to a mercury arc lamp of a similar width was initially a prohibition to adoption for use in ink-jet printers. We have also seen many manufacturers try to enter the market by manufacturing a less expensive LED, with poor results. In order to save on cost, printer

It is important to work closely with printer manufacturers when developing LED/UV curable inks (courtesy Phoseon Technology)

manufacturers experimented with LEDs of lower power and quality only to find that to gain the benefits of LED curing, a high-quality lamp with sufficient power is vitally important for consistent quality out of the printer. What we see today is a limited number of manufacturers producing very high quality lamp systems. This has allowed ink manufacturers like Nazdar to focus on making inks that respond precisely to the monochromatic wavelengths emitted by today's lamp systems.

For ink manufacturers like Nazdar, it is important to work closely with printer manufacturer partners in the development of LED/UV curable inks. While it is true that many inks developed for use with mercury arc lamps can cure with an LED lamp, that cure may not be as efficient or complete as if the ink has been exposed to a multichromatic UV bulb.

THE CORRECT PHOTOINITIATORS

Inks designed for mercury arc curing typically have a blend of photoinitiators that respond to many different wavelengths simultaneously, and may (or may not) contain an initiator that will react to the specific wavelength being output by an LED lamp. This situation can lead to two problems. If the ink does not contain a photoinitiator that can react to the LED wavelength, the ink will simply not cure. If the ink does contain a photoinitiator that, for example, will react to a 395nm emission, the question becomes one of having enough initiator in the ink formula to fully cure the ink. The output power of a lamp will also play a role in whether or not the ink will cure. When experimenting with inks designed for mercury curing, we found that an ink may cure completely with an eight Watt LED curing system, top cure with a four Watt system, and remain tacky with a two Watt system.

We also find that a photoinitiator package designed to receive a limited dose of 395nm emissions from a mercury arc bulb will yellow when exposed to the more intense emissions from an LED lamp. This can adversely affect clears, white and light colour inks.

For the LED/UV and mercury arc curing inks being developed today, we are fine-tuning the photoinitiator packages to optimise the very different spectral outputs of the varying lamp technologies.

LED/UV curing is a technology that is here to stay. From the perspective of an ink manufacturer, we see great growth potential in LED curable inks and are focusing a great deal of our research and development efforts on LED curable inks. ■

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A STRONG SOLUTION FOR OPTIMAL DIGITAL PRINTING

Nufar Kiryati describes the reasons for printer specific inks

Print Service Providers (PSPs) acknowledge the need to change in order to meet the future needs of their customers. According to InfoTrends research in 2015, the wide-format market is expecting to grow from $19.3 billion in 2013 to $22.3 billion by 2018 and clearly shows the opportunity this market holds.

As this market is becoming more sophisticated by offering a greater range of application possibilities, creative print shops are encouraged to utilise newer printer technologies and are thus demanding more from the printer technologies they are using. In addition, as wide-format is becoming a mainstream industry with higher competition rates, margins are eroding, leading print shop owners to search for more cost efficient solutions.

The rapid market growth combined with economic pressures lead to the point where non-OEM inks (sometimes referred to as alternative inks) began to appear and rapidly gained popularity. Over the years non-OEM inks have evolved dramatically and today can be ranked equally to OEM inks.

PRINTER AND INK SYNERGY

In the past few years the leading trend that guides ink-jet ink manufacturers is the need to develop a perfect synergy between printers and their inks. Working extensively to develop this synergy, the first company claiming to tackle this was Bordeaux Digital Printink, which introduced in 2008 a technology that soon became a standard for ink manufacturers – the 'Mix&Match' solution for seamless conversion from OEM to non-OEM inks. Nowadays, 'Mix&Match' is the standard for non-OEM ink manufacturers.

Until 2008, non-OEM inks were limited in their performance due to one main limitation. Conversion was difficult to the end user and required complete conversion of all colours, flushing of the printer and creation of new ICC profiles. The 'Mix&Match' solution was a breakthrough concept that changed the way print shops conceived non-OEM inks. 'Mix&Match' inks were compatible with OEM inks both in chemical attributes and in colour enabling mixing together with the original inks, without difference in colours after the conversion.

'Mix&Match' inks also eliminated many of the obstacles for PSPs wanting to move to non-OEM inks. This game-changer concept gained popularity among print shops as it saved them money and time while maintaining high quality printing.

THE RESULTS OF EXTENSIVE RESEARCH

Extensive research of the wide-format market trends and leading experts in the field revealed interesting facts. The main barrier to switching to non-OEM inks today is the installation/conversion process that required a technician and printer down-time. Furthermore, non-OEM ink manufacturers are taking into account only the print-head technology when matching ink to a printer and are not considering other technical attributes of the printer. Yet, there are additional criteria that influence the adaptation between the ink and the printer to yield perfect printing quality.

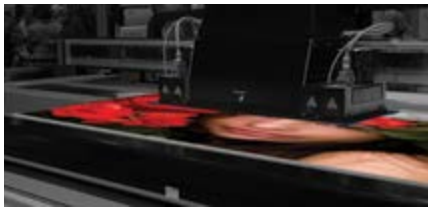
Printer manufacturers are constantly developing higher speed printers whose capabilities are supported by more than just new industrial print-heads which are capable of faster printing. These manufacturers are offering specific inks for specific printer models that complement the printer – so why shouldn't non-OEM manufacturers follow the same standard? Dedicated inks for specific printers that are fully compatible with the printer's technical attributes create a perfect synergy between the printers and their inks and enable better printer performance.

When formulating inks for printers there is no one formula that will fit all types of printers. When looking at the technical attributes of different types of printers, even when two printers have the same print-head, there are other technical attributes that are different and make each printer unique. Heating and drying systems, print-head voltage and print speed, different tubing systems, different wavelength of UV lamps for UV-curable printers and ink packaging are all characteristics that make every printer unique and require specific ink adaptation. Furthermore, if the ink is not developed for a specific printer, it will not be 100% synergised with the printer and will not fully utilise its capability.

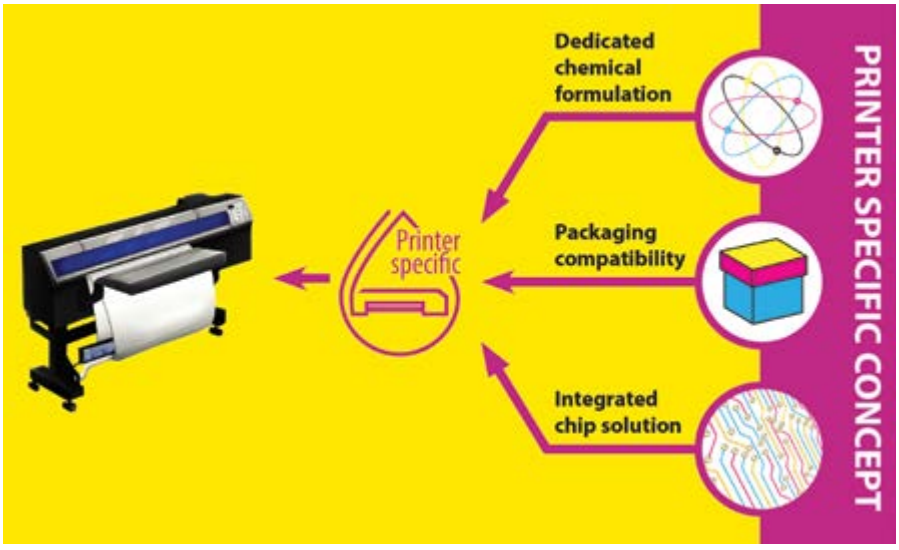
GAP IN THE MARKET

In the past couple of years Bordeaux identified this gap in the market and started working on ink solutions that fulfil this need. An in-depth process has begun in the company, in which the entire product line has been reviewed and inks were re-formulated by the R&D department with printer specific modifications.

Printer specific inks that match the



There is now the ability to create better prints with printer specific inks



The 'printer specific' concept

technical specifications of the printer can make the difference between a good and a great print. These inks have been formulated for, and then thoroughly tested on, specific printer models so they are compatible with the printer parts, its feeding system and its technical attributes.

There is a high demand for printer specific solutions across all technologies of the graphic arts section. The end users are eager for solutions which are plug and print and do not require technical support for installation. Since each printer has its proprietary features, it is mandatory to provide a solution that is fully compatible with the specific printers and does not require either a technician to perform the conversion nor substantial printer down-time or modifications. Ink delivery system bypasses, open bulk systems and other improvised packaging solutions have always created uncertainty and fear in printer owners. These solutions are prone to failures and reduce the print quality.

COMPATIBLE PACKAGING REQUIREMENTS

For this reason the second characteristic of printer specific inks is the OEM equivalent packaging. Each ink solution needs to be supplied with a compatible packaging for the printer it is intended for. The dedicated packaging along with the unique ink formulation provides zero down-time installation which does not require a technician assistance and can be done by the printer operator.

The last barrier for conversion to non-OEM inks is chip protection on the printers. Printer specific inks provide a solution for this as well and are supplied with a chip solution that is adapted for each printer, thus assuring that the conversion would be as transparent as possible.

Bordeaux believes that these three key benefits of printer specific ink to printer specific chemical formulation, compatible packaging and chip solution will help to make printer specific ink the new benchmark of the industry.

Addressing environmental compliance and customer satisfaction, UV curable inks are emerging as the frontier of wide-format printing as they allow printing on a wide range of substrates.

MEETING THE CHALLENGES

The main challenge that non-OEM ink manufactures are faced with is the lack of an easy plug and print conversion solution for UV-curable printers. These printers are far more complex than solvent ones, with many more attributes to consider when manufacturing inks. The printers' complexity combined with the high price of UV-curable printers can explain why PSPs are reluctant to use non-OEM UV-curable inks. Difficult conversions and relatively advanced technical knowledge are needed for successful conversion to non-OEM ink.

One of the main features of UV printers is the curing lamp. A standard UV lamp has a broad spectrum of wavelengths which affects the ink or coating formulation. Not all lamps are the same. Lamps differ in the UV wavelength output, as well as the peak energy output. The mixture of photoinitiators in the ink must adhere to the exact wavelength of the curing lamp. When formulating inks for different UV-curable printers and different UV curing lamps, the photoinitiators are used to match the wide-spread wave length of the UV lamps. A careful selection of the right photoinitiators to match the energy peak of the curing lamp is a must. Thus, the degree to which the UV energy is synchronised with the photoinitiators in the ink formulation will dictate how the printer correspond with the ink.

Guy Evron, Marketing Manager of Bordeaux explains: "Once we have identified the gap in the market and the need for better ink solutions to UV-curable printers we have started to work on a new line of printer specific inks. All printer specific inks have been designed from scratch in order to fit the best-selling printers in the market. After two years of development and rigorous field testing Bordeaux is proud to be the first non-OEM ink manufacture to develop printer specific inks for the leading UV printers on the market such as Oce's Arizona, EFI's VUTEk QS and the Fujifilm Acuity."

As said, one of the largest challenges in the print industry today is the erosion in margins. Non-OEM inks have been a main solution to this problem over the years and will continue to be a major consideration in the purchase of a new printer. Print shop owners are constantly searching for new ways to save on costs without sacrificing quality and printer specific inks might be just what are needed in order to tip the scale. ■

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REVOLUTIONISING PRINT-ON-DEMAND

Robin Kavanagh explains why sublimation is becoming such a successful business option

Demand for personalised and custom products in small orders is growing each year. This poses challenges to those in the imprinting industry whose business centres on analogue technologies, such as screen-printing or embroidery. Production using these methods of decoration can be very profitable for large run orders, since you are getting the most efficiency for the least amount of preparation.

However, this is not the case for short runs. The amount of time, materials and preparation needed to set up production makes earning a profit very difficult. As a result, many businesses are turning away potential orders and business building opportunities with new and existing customers.

What if there were a way to profit from small orders, generated on demand and customised to customer needs? How would this affect your revenue streams and your business as a whole?

Sublimation is revolutionising the imprint and digital decorating industries with its low cost of entry

A BUSINESS BOOST

If being able to take on short-run and on-demand jobs would give your business an added boost, you should consider investigating dye sublimation. This digital product decorating technology is revolutionising the imprint and digital decorating industries by offering low cost of entry, quick ROI and very profitable print on demand solutions. Not only are businesses that focus solely on sublimation printing popping up all over the world, but established companies that centre on other print technologies are adding sublimation capabilities as a way to earn new business.

Here is a look at what dye sublimation is and how it could be the perfect solution for providing print on demand service to your customers.

Diversification can lead to business success

WHAT IS SUBLIMATION?

Sublimation, also called dye sublimation, is a digital decorating technology that embeds high definition, full colour images into the surfaces of a wide variety of products. These substrates need to be made of polymers or polyester. They can also have a polymer coating designed for the sublimation process. Hundreds, if not thousands of substrates made for sublimation are currently available, making this technology applicable to a diverse array of industries.

Among the products you can create are shirts, bags, mugs and glassware, awards, signs, home decor items, decorated garments, personalised and photo gifts, promotional products, jewellery, accessories, mobile device cases, souvenirs, office products, kitchen items, keepsakes, memorial products, and fundraising items for non-profit organisations and schools – the list goes on and on.

One of the things that makes sublimation unique is the chemistry that goes on behind the scene of the simple three step process for imprinting: create, print and press.

CREATE:

Work with popular desktop graphic software (Adobe products, CorelDraw) or a sublimation specific design suite, like Sawgrass's CreativeStudio Online Designer, to create the graphics your customers need for their product.

Continued over

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The process is suitable for decorating a wide range of products

PRINT:
Use a sublimation system – specific printers, inks and transfer paper designed for use in the sublimation process – to print your artwork. Sublimation inks consist of dye solids suspended in a carrier fluid. Only the print-heads in printers designated for sublimation can handle the high viscosity fluid that passes to the transfer paper, as well as produce the high definition images sublimation is known for.

PRESS:
Attach your transfer to the substrate and place both in a heat press. The high temperature and pressure of the press will cause the sublimation process to happen, embedding the dyes from the paper into the surface of the substrate. Unlike other transfer technologies, only the dyes are left behind.

During the sublimation process, the dye solids in the transfer paper transform into gases, while the polymers on the substrate open up. The pressure from the press pushes the gases into the polymers. Upon cooling, the polymers close and the gases turn back into solids, encased within the substrate's surface.

Durable signs and displays are both colourful and durable

This is how sublimation creates permanent, high definition colouration that does not chip or wash away. Your designs become part of the product itself and are presented in stunning colour and clarity.

THE PRINT-ON-DEMAND SOLUTION

There are several reasons why sublimation enables businesses to offer profitable print-on-demand services. The foremost is the simplicity and speed of the three-step process explained above. The artwork is created and printed digitally. There is no need for colour separations, screen burning or other manual setup, which can take a lot of time away from profit-earning production. There is also not significant downtime while preparing to print, as with the custom fabric, decorated garment, signage and promotional product production industries. With sublimation, you can quickly adapt templates for popular products, add names or photos and generate custom orders for on-the-spot orders.

In terms of actual production, sublimation is incredibly efficient. Print speeds are less than a minute in many cases, and most substrates press in less than two minutes. And, because printing is faster than pressing, you will always have the next transfer ready before the previous pressing cycle is complete, which leads to an efficient production system that maximises output.

You may ask, how does this impact profitability? Your production up-time directly translates into your profit margins. The more time you spend preparing to print, the more expensive the processes are for you. Because sublimation's print and press production takes only a few minutes per item, you can produce more per hour and easily accept last minute and single product orders. The set-up and production time is the same whether you make one or 1,000. Being able to accept these types of orders increases your sales volume and profit at the same time.

Promotional goods are ideal candidates for sublimation

INVESTMENT AND PROFITABILITY

Sublimation is one of the most economical imprinting technologies on the market, as it consists of a computer (which you most likely have), a sublimation printer, inks, transfer paper and a heat press. Entry-level systems, such as the Virtuoso HD Product Decorating System, range between €600 and €1,550. These systems include SG400 (A4) or SG800 (A3+) printers, SubliJet-HD sublimation ink, CreativeStudio online design and printer software, all-in-one support and a suite of resources to help with production, sales, marketing and more.

Your greatest expense will be the heat press. A good-quality heat press will give you the best results and should cost between €600 and €1,300. In all, your total investment to start sublimating should be in the area of €600 (without a heat press). Now, compared to other technologies, such as a laser engraving machine (€7,000 or more) or a direct-to-garment printer (about €11,000), sublimation is a very economical choice.

Return-on-investment is also much quicker, given this low cost of entry. Also, the quality of sublimation printing fetches premium prices, even though your costs are the same or even lower than other imprinting methods you already use. By selling your products for what the market will support, you maximise your profit potential on small run orders.

FINAL WORDS

Digital printing is the way of the future, and sublimation technology is the answer so many imprinting businesses have been searching for. There is a lot of money to be made by accepting print on demand orders from new and existing customers. Isn't it time you looked into what sublimation could do for your business? ■

Robin Kavanagh is Global Public Relations Manager for Sawgrass Technologies

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NEW RANGE OF UV-INTEGRATORS BRINGS ADDED VALUE TO CUSTOMERS

Karlheinz Mohn outlines the need for accurate measurement comparability

This year, looking back on its 50 years of company history, TECHNIGRAF acknowledges that, in its last five decades, it has built up an excellent reputation as a manufacturer for exposure units and UV-conveyor belt dryers for the printing industry. In addition to this production equipment, which it believes is largely indispensable in the screen-printing segment, TECHNIGRAF has also led the field for developing UV-measuring instruments needed for graphic and industrial procedures.

The technological knowledge resulting from such high production depth allows a wide range of individual technical solutions for end customers. This, in turn, opens the door for a solid contribution to the company's overall results for the years ahead.

NEW LAUNCHES

The launch of some of these new products for use in the measuring business have already taken place. These will provide additional value und options for the customers. For example the family of the AKTIPRINT UV-Integrator (UV-A) and the AKTIPRINT UV-Integrator S (UV-A) will be complemented by the new AKTIPRINT UV-Integrator Full-UV (250 to 410nm) and the special AKTIPRINT UV-Integrator LED-UV (265 to 495nm).

These new integrators are very robust in their handy and compact design. The solid aluminium case and the integrated heat shield allow use in daily production business and, with their size (Ø 90mm, 12mm height and 140g weight), they fit in every bag or trouser pocket. Furthermore the 'Full-UV' and the 'LED-UV' are calibrated according to DIN EN ISO/IEC 17025 and, therefore, fulfil the requirements of the modern quality management systems.

The new AKTIPRINT UV-Integrator Full-UV (250 to 410nm)

TECHNIGRAF's special AKTIPRINT UV-Integrator LED-UV (265 to 495nm)

The AKTIPRINT UV-Integrator Full-UV is developed especially for the dose measurement of the UV lights of conventional Hg radiators as it is possible to cover the whole range of the UV-C, UV-B and UV-A with the sensor on the back of the casing. The AKTIPRINT UV-Integrator LED-UV is a measurement instrument to show the UV-dose at UV-LED lights with their high intensities. Both of these new AKTIPRINT integrators are suitable for the belt dryers and the continuous dryers from TECHNIGRAF as well as other brands.

USER-FRIENDLINESS

The high user-friendliness and the standard calibration are two of the arguments in favour of adopting the new AKTIPRINT integrators. As a result they are of particular interest to customers who are planning to reconstruct or build up their quality management.

The comparability of measurement results is a basic theme which is often discussed among experts. Therefore, in the process of measurement, the instruments play a central role. As such it is important to know that the results of the proven AKTIPRINT UV-Integrator (UV-A) and UV-Integrator S (UV-A) – both calibrated to the TECHNIGRAF house standards – and the results of the new integrators, 'Full-UV' and 'LED-UV', are not comparable due to the different measurement ranges and the varying calibration. ■

Karlheinz Mohn is General Manager of TECHNIGRAF

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MUCH MORE TO FOLLOW…

The next pages feature the Official InPrint 2015 Official Show Catalogue, with this issue's technical content, company focuses, case studies, events round-up and association coverage resuming on page 29...

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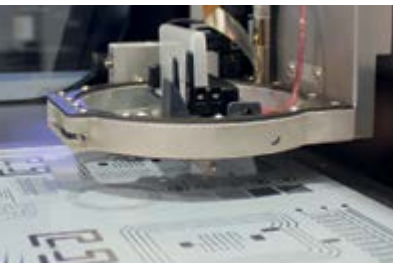

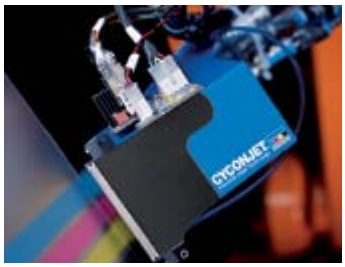


TRAVEL & ACCOMMODATION

THE VENUE
Munich Trade Fair Centre
(InPrint in hall A6), Entrance East
Messegelände, Am Messeturm 4,
81829 Munich (Germany)

The second edition of InPrint will take place for the first time at the Munich Trade Fair Centre, one of the largest and most popular event venues in Europe, noted for its generous layout.

With close access to the manufacturing sector, excellent transport links and a good variety of affordable accommodation, Munich is a logical choice for the InPrint show. InPrint will occupy Hall A6, a prime exhibition hall at ground level. The hall features high ceilings and is pillar-free, resulting in a spacious, light atmosphere.

Visitors will have access via Entrance East of the Munich Trade Fair Centre leading straight into Hall A6.

Ample parking for both exhibitors and visitors is available nearby.

OPENING HOURS

Tuesday 10 November 2015	09:00 – 17:00
Wednesday 11 November 2015	09:00 – 17:00
Thursday 12 November 2015	09:00 – 17:00

ENTRANCE TICKETS AND PRICES
To benefit from favourable prices and quick admission to the exhibition you can purchase your entry ticket online ahead of the show.

Tickets are available via the Online Ticket Shop from autumn 2015. Alternatively, you can purchase your ticket on-site during all three show days. Tickets also include access to the conference and to the co-located "productronica" show.

CO-LOCATED WITH PRODUCTRONICA

productronica

10 – 13 November 2015
In seven exhibition halls
Tickets valid for both shows

Being closely connected with electronics development and production, InPrint 2015 will be co-located with the world's leading trade fair for this segment.

productronica will cover the entire value chain for electronics production and addresses the international investment decision-makers and experts of the industry. Exhibitors from all over the world present at productronica innovative and comprehensive solutions and products for electronics production.

HOW TO GET THERE:
By air: Regular shuttle busses running from Munich airport directly to the showgrounds (approx. 45 min.) on show days, please follow the signage at the terminal to the stop, tickets available from the driver (cash only) or online: www.airport-tradefair-express.com.

By car: The Munich Trade Fair Centre is directly located on the A94 motorway, exit "Feldkirchen-West" (Exit No. 6). The traffic control system guides visitors to the nearest parking areas. The navigation system categories are 'Event Centre', 'Exhibition Grounds' or 'Trade Fair'.

By train and public transport: Munich's main railway station ('Deutsche Bahn' Train Network) offers a direct connection from the city centre to the venue with the U2 subway (U-Bahn). Get off at the last stop 'Messestadt Ost' in order to get to the Entrance East.

ACCOMMODATION SERVICE:
Hotels at best rates near the showgrounds can be booked directly via www.inprintshow.com
or via the InPrint travel agency Tradefairs.com:
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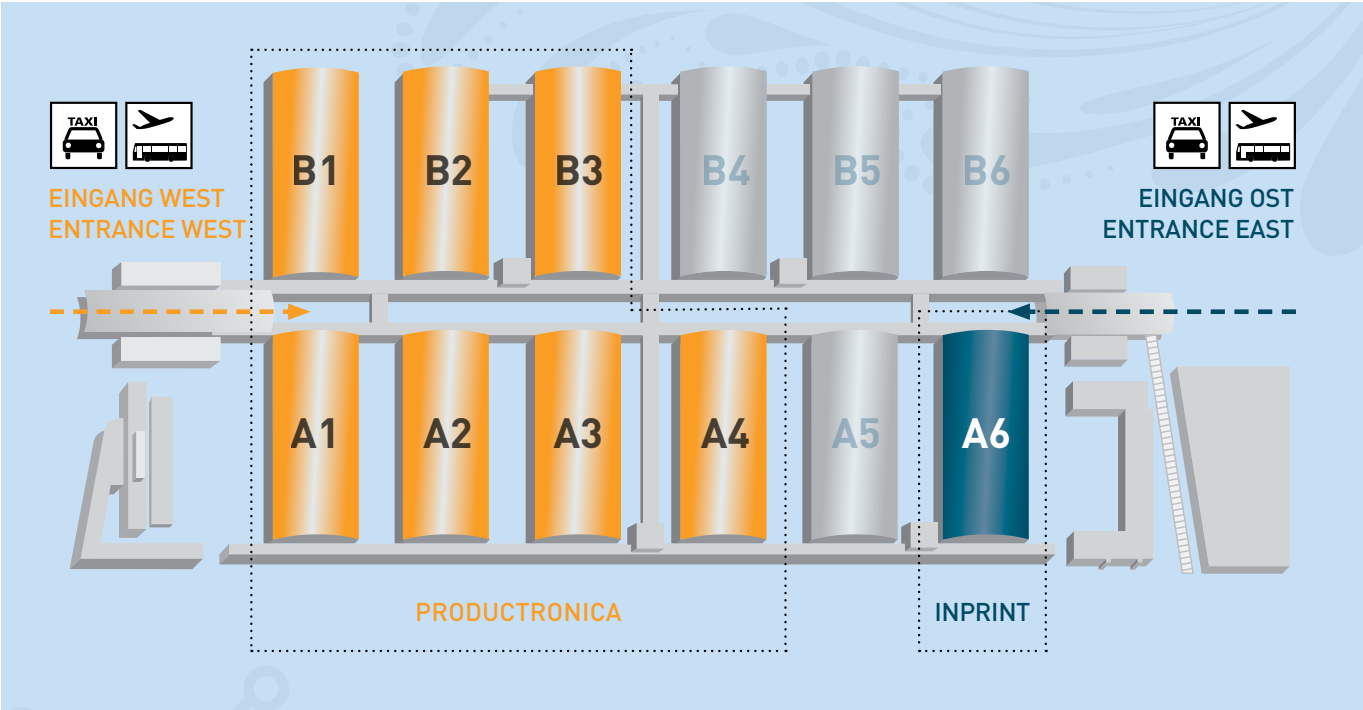

Entry tickets can be acquired from autumn 2015 from www.inprintshow.com/tickets

ACCELERATED GROWTH FOR INDUSTRIAL PRINT

Industrial Print is the only print technology sector that can claim double digit growth.

INPRINT
INDUSTRIAL PRINT SHOW

The growth rate of InPrint Show itself is proof of this. In one show cycle the show has increased in size by over 50%, proving the sector is in a dynamic phase of change. It was always our vision to create a unique event about print technology for industrial manufacturing and it has proven itself to be a fertile sector for innovation! There is simply a huge amount of interest in this evolving marketplace and from our experience in launching the show; there is clearly a big need for insight, information and innovation for print in manufacturing and from the entire industrial print supply chain.

InPrint research partner, I.T. Strategies have forecasted that between 2014 and 2020, the average cumulative growth across all industrial print segments is predicted to be 36%. This is an increase on previous estimates of 20% due to higher than anticipated activity. Add to this the tremendous growth of InPrint and it proves that the market is accelerating as the forces for change continue to influence huge interest in print technology from the manufacturing sector.

As well as the considerable 'push' for development and the energy of the developing community, the fact is that there are also considerable 'pull' factors from the consumer market which is also fuelling this transformation. In order to meet this opportunity, production simply requires innovation, whether this is for screen, speciality, digital, inkjet or 3D printing technologies.

Frazer Chesterman

Marcus Timson

For InPrint 2015, we are committed to 'leading the future of industrial print'. The event's content will cover three broad topic areas: Function and Future, Design and Décor and Packaging and the core technologies shown at the event will include screen, speciality, digital, inkjet and 3D printing processes. The event has over 150 exhibiting companies and features over 50 conference sessions. A raft of product launches for new technologies for industrial print production will take place at the show.

The burning question is 'What is the Future of Industrial Print?'. Since 2013, we have had a number of debates and discussions around how markets will develop and to what extent growth or adoption of new technologies take place. To some extent it is very difficult to predict exactly how the market will develop. Will inkjet replace analogue technologies or will it be introduced as a complimentary technology that produces new value and output not previously possible? It is clear that InPrint has established itself as the show that provides the best answers for questions such as this whilst giving the most effective access to innovation, insight and expertise for industrial printing, both now and in the future.

So we very much look forward to seeing you in Munich in November for the second edition of InPrint.

Frazer Chesterman and Marcus Timson are directors of FM Brooks and co-founders of InPrint

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web: www.inprintshow.com

SPECIALISED CONFERENCE

In addition to innovative industrial printing technology, InPrint 2015 will again include a high-calibre conference programme on two conference floors, packed with panel discussions and themed presentations around the focal topics Function and Future, Decorative, Packaging and 3D, as well as multiple networking opportunities.

- **Function, Future & 3D:** A look at the latest developments in screen, speciality, digital, inkjet or 3D printing. Including exciting new applications and the utilisation of 'Smart' screen functional printing to achieve improved production capacity both for now and into the future.
- **Decorative:** Increasing need for mass customised production is fuelling innovation for industrial printing onto glass, wood, metal, ceramics, plastics, leather and textile. Presenters will deliver insight into new developments, techniques and technologies for decorative surface imaging.
- **Packaging:** A need for continued innovation in packaging for branding and retail sales strategies has led to new opportunities for printing in primary and secondary packaging. The seminar looks at new developments and the many trends and opportunities in addition to the forecasted growth of the largest segment within industrial print.

TOPIC & SPEAKERS (EXTRACT):
What is the Future of Industrial Print?
I.T. Strategies, Mark Hanley

Pushing the boundaries of inkjet applications
University of Sheffield, Dr. Patrick Smith

3D Printing and its impact on future markets and consumerism
Imakr, Sylvain Preumont

Revolutionising digital textile printing: Introducing one ink for all fabrics
Bordeaux, Guy Evron

How screen-printing continues to revolutionise manufacturing
ESC, Marcus Borghoff

Why digital print for packaging is here to stay
ThePackHub, Paul Jenkins

Film insert moulding inks, primers and dual-cure lacquers as protective coatings for IMD-FIM applications
Pröll, Dr. Hans-Peter Erfurt

Digital Printing of Glass and Wood based/ building material
Durst, Andreas Unterweger

3D Printing - New Opportunities for Ink Jet Printing in Manufacturing
Voxeljet, Dr. Ingo Ederer

Case study: Innovative interior decoration applications
Markus Benesch Creates, Markus Benesch

- **Great Innovations Session, Hall A6:** In the 'Great Innovations Session' on Wednesday, 11 November 2015, at 15.30 hrs, exhibitors present a technological innovation in a short 5 minute pitch. A jury will decide on the winner and award the 'Best Industrial Innovation of InPrint 2015' title.

INPRINT
INDUSTRIAL PRINT SHOW

Your entry ticket gives you access to productronica and all InPrint conferences and seminars.

INPRINT AMBASSADORS 2015

The InPrint 2015 Ambassadors are supporters from a range of key players from the field of industrial printing technology. Such support from high-calibre companies confirms that InPrint is the place to connect with new technology that will drive new business.


Mark Alexander, Xaar


Frederic Blancher, Encres Dubuit


Christophe Buillard, Sensient


Tom Cloots, Agfa Graphics


Friedrich Goldner, Marabu


Mark Hanley, I.T. Strategies


Alexander Hinterkopf, Hinterkopf


Mike Horsten, Mimaki


Paul Jenkins, ThePackHub


Graham Kennedy, Ricoh


David Lyus, GEW


Giorgio Macor, KUEI


Sophie Matthews-Paul, Rockstro


Jason Oliver, Heidelberg


Dr. Patrick Smith, University of Sheffield


Didier Trolio, Machines Dubuit


Lorenzo Villa, 2be Partners


Mike Willis, IMI

MARKET INSIGHT SHOWS ACCELERATED GROWTH

Mark Hanley describes digital print's industrial value propositions

Mark Hanley , I.T. Strategies

Digital print in true industrial markets is not called on to do a better job of what analogue print already does. Analogue print does a great job in terms of product quality and cost against a huge variety of specifications. But there are some things only digital can do well, and those are the building blocks of parallel and new markets in the industrial segment.

This is a simplified table of what are already today perceived as unique digital print value propositions in the industrial segment and we have ranked them in descending order of importance according to our own user research in early industrial implementations:

Cost reduction: Reduces economic costs of analog print at low-mid volumes
Fast response: Enables fast response as a competitive advantage for the printer provider
New Markets: Enables creation of entirely new markets and applications
Customer content: Generates custom content capability more efficiently matching commmunication to differentiated uses
Gather experience: Enables users to experiment and gather experience

To give a couple of examples of what this can mean in real life, in the case of cost reduction, this has meant so much to the ceramics tile printing industry that it has already gone substantially towards full substitution of analogue with digital systems. In its case this has to do with a very expensive and cumbersome imaging system in analogue print, and one which required an integrated kiln line to be interrupted in its normal production rhythm. That can cause substantial damage to the line if not closely managed. Digital removed these issues at a stroke.

DIGITAL ADVANTAGE

Fast response in turn is a massive advantage to the fashion printed apparel industry where under normal conditions analogue print can involve a six month lag between design presentation and arrival of saleable product at the retailer – and that is in an industry where fashion is the driver and timely response is directly measured in higher prices and volumes. Digital production apparel print can bring that lag down to two weeks.

3D creation of manufactured objects using digital printing allows customised and small volume fabrication of functional products. These were previously financially unattainable for the new users being drawn in by 3D printing. That is nothing less than a new and potentially very large user group leveraging what are in effect new products. The same is true of the digital photo album which is unobtainable except via digital printing and which has in some ways supplanted the old 'six-by-four' photo market, and at very high consumer pricing values. In a similar way display graphics available to the local retailer in minimal quantities is also a new product and market among people who did not buy graphics before – in this case a new market that grew to exceed $45billion in retail revenues for print after only 20 years from scratch.

LONG-TERM VALUE

But perhaps the biggest long-term value proposition for digital industrial printing is in the packaging sector. The ability over time for digital printing to provide custom content in the brand identity communications market, which is what packaging really is, is to bring the massive packaging conversion market into synchronisation with increasingly fragmented demand patterns.

While the packaging conversion industry worldwide has spent 30 years perfecting higher and higher integrated print/manufacturing volumes at lower and lower costs, the pattern of demand has been going in the opposite fragmenting direction. The meaning of this for consumer goods brand owners is incalculable over the long term. That is actually going to take a long time for a variety of fundamental reasons relating to technology and supply chain bottlenecks, but it is the biggest industrial digital printing target of all, and will likely be its most profitable field.

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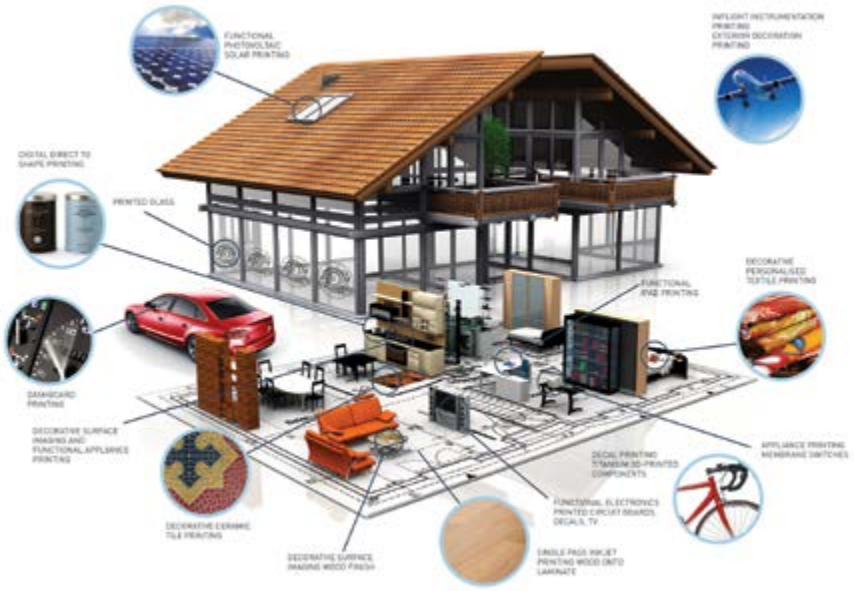

BUILDING AN INDUSTRIAL LANDSCAPE

Tom Kloots explains the challenges facing suppliers

InPrint 2015 ambassador, Tom Cloots

Tell us more about Agfa?
The story of Agfa is about the history of imaging technology really. Agfa Graphics more specifically is a supplier to the printing industry with pre-press machinery, printing plates, software and most recently also wide-format ink-jet printing solutions and related dedicated software. Too long a story to explain in detail, yet illustrating that colour, inks and printing are in the DNA of our company. That know-how is the reason for our activities in the new industrial printing market.

How important is industrial printing to the future of the business?
Industrial printing is a quite general term and embraces so many technologies. In fact it has very little in common with the conventional printing industry unless for the fact that there is a process of putting ink on a substrate. But that is it. However it will change many existing processes while creating even new ones. Already now, manufacturing of products has drastically changed thanks to the fact that printing (parts of) pieces has been introduced.

What products do you have which could be classified as industrial printing?
As a supplier to the industry we can only help industries in their conversion to create completely new products or to do things differently. Our ink technology is important for sure. High density UV inks allow for printing on a wide range of substrates as part of the manufacturing process of doors or table tops for example. Our low-migration inks are used to print directly on butter tubs or plastic bottles, offering more flexibility in the images, the run lengths and personalisation. Some of our wide-format printing equipment is used to print in the manufacturing line and we offer colour management expertise to those who are confronted with the fact that colour can be so different on various substrates.

What are the challenges for developing new products for industrial print?
As said, we have built a lot of expertise on inks, colour, automatisation and imaging and we are convinced that such expertise is vital for future developments. Now we need to find creative industry partners to share our know-how in ink and printing technology so they can integrate the ability to print in the industrial solutions for their customers.

What will you be launching at InPrint?
Agfa Graphics is using InPrint as a platform that gets in contact with the industry and its integrators. They are looking for solutions rather than products per se. So we will be promoting the technologies and show how they have been successfully introduced in an industrial environment already.

Agfa is committed to industrial inkjet, so do you see a future where inkjet has replaced existing analogue technologies across the industrial spectrum?
As an industry we know that new technologies are being used wide-spread today. The end user may even never know what process is used to manufacture or decorate products. The laminate flooring and tiling industry have already made huge steps in converting to new digital functional printing alternatives. The decoration industry is also offering a wide range of new products. Take the personalised wall paper as an example. And in packaging, which is the closest to the conventional printing, digital alternatives are typically (but not solely) used for promotional purposes on consumer products.

Agfa is an InPrint Sponsor, to what extent do you believe that the InPrint Show is important to the development of industrial print?
There is a clear demand to lower stocks, offer personalised products and being able to follow industry and fashion trends. In essence we all aim at doing things smarter and more targeted to the end user. With ink-jet printing technology and a lot of creativity, it is possible to re-think existing work-flows and create new opportunities. We believe that the InPrint Show creates the necessary platform where industry leaders meet and experience how to integrate new technologies in a manufacturing process.

Tom Cloots is an InPrint 2015 Ambassador and Director Marketing Industrial Inkjet at Agfa Graphics

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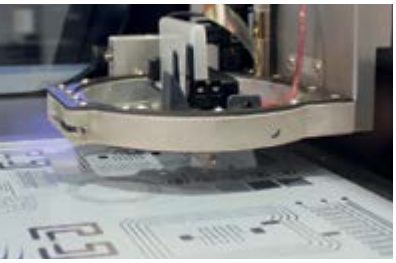


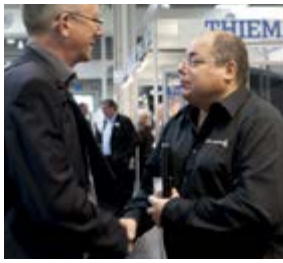

WHAT IS THE POTENTIAL GROWTH FOR INDUSTRIAL PRINT?

Tim Phillips observes the growing paradigm shift in industrial manufacture

We are increasingly seeing the signs of a shift in product manufacture from the twentieth century model of mass production, followed by mass distribution, marketing and retail. The new approach is a more diverse model that caters for increased segmentation and individualisation of products (Figure 1).

Ultimately this will lead to fabrication of products on demand using technologies that are currently in development, of which a key element is digital printing and deposition using ink-jet technology. This digital manufacturing technology promises advantages over conventional techniques, allowing increased variation in products, faster introduction of new designs and liberation of designers by enabling profitable products to be produced in much smaller quantities, allowing more challenging designs to be used. This will change the emphasis of competition away from price (and therefore a requirement for the lowest possible unit production cost) towards design, convenience and personalisation. The shift favours manufacture closer to their consumption in developed economies, as there is no value in producing a product overnight only for it to be on a boat for a month, reversing the former trend towards remote mass manufacture in low cost economies.

We are still in the early stages of this shift, but the benefits of digital printing using ink-jet technology are starting to be exploited across a range of industrial applications. These benefits include the ability to introduce new designs and products rapidly, defining deposition digitally so that it can be changed every time, depositing onto delicate substrates without contact, and depositing functional materials as well as just colours. In short, digital printing technology allows you to deposit what you want, where you want, when you want!

Figure 1: Increased segmentation and individualisation of products

ADOPTION OF DIGITAL TECHNOLOGY

While some industries have adopted digital printing and deposition with enthusiasm, others have been much slower. The book 'Crossing the Chasm' by Geoffrey A Moore studied the adoption of new technology by consumers and why this adoption process is sometimes inhibited. Moore identified that after adoption of a new technology by enthusiasts and visionaries, there was a distinct 'chasm' that can hold back the adoption of technology by the majority of pragmatist consumers. Many technologies and products succeed in their early stages, but are unable to cross this chasm and ultimately fail in the market before they become profitable. We can use a similar model to understand the adoption of digital manufacturing technology across different industries.

Figure 2 shows this life cycle with the adoption stages of key digital applications indicated. Clearly digital graphics is a mature industry with limited growth. Ceramic tile printing has been a mainstream 'tornado' application showing rapid growth and significant sales, but now with over 50% adoption, clear signs of change to late majority-type behaviour has been seen, with increasing price pressure and reduced innovation. In contrast, adoption of digital technology in textile printing has crossed the chasm to the mainstream, having been stalled for several years, and is showing rapid growth. Some of the other key potential digital markets such as laminates, packing etc are clearly at an earlier stage, but have been expected to show growth for the last few years. The key question is, why is this? What is causing the 'chasm' in these cases?

There are a number of reasons we have identified that explain why some industries are slower in adopting digital technology than others (Figure 3).

One factor is the strength of market pull: how compelling are the benefits of digital technology in a particular market? If they are not as strong as in ceramics and textiles, for example, the market pull will be weaker. On the flipside of this, if the current technology does not deliver the required performance, adoption will be impeded. Flexible packaging is a good example of this, with the market requirements for very high quality and excellent colour match not

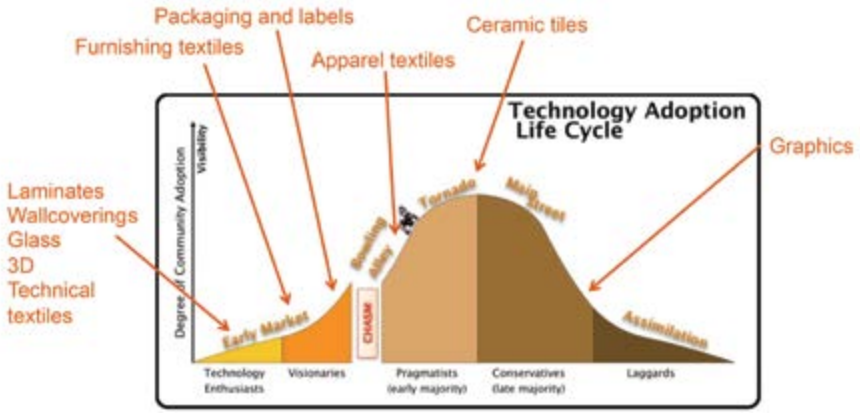

Figure 2: Digital application adoption

being met in most cases by current digital technology. The third key factor is economics: while the overall strength of the economy can influence adoption speed, there are also industry-specific factors that may hold back adoption. The last identified factor is communication: if the industry players do not understand the benefits that digital adoption will bring them, this will hold back the speed of technology take-up.

TECHNOLOGY DEVELOPMENTS

So what can the providers of digital technology do to ensure the fastest possible adoption of their technology in markets identified as having potential? There are clear 'hygiene factors' that need to be in place to allow the benefits of digital to be exploited: most industries will not accept a backward step in speed or quality in order to gain other benefits. We believe those hygiene factors are image quality and durability on the final product; and productivity, reliability and ease of use in the factory. A significant amount of the investment by the ink-jet industry in technology development is to address these hygiene factors. Advances in print-head technology are addressing quality, speed and reliability, ink developments address quality, speed, reliability and image durability, and last but not least, advances in software making systems easier to use while adding new functionality.

DESIGN: LEVERAGING THE DIGITAL ADVANTAGE

Consumers (and the companies that supply them) don't buy technology – they buy the results of this technology in the form of printed designs. For the industries of interest digital technology is a means to an end, not the end itself. The ultimate market pull being addressed by digital technology is a desire for varying images, natural effects, new colour possibilities, new levels of detail and other design possibilities enabled by the technology. Failure to communicate technology benefits in the language used by industries is a key factor in causing a chasm.

On the adoption side, one aspect slowing adoption is the shift in thinking required to fully understand and exploit the benefits of digital technology. Manufacturers have many years of experience with existing technology, and design to the strengths (and around the weaknesses) of that technology. The initial approach often shown by a potential adopter of digital is to try and reproduce existing designs, which misses the point (and the opportunity) of adopting a new technology. A paradigm shift in design-led thinking is required by both the industry and the technology supplier for a successful adoption process to occur.

THE NEXT TORNADO APPLICATION?

It is clear that for digital technology suppliers looking to access new markets with identified potential, there are a number of issues that need to be addressed. Firstly, the hygiene factors need to be in place. Secondly, the true benefits of digital technology for a particular industry need to be understood by that industry. Thirdly, the design-led benefits of the technology, and the need for a shift in thinking, need to be communicated to the potential adopters. Only then can the promised potential in new industrial digital markets be realised. Clear signs of life are seen for digital technology in industries like packaging, laminates and home textiles, with some excellent early stage examples of the technology being used to provide benefits, and increased interest from those industries in a solution if the right performance and cost parameters can be met. The future looks increasingly exciting for these markets and others, and only time will tell how quickly these industries are able to cross their own chasms and enter the tornado growth phase.

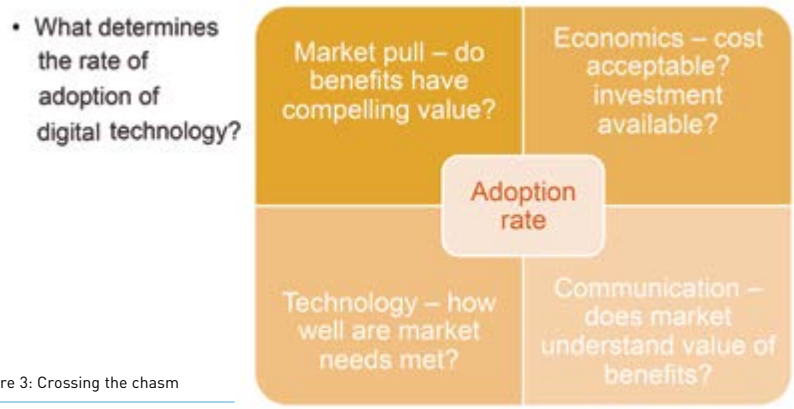

Figure 3: Crossing the chasm

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Mike Horsten's simile demonstrates that growth ingredients can be likened to wine production

Mike Horsten

We know that creating a great wine involves making many carefully considered decisions from the location, soil properties and type of grape to the typical weather patterns, day-to-day nurturing and pruning right up until harvesting. Mimaki Engineering Co Ltd, which is publicly listed on the Osaka Securities Exchange, Inc and celebrating its 40th year in 2015, believes that being a successful print systems' manufacturer is much like establishing a renowned vineyard. The initial journey may take time but, once the highly skilled research and development teams have done their work and their expertise is brought to fruition, the following reputation ensures market recognition, customer satisfaction, and company growth.

SOWING THE SEEDS

Our reputation is growing with turnover increasing by more than 25% in the past five years. Today 29% of our sales are in Japan while 30% are in Europe. This success story comes from Mimaki Europe BV, established in Amsterdam, which is this year celebrating a decade in operation. With warehouses in Amsterdam Schiphol Airport, it is responsible for the sales, marketing, logistics, administration and technical services through distributors and resellers for all EMEA countries.

In addition to these existing bases, including the USA, we have established subsidiaries in fast-growing emerging countries such as China, India, Brazil and Indonesia. We intend to launch market-orientated products tailored to these emerging countries to help extend and diversifying our customer base.

Mimaki Engineering was the first company to introduce piezo print-heads in its UV printers and plotters back in 1997 and 1998 and, since then, we have developed a wide range of printing equipment, mostly based around on-demand manufacturing. Today, we consist of several businesses addressing customers' needs in various markets. We aspire to become a development-orientated enterprise and create new business in the market by developing various products which boost our customers' competitiveness with our original ink-jet technology and cutting technology. The company consists of several business units in order to meet customers' needs in various markets. They regard each unit as a single grape, and aim to shape the entire company like the cluster of grapes.

At Mimaki we aspire to become a 'development-orientated enterprise' and hold our own technology and supply our own brand products throughout the world, and we aim to become a company that can adapt and quickly provide the products that will satisfy the customers. Additionally, we strive to become an innovator always providing 'something new, something different' in the market and attempt to establish a corporate culture where our individual employees can exploit their personal characters and capabilities to the fullest extent.

CULTIVATING GROWTH

Whereas a vineyard transforms grapes into fine wine we help our customers transform substrates into top quality end products. We have cultivated a burgeoning cellar of both roll-to-roll and flat-bed wide-format ink-jet printers and cutting machines for the sign and graphics, textile and apparel and industrial markets. These are supported by a complete product range for each group that includes hardware, software and the associated consumable items, such as inks and cutting blades.

We also have a catalogue of innovative, high quality and high reliability products, based on aqueous dye sublimation, acid, reactive textile, latex, eco-solvent, solvent-UV, solvent and UV-curable ink-jet technology.

NURTURING OPPORTUNITIES

This variety helps us to best service a number of markets with sign and graphics taking the lion's share of almost 60%. The sector for industrial products is 23% and that for textiles and apparel is 8%. All these areas are providing us with exciting opportunities for growth and we are continuously researching additional ways to support opportunities and challenges as they emerge. The creation of high quality, user-friendly products requires a high degree of emotional intelligence, so we make sure to keep the finger on the pulse of our customers.

Among our latest launches we have therefore focused on environmentally friendly and energy efficient products including

Continued over

Mimaki's head-quarters in Japan

Mimaki Europe is now celebrating a decade in operation

ground-breaking latex and solvent-UV inks as well as ecologically friendly UV LED technology, precise array of staggered heads and automatic change of double ink cartridges. We are also seeking to expand our global market share of digital on-demand printing systems with ink-jet printers that can reduce power consumption and ink waste. Our new ink-jet laboratory supports ink-jet technology application developments in collaboration with different industries, based on pattern formation or coating of liquid.

To remain an innovative operation and to fully exploit personal characteristics and capabilities of our individual employees, we established a Group Independent Profitability management System (GIPS) to pursue departmental profitability in small groups. We adopted a staff division system which has the responsibility and authority to manage its activities from product planning, development to sales planning for each group of products. As such, all employees will help management and aid efficiency resulting in an aggregate of small fruits like a cluster of grapes.

EXTENDING MARKET REACH

The sales department also plays a vital role in communicating customers' requirements, in order to develop new products quickly. Its tasks include marketing, product planning and product proposals. In Japan we have set up 'close-to-customer' sales channels and test centres, where customers can test their products using their own materials before purchasing.

We are also establishing a 'One Week Production and Inventory Cycle' (OWPIC) - a production system that can respond immediately to fluctuations in global demand by executing the assembly and inventory planning on a weekly basis. Each production stage in the manufacturing department – management, purchasing, manufacturing, production engineering and quality assurance – is co-ordinated to perfection in order to produce high quality products. To improve total cost competitiveness we identify four criteria, these being 'Q(quality), C(cost), D(delivery) and S(speed)'. In the day-to-day production environment employees focus on 'Visual Production Management', in which a problem is promptly discussed in dedicated work section teams. We believe it instils confidence as far as customers are concerned.

MANAGING THE MIX

All this backroom ingenuity is no good if potential customers don't know what we are doing or don't have the chance to see what the business benefits are for them. That is why we are committed to globally showcasing our solutions at national and international events around the world. These include FESPA, drupa, InPrint and Viscom. Each show provides us with a different platform and enables us to talk to a wider customer base, ensuring we can help as many operations as possible to expand their services in a way that supports their existing business set-up.

For many customers that is where our relationship starts; but it is one we continue to cultivate with a tailored service to support the operations long after our solutions are installed. We like to work closely with our customers to understand their daily demands and help them identify how our solutions can help them be more effective, productive and profitable.

One of the awards made to Mimaki during 2015

KEY INGREDIENTS

As one of the industry's most creative sommeliers we would like to give you our take on how the five basic wine characteristics can be translated into a business-winning formula:

1 Body – the infrastructure of Mimaki has been built up over the past 40 years to create a solid foundation that supports an 8% reinvestment of our annual turnover into research and development. This ensures all potential opportunities for product growth are explored.

2 Sweetness – helping our customers hit the sweet spot of production is what drives our continued product development programme. We create solutions that deliver maximum productivity to support customer profitability and open up new markets and revenue streams.

3 Acidity – everyone wants to be the business that packs such an energetic punch that customers and end users keep coming back. Aside from the reliability, robust build and quality output, Mimaki solutions deliver flexibility to broaden service reach.

4 Tannin – like tannin, ink is an essential compound in the creation of the final print. Getting the recipe and mix right is critical and that is why our latest developments have focused on high-performing eco-friendly latex inks.

5 Fruit – the fast-growing portfolio of solutions that reflects the varied demands of today's production environment from entry level to superfast super wide solutions. Mimaki listens to what customers require to allow them to deliver on end-user expectations. Or as the Italian proverb goes: "A buon intenditor poche parole" – "To the connoisseur merely a few words suffice." ■

Mike Horsten is General Manager Marketing EMEA Mimaki Europe

SHORT COMPANY HISTORY OVERVIEW

1975	August	Founded as a private limited company
1979	March	Opened Tokyo sales office at Ueno
1981	May	Reorganized as MIMAKI ENGINEERING Co., Ltd.
1983	December	Started development of A2 flatbed pen plotter [RY-1003] for OEM
1985	February	Started sales of A2 flat pen plotter under " Hokusai " brand-name
1995	July	Founded MIMAKI ENGINEERING (TAIWAN) Co.,Ltd.
1999	January	Received ISO 9001 certification
1994	September	Founded MIMAKI USA, Inc. in Duluth, Georgia
2003	October	Opened Nagano Development Center
2004	April	Founded MIMAKI PRECISION
2004	April	Founded MIMAKI EUROPE B.V. in Amsterdam, The Netherlands
2006	June	Acquired WIZTEC CO.,LTD.
2006	April	Opened Technical Call Center
2006	April	Acquired Graphic Creation
2007	March	Listed on JASDAQ Securities Exchange, Inc.
2007	December	Founded MIMAKI IJ TECHNOLOGY (ZHEJIANG) CO., LTD.
2008	July	Acquired Mimaki-nbn GmbH
2009	January	Received ISO 14001 certification
2008	June	Founded Shanghai Mimaki Trading Co., Ltd.
2009	July	Founded MIMAKI BRASIL COMERCIO E IMPORTACAO LTDA
2010	September	Acquired MIMAKI KANPHOR INDIA PRIVATE LIMITED
2011	August	Founded MIMAKI PINGHU TRADING CO., LTD.
2013	November	Founded PT. MIMAKI INDONESIA
2013	April	Founded MIMAKI AUSTRALIA PTY LTD
2010	April	Founded MIMAKI SINGAPORE PTE. LTD.
2011	July	Trade name Mimaki-nbn GmbH has changed to Mimaki Deutschland GmbH

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ADVANCEMENTS IN DIGITAL READY TEXTILES

Emily Falconer gives an insight into the importance of base cloth choice

For more than 30 years, Premier Textiles has been leading the way in the development and supply of print ready fabrics. Initially supplying raw loom-state textiles and yarn into the UK market for a number of years, the company has become one of the most established textile suppliers to a growing global client base. During the past decade, the increase in demand for finished fabrics has seen the growth of the Premier stock holding, with it now offering in excess of 100 different base cloths.

Premier has witnessed the growth and the increased demand for finished fabrics, whether PFP (prepared for print) or PFDP (prepared for digital print). The team at Premier Textiles has developed its knowledge and understanding of various inks and print methods to provide customers with the relevant solutions and advice for their specific needs and end use. As a result of this increased demand for quality print base fabrics, Premier has evolved into a leading supplier of ink-jet ready substrates – there is a clear interest from many digital printers who see the benefit of printing onto value added cloth. The print industry was changing; an increase in interest and subsequent investment has only recently resulted in a surge for quality print base options.

A VERY BROAD TECHNOLOGY

However, digital printing is a very broad technology. Within it there are a variety of printing methods, all of which shape the applications and their end use. Some digital technologies have not been as popular as others and, in the past, the focus has mainly been on reactive and sublimation print methods. But, more recently, as stated by Mitesh Patel, Technical Sales Manager: "The advancements and developments of ink for pigment printing have resulted in a push for quality pigment coated base cloth options. We have been perfecting pre-treat applications and are now confident that our washable pigment solution is now commercially ready."

Premier is at the forefront of this development, striving to produce a coated substrate that will have improved washablity and increased rubfastness along with increased colour yield, giving deeper blacks and bright vibrant colours when printing using pigment inks. The company has conducted extensive trials, using different market leading printing machines and inks, so that it could develop a coating solution for pigment systems.

An unwashed pigment pre-treat and a washed at 40 degrees C pigment pre-treat

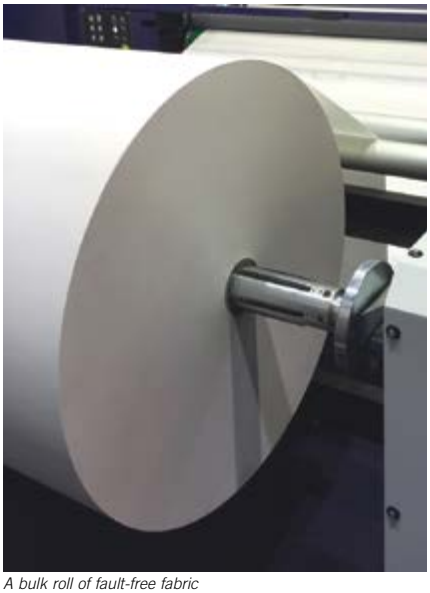
"We have been able to develop ahead of the market as we are able to understand the digital printers needs through being involved from concept, using extensive textile knowledge at each stage of manufacturing fabric, to produce truly ink-jet/digital ready fabrics," says Nick Smith, Director of Premier Textiles.

A swatch of unprinted polyester

SO, WHY PIGMENT?

Consumer demand has driven the improvements for ink technology; with these improvements the customer can achieve bright vibrant colours on their coated fabrics with close comparisons to the colour vibrancy obtained when reactive printing. More and more small start-up companies are using pigment inks, as it is an easier process with lower set-up costs compared to reactive

Continued over



A bulk roll of fault-free fabric

printing. Digitally printed fabrics, specifically for the home textile market, have grown significantly. More and more conventional printers are now offering digital pigment printing as a value added service to their customers.

Due to the increased demand for coated pigment ready fabrics, pigment coated sales have remained strong. Premier anticipates that there will be a continued increase as the inks develop further with improved fastness properties. With this, the company predicts that the sales of uncoated fabrics will slowly start to decrease as more and more digital printers are seeing the benefit of switching to the coated options.

TAKING A DRAMATIC TURN

In 2013, Premier Textiles print base sales took a dramatic turn with the introduction of polyester substrates into the range for transfer printing. There seemed to be an obvious lack of 'value added' polyester fabrics in the market-place, with the standard polyester available being the usual commodity fabrics for the traditional end use of signs, flags and banners, and of far eastern origin.

Premier has engineered, from concept, a new generation of polyester base cloths that look and feel like cotton. The next generation of polyester fabrics includes silk feel velvet, cotton/linen look upholstery and textured weaves that have the look and feel of natural fabrics.

The results were so unexpected. Many customers cannot tell the difference between the natural and polyester fabrics, with many of them not believing it possible until they had tested the products themselves. This led Premier to innovate further and develop a truly natural/synthetic sublimation ready base cloth, closing the gap between natural and man made fibres.

As the print industry begins to realise that fabric choice is just as important as choosing the right printer, ink type or software, the demand for high quality value added fabrics is increasing. So why is choosing the right base cloth so important? Fabrics that have had the correct preparation from the selection of yarn to the processing of the cloth will produce a higher quality print – thus resulting in fewer rejects, less machine downtime and ultimately resulting in greater return.

A silk scarf printed with acid dyes

CORRECT PRESENTATION BASE CLOTH

Without the correct presentation of base cloth that has been prepared in the right way, digital printing machines will not produce a high quality print. It is as much about the textile substrate used as it is about the machine ink or software that is creating that print.

Throughout the years of supplying print base fabrics Premier has seen a variety of fabric problems, which result in a poor print or the need for a re-print. The goal is to overcome these issues, to produce value added fabrics and introduce them into the market place. Due to the growth of the ink-jet market and the sheer demand for high quality fabrics, Premier Textiles will strive to be one step ahead due to the constant drive to push boundaries in fabric innovation.

Having witnessed positive growth in the ink-jet market throughout the last ten years, the belief that this growth will remain strong and continue into the next decade is obvious. With global brand leaders of digital printing machines waking up to the concept of digital printing onto textiles and modifying their print machines in such a way to showcase this, it is a very exciting time to be involved in fabric development.

A sublimation printed polyester/linen fabric

SHIFT TO NEW AND EXCITING FIELDS

Digital printing technology changed the printing process and shifted it to new and exciting fields. With the rapid growth of ink-jet printing, many digital printers will now not accept the standard faults that are common in natural fibres, and they are demanding a textile that behaves and prints like paper. One of Premier's next challenges is to meet the growing demand from high speed printers needing a continuous bulk roll of thousands of meters of fault-free fabric, without compromising quality, at commodity prices.

The future developments of substrates for ink-jet printing will see Premier Textiles further develop innovative base cloths which will include transfer ready glitter, a combined poly/natural fabric, direct disperse pre-treat and the introduction of a value-added range of fashion fabrics for digital printing. ■

Emily Falconer is in Sales and Marketing at Premier Textiles

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EXPANSION SUCCEEDS WITH ADDED AUTOMATION

Tim Klee illlustrates why investment in CNC-based equipment can extend bottle moulding capacity

In the mid-eighties many of the large Midwest bottle moulding companies decorated with solvent-based inks and had not committed to more automated UV production equipment. Jay Viery and his partner, Arley Stewart, saw this as an opportunity and formed Signature Label in 1986 to serve the expanding printing market using UV-curable inks on plastic bottles.

Viery describes Signature Label as an extension of its customers' capacity and capability. While many of its bottle moulding customers have large in-house decorating departments, they rely on Signature Label to handle peaks in their business due to overcapacity or to new business. For the bottle distributors, the company provides a unique and reliable resource that adds to the total package of products and services they sell. Viery notes:"Our customers also rely on our absolute confidentiality. Most of them are fierce competitors yet they trust us with their key accounts, products and new projects."

Signature Label's core market-place has been bottle moulders in the health and beauty aids, toiletries and cosmetics industries. These markets are primarily located in the Midwest states yet reach out as far as New York City. Having two locations, one in northern Ohio and the other in southern Illinois, allows Signature to overlap the critical markets of Chicago and Cincinnati while reaching out to markets that would otherwise be logistically prohibitive.

In-house tool making capability, experienced technical staff and first-class order processing systems continue to keep the company successful. With its tool making expertise, Signature Label gains the added benefit of repairing and rebuilding machines, improving their availability.

DECISION TO EXPAND

Two years ago, the company decided to expand into UV printing on glass. Viery realized that this was a big step for Signature Label as it would have to deal with a new market-place, new product lines and new equipment. With this much going on, it was imperative that the capabilities of the new decorating system be reliable in order to instil customer confidence in quality, productivity and reliability. In reviewing its equipment options, Viery concluded that he would have to look seriously at a CNC-based machine.

Jay Viery inspects the KBA-Kammann K15

Signature Label had stayed on the side-lines as CNC systems were being developed. It was a big investment and Viery had concerns about the technology of integrating so many servo drives. It was only after meeting with Christian Maas, KBA-Kammann's Co-Managing Director that his outlook changed. Maas's description on how his company was able to overcome the challenges of these servo drives, combined with a demonstration using a newly built machine, convinced Viery that these systems were market ready. Signature also visited two regional customers who had multiple machines in production, reinforcing the market readiness of the system. Viery and his son, Evan, visited the KBA-Kammann USA Demo Centre in New Hampshire spending two days crawling all over the equipment as well as performing article changeovers.

Signature Label has had a long term relationship with KBA-Kammann that began in the eighties when Wilfried Kammann of Werner Kammann Maschinenfabrik GmbH contacted Viery and his partner not only to congratulate them on their new venture but to offer any assistance that he could give them. Viery adds: "This began a multi-decade relationship, not only in acquiring Kammann Machine screen-printers, but also in the invaluable consul that only Wilfried Kammann can offer. This relationship has been instrumental in Signature Label's success."

Jay and Evan Viery

THE RESULTS

The new KBA-Kammann K15 CNC-M+16 machine arrived last autumn. "After only using mechanical machines, it was hard to believe the control and accuracy possible with a proper servo machine," explains Viery. "With all these capabilities, it will probably take a number of years to fully realise what this machine is capable of doing."

Although Signature Label had owned and installed 39 Kammann systems during its 28 years of business, seeing the extent of the assembly, electrical connections, and alignment required for the machine, it was clear that specially trained technicians were required. From unloading the crates off the truck to the first bottle print tests, it took two technicians only 42 hours to complete the installation. Because everything worked correctly, the initial print tests only took a short time, and then there were three days of training on the bottle programming software and job setup.

Viery concludes: "A key ingredient in Signature Label's success is its loyal employee base with its technical group having more than 300 combined years in bottle decorating. That skilled base, combined with loyal customers and best-in-class equipment, is hard to beat." ■

Tim Klee is Marketing Consultant for KBA-Kammann USA

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TAKING THE ALTERNATIVE ROUTE

Digital print and labelling specialist succeeds in cost-savings without compromising standards

When Customark, one of the UK's most diverse specialist printing and labelling companies made the transition from OEM inks to Sun Chemical's Streamline range of alternative solvent ink-jet inks, it didn't just benefit from the combination of premium quality output and total reliability. The company has achieved significant cost savings without compromising standards, giving its service offering that all important competitive edge.

The West Midlands-based company, which specialises in the development and printing of unique labelling and identification systems as well as promotional and display graphics, prides itself on its customer service and high quality products at competitive prices. With such a diverse and growing product portfolio and its wide-ranging and demanding customer base, Customark was experiencing increasingly high volumes of ink usage on its Roland and Mimaki digital wide-format printers.

CONSTANT PRINTER USE

"These are in almost constant use, running 24 hours a day up to six days a week," says Steven Round, in charge of marketing at Customark. "And, with customer demand for ever tighter turnaround times, shorter and more personalised print and high quality output, any disruption to the efficiency and quality of our operation just wouldn't have been acceptable."

The challenge of supplying Customark with its increasing inks and consumables needs lay with ScreenPro, Sun Chemical's largest authorised distributor for screen and digital inks to the UK graphics market. Liam Redmond, Director of ScreenPro explains: "We pride ourselves in keeping one step ahead of our customers by anticipating their needs and carefully monitoring product innovation. Having worked with Customark for several years, we could see through their increased volumes of ink usage that they could benefit significantly by migrating from their existing OEM product to the Streamline range of alternative inks, and just as importantly, without impacting on the quality and productivity of their output."

EASY MIXING AND INTERCHANGE

Sun Chemical's Streamline range offers fully OEM-compatible solutions for ink-jet printers, which have been specially formulated to match the colour, physical properties and performance of the original inks. This enables them to be mixed and interchanged with OEM solvent-based inks, offering total flexibility and without affecting output.

Customark's Mimaki JV33-130 running Streamline inks

Prior to introducing the Streamline inks to its customer offering, and recommending it to Customark, Liam and his team at ScreenPro needed to be totally confident that the ink would perform equally well, if not better, than the existing inks that Customark was using. "We could easily calculate the cost savings, but we had to be absolutely sure there would be no detrimental impact to the effectiveness of their equipment as well as replicate the highest standards of output," says Redmond.

ScreenPro undertook a series of trials over a period of twelve months to test rigorously all aspects of the inks in real production environments in terms of quality, performance, colour matching and compatibility with printing technologies.

COST AND PRODUCTION EFFICIENCIES

"The results were quite remarkable," enthuses Redmond. "There were absolutely no issues with the Streamline inks, giving us complete confidence to recommend them to our customers, who have since welcomed the opportunity to achieve considerable cost and production efficiencies with some outstanding quality output."

Having conducted its own trials to monitor performance alongside its OEM inks, Customark has since converted its Mimaki and Roland wide-format digital machines and has been successfully using Sun Chemical's Streamline alternative solvent ink-jet inks for some time. Round concludes: "It's been a win/win situation for us. We haven't suffered any quality or production efficiency issues – which is something that can happen when you introduce some alternative inks. In addition, we've also gained some substantial cost benefits, saving around 32% in ink costs alone over the last twelve months." ■


The Streamline alternative inks don't impact on output quality and productivity

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TheIJC scientific board is chaired by Fritz Bircher of the iPrint Institute in Switzerland, with board members, Ian Hutchings from University of Cambridge, Michele Dondi from ISTEC Faenza (Italian Research Council Ceramics) and Marc Van Parys from University College Gent.

Detailed delegate information and booking is availale online at www.theijc.com
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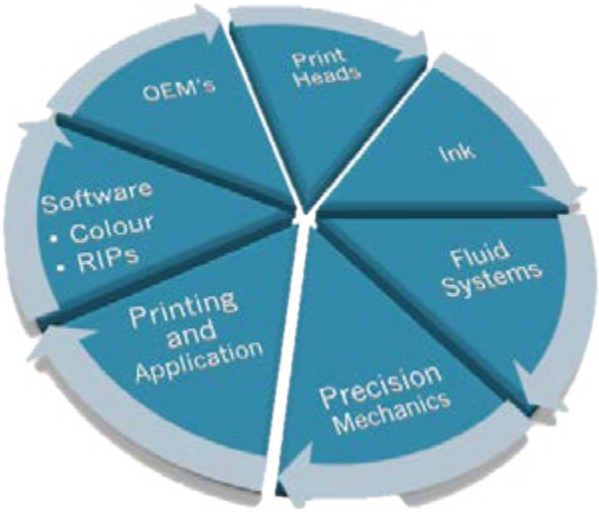

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EFI acquires Reggiani and Matan

The start of July saw EFI announce the acquisition of two major brands in the digital printing sector, these being Reggiani and Matan. These two additions give the company a strong foot-hold in the industrial textile market and a new opportunity for soft signage producers plus additional UV-curable capabilities and an additional technology base in Israel

Reggiani's ink-jet technologies, which will be rebranded as EFI Reggiani, address the full scope of advanced textile printing, with versatile printers suitable for water-based dispersed, acid, pigment and reactive dye printing inks. In its 60 plus year history, Reggiani has become a leading innovator of a full range of industrial solutions for textile manufacturing, including high-quality printers for fashion and home furnishing textiles, with a comprehensive portfolio spanning the company's original rotary screen technologies to the most advanced inkjet textile printers and inks in the industry. Reggiani has also established relationships with many of the leading textile manufacturing companies around the world and provides an integrated offering including equipment for all stages of the textile printing process, centred around its leading digital inkjet textile printers.

"This acquisition gives EFI an immediate leadership position in one of the world's largest industries undergoing the transformation from analogue printing to digital. The textile printing market is just beginning that transition, which will enable manufacturers to shift from long-run to on-demand manufacturing, responding to the increasing demands of short runs and customisations," states EFI CEO Guy Gecht.

The acquisition of privately-held Matan Digital Printers adds an even broader range of products to the EFI portfolio, particularly for superwide-format display graphics printing. Gecht comments: "Matan's strong R&D capability will further accelerate EFI's ink-jet innovation, while filling a key spot in EFI's portfolio for a lower-acquisition cost line of roll-to-roll production printers focused on signage, banners, billboards and fleet graphics." ■

Guy Gecht

New universal textile emulsion from MacDermid Autotype

MacDermid Autotype has launched Plus TX, a new screen emulsion specially formulated for textile printing that is fast, reliable and easy to use. The company states that it combines the best properties of existing emulsions into one universal product suitable for plastisol, discharge and water based textile inks.

With exceptional coating quality and durability, coupled with fast exposure and washout, Plus TX offers a blend of characteristics that makes printing easier and more efficient whilst also delivering excellent results. In terms of processing, the excellent colour contrast offered makes it easy to see when the screen is developed, yet the emulsion is also transparent to allow good sight registration on the press.

The very high solids provide good bridging on coarse mesh and a fast drying speed, and Plus TX also delivers excellent coating quality, which minimises the need for retouching, while its flexibility prevents cracking when printing over garment seams. It is also decoatable, so screens can be reclaimed quickly after printing. All these qualities make the process faster and easier, helping screen printers to speed up production and maximise profitability.

New Plus TX screen emulsion is reliable and easy to use

The universal resistance properties allow Plus TX to work equally well with water based, discharge or plastisol inks. This provides flexibility and peace of mind for textile printers who are using more than one ink type. PLUS TX gives today's textile printer greater productivity and profitability. ■

Mactac adds vice presidents to leadership team

Mactac has selected two new vice presidents to join the its leadership team at its headquarters in Stow, Ohio. Chad Oney has assumed the role of Vice President of Operations effective and Ken Pratt is now Vice President of Global Procurement.

"With previous leadership positions, both Oney and Pratt offer a variety of experience that will undoubtedly help Mactac achieve new levels of success," says Ed LaForge, President, Mactac Americas. "Their unique skills' sets, coupled with their proven track records of leading complex and business-transforming projects, will be a great asset to the organisation."

Oney brings nearly 20 years of experience to Mactac transitioning from his role as the director of operations, North America, at Carlisle Brake and Friction. After joining Carlisle in 1999 where he served as a manufacturing engineer, he has since excelled in several roles from engineering management to Vice President/General Manager for Asia Pacific.

Pratt also brings nearly 20 years of experience, specifically in sourcing and supply chain management, to Mactac. Prior to his most recent position as Vice President of Procurement at Associated Materials, he held positions with General Electric, Otis Elevator, Textron, A Raymond Tinnerman and GE Transportation.

Ken Pratt is one of the two new VPs appointed by Mactac

Oney and Pratt will report to Ed LaForge, president of Mactac Americas, and globally Pratt will report to Guido Alvino, president of Mactac Europe. ■

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Kili Arts brings high-definition photos to life on metal with Epson

An Epson SureColor SC-F6000 1.1m digital dye sublimation printer has been installed by Kili Arts to produce its new range of high quality ChromaLuxe photographic prints. The company has owned an Epson Stylus Pro 9890 wide-format printer for two years, which it uses to print its fine art, photographic and canvas prints. This latest SureColor investment has enabled it to expand its product range into metal HD prints, which has resulted in a significant increase in production and overall profit of 60% since installation earlier this year.

The company is owned by East West Photography Ltd, an Asian wedding and events photography company founded in 2001 by Gurwinder Singh Soor & Jagdeep Singh Panesar. It is through the photographic side of the business that Kili Arts has developed. Photographer and Director, Jagdeep Panesar says: "We used external suppliers for all East West Photography's printing needs for a number of years but were often disappointed with the inconsistent results. We are extremely passionate about delivering the highest quality service to our clients so we reviewed our options and that's where the idea of starting up our own printing side of the business came from."

Kili Arts bought its SureColor SC-F6000 from wide-format print solutions specialists and approved Epson reseller Perfect Colours in January 2015. The machine is ideal for low-to-medium volume work and has been developed to support an extensive range of applications such as soft signage, interior décor, textile and garment printing. The company also invested in a Sefa 1510 heat press to print onto ChromaLuxe metal panels. ■

The new Epson SureColor SC-F6000 installed at Kili Arts

Esko releases Suite 14.1 bringing SaaS and greater flexibility

Launched by Esko is its Software Suite release 14.1, which is rolling out with Software as a Service (SaaS) and subscription options that give users greater flexibility, scalability and a lower total cost of ownership. In addition, it also includes a number of across-the-board enhancements, all developed to maximise ease of use, make implementation faster, improve support and deliver an even more outstanding customer experience.

"SaaS and Subscription models for software are becoming the de facto standard in the software industry," explains Bernard Zwaenepoel, Esko's SVP Software Business. "Esko has worked hard to keep pace with customer needs and industry trends, and to bring more value to customers with our Suite 14.1 release. While we have been offering a subscription model for some time for certain software modules, this release broadens the scope of that effort across more Suite 14.1 modules and responds to customer requests for increased cloud-based delivery of Esko software solutions. While perpetual software licenses will continue to be offered, customers now have the option of choosing a SaaS or Software Subscription model if it better fits their operational needs.

"Esko is dedicated to providing innovative features and developments to the package and label printing industry," continues Zwaenepoel. "With the release of Suite 14.1, we bring valuable new functionality to our current and future customers, giving them the user experience, scalability and flexibility they expect. We're excited to be providing them greater ability to respond faster to changing market dynamics." ■

Sensient acquires Xennia

During the first week of May Sensient Technologies Corporation reached an agreement to acquire the assets of Xennia Technology, the UK manufacturer of speciality inks used in digital printing. Xennia's product lines consist of reactive, acid and sublimation inks for printing on a range of textiles and other substrates. The business was previously owned by Royal Ten Cate NV, a multi-national producer of functional materials headquartered in the Netherlands. Xennia reported revenue of approximately $11.0 million in 2014. The transaction is expected to close in the third quarter of 2015.

Paul Manning, President and CEO of Sensient, states: "We are very excited about the expertise and opportunities that Xennia will provide. Xennia's strong technical capabilities will broaden our product offering and accelerate our access to important customers and markets for our inks business." ■

Four new products added to Ultraflex portfolio

Ultraflex Systems has introduced a quartet of new materials to its portfolio. These are XMR Magnetic Receptive Media, VorTex Backlit Optimum D270, its SuperSmooth PET Backlit and, finally, SuperPrint Smooth Banner front-lit.

XMR Magnetic Receptive Media contains a ferrous component allowing the media to be attracted to a magnet base. Ultraflex states that it contains the benefits of a magnet without the weight and, as a light-weight material, it results in increased viability in high volume, frequently changed applications such as retail stores and restaurant menu board graphics.

Designed for soft signage applications, VorTex Backlit Optimum D270 is a woven polyester ideal for use with back-lit retail applications. The fabric is designed and coated to hold a high resolution and wide colour gamut – specifically a high-density black.

The construction of Ultraflex's SuperSmooth PET Backlit enables it to be more flexible and resilient to cracking, chipping and other types of damage associated with traditional back-lit films. With its curl-free and super-flat characteristics, this material is suited to indoor or outdoor applications including retail displays, airports, museum exhibits, menu boards and tradeshow graphics.

Finally, SuperPrint Smooth Banner vinyl material is designed specifically for interior, close-viewed graphics. It has a smooth face creating a uniform print surface, is available in a matte finish and is compatible with solvent, eco-solvent and UV-curable ink formulations, and screen-printing. ■

New printer specific inks introduced by Bordeaux

Bordeaux Digital Printink states that its attendance at FESPA Mexico proved a success with the showcasing of printer specific solutions for Océ Arizona, Fujifilm Acuity, Roland, Mimaki, Mutoh, and Epson digital printers.

The company adds that visitors witnessed the quality and outstanding colours of its dye sublimation and eco-Solvent inks, demonstrating that the inks are printer specific, which enables zero downtime printer conversion to Bordeaux inks with no need for flushing or colour profiling.

"Expending our presence in Latin America, Bordeaux has established two business co-operations with PAPEL and ESS – leading distributors in the printing industry," says Guy Evron, Marketing Manager at Bordeaux. "Furthermore we are excited to offer our printer specific solutions in response to the growing demand for sustainable solutions for the wide-format printing industry".

Bordeaux's latest UV-curable ink solution for the Océ Arizona printer series, designated Plasma AR, and the Fuji Acuity's Plasma AC claim to be the industry's first plug-and-print solutions for UV-curable printers. These inks are formulated to achieve optimum adhesion, high quality colour and performance, as well as long-term outdoor durability with multiple rigid, flexible and super-flexible substrates. ■

CMA ColorCloud delivers precision accuracy and drives down costs

Simplification of print performance and cost savings are now being addressed successfully with CMA ColorCloud which is designed to be a cloud-based colour management solution for production businesses of all sizes. This cost-saving and easy-to-use tool enables users to deliver precision accuracy across all output devices and materials, ensuring stability and consistency, and generating correct results across all digital platforms, computer monitors and, even, smartphones and tablets.

Developed by colour specialist CMA Imaging whose long-term experience and expertise have led it to a market-leading position in today's graphics industry, CMA ColorCloud is designed to be used with a measurement device via a standard web browser. Requiring no hardware or software, nor any maintenance downtime or costs, it utilises a set of patented management algorithms to ensure accuracy of colour throughout both proofing and printing, with calculations that ensure the right relationship within the CMYK model, correct grey balance and a resulting reduction in ink or toner usage.

CMA ColorCloud's primary intention is to enable users to improve their workflow by providing consistency and accuracy which result in improved print quality across single and multiple devices. Its capabilities include precision colour matching, lowered costs, and a reduced margin for error while significantly enhancing operator efficiency via optimised ICC and device link profiles that ensure repeatability.

Based on a pay-per-profile model, CMA ColorCloud users also have the option of purchasing an annual unlimited licence. Its potential extends across digital print devices using toner-based or ink-jet technology, as well as wide-format engines that employ all ink formulations such as eco-solvent, latex and UV-curable chemistries.

CMA Imaging has based its ColorCloud concept on the challenges that have resulted from the growth in precision colour throughout digital job generation, proofing and printing, and by understanding the needs of today's print service providers and display specialists. The company's deep-rooted expertise extends into providing one-stop-shop colour management solutions for contract proofing, flexo, screen and offset litho printing, as well as wide-format and digital production.

In addition to intelligent software solutions, CMA Imaging offers FSC and PEFC certified papers and combines responsibility for promoting the reduction in chemical and consumable waste with lowering costs and improving throughput for its customers. The company partners with specialists who are able to maintain its key criteria for adding value while enhancing environmental principles throughout all sectors of the printing industry. ■

Caldera continues commitment to V10 progress in latest update

Version 10 of Caldera's flagship printer control suite has been upgraded for all current licence-holders, featuring productivity markers, speed improvements and improved language support for international users. Drivers have also been developed for a number of new printers and cutters, building on the company's reputation as the go-to software internationally for the imaging of wide-format graphics. The update, V10.1, is available for free to all current Version 10 holders.

Among the performance upgrades Caldera's V10.1 is the incorporation of APPE 3.7

Users can now add extra print-to-cut marks from within VisualRIP and GrandRIP at the stage of finalising the job, carrying these indicators over between repeated or nested documents. Not only does this provide improved accuracy, particularly for textile and digital signage work, but it also optimises media space by eliminating the need for cut markers on borders. This option is fully supported by many industry standard cutters, including the Zünd, Protek and Summa brands.

Among the performance upgrades included in V10.1 is the incorporation of APPE 3.7, which decreases the RIP time for complex PDFs with variable data content or transparencies. Raster files and spot (or N-) colour processing are improved by more than four times when used in combination with Caldera's dedicated C4 engine or a computer with similar processing power. This gives a significant productivity enhancement to the growing audience of wide-format houses that are using special effects and regionalisation within their output.

Popular features also receive improvements, with support for the Kala XY trimmer newly available to Trim-O-Matik licence holders. Nest-O-Matik, meanwhile, now allows users to change the automated naming of files; this is reflected in Nexio, Caldera's JDF-JMF connector module, which sees a 'GangName' field added for clustered jobs and is fully compatible with these amendments.

Japanese users benefit from improved support after customer feedback, while the Hebrew character set has been extended to cover new functionality. The entire suite has received a new language, Czech, in Caldera's continuing mission to extend its user family; similarly, Nexio now carries full documentation in Spanish.

"Our landmark Version 10 is establishing itself firmly as the product to beat world-wide and we continue to receive feedback from our various customer contact channels," explains Frédéric Soulier, Chief Technology Officer. "We will continue to augment Caldera across the board with incremental upgrades as we find new ways to improve speed, functionality and performance for our users."■

Sawgrass joins forces with Kiian Digital and J-Teck3

Sawgrass Industrial, the business division of the Sawgrass group operating in sublimation and pigment inks for industrial applications, is joining JK Group which includes the brands Kiian Digital and J-Teck3. This new move extends group's technology capabilities.

As a division of the Sawgrass group, a well-known innovator and pioneer in digital sublimation with a large portfolio of intellectual property rights, Sawgrass Industrial is a leader in the high-end market of digital sublimation and water-based pigment inks with a wide portfolio of brands, including SubliM and M-Inks. The main applications addressed by Sawgrass Industrial's products are fashion, sportswear and home décor. Sawgrass Industrial is present mainly in Europe and the Americas, serving key clients both directly and through dealers.

Kiian Digital, J-Teck3 and Sawgrass Industrial share a track record of innovation, quality, reliability and are regarded as trusted commercial and technical partners of companies that supply top brands in more than 100 countries worldwide. Together they claim they have created the largest industrial digital sublimation group with leading technologies, a global presence and a world class manufacturing capability for textile applications.

The Sawgrass Industrial acquisition further enlarges JK Group's portfolio of advanced inks which are compatible with a wide variety of digital print-heads including plotters and high-speed machines. JK Group will maintain its focus on high quality industrial standards and on driving market expansion internationally.

JK Group President, Dennis Wilby, states: "Following the combination of Kiian Digital and J-Teck3 last year, the addition of Sawgrass Industrial takes the JK Group into a global leadership position in the digital sublimation sector and at the forefront of the textile pigment inks market development."

Alberto De Matthaeis, JK Group CEO, adds: "We believe that the synergies of working together will add significant value to the three brands while retaining their independence with separate sales, customer service and product development."

Sawgrass Technologies will continue to operate as an independent company serving the needs of digital printing applications on printers less than 1066mm (42 inches) addressing non-industrial customer needs. ■

Phoseon Technology surpasses 50,000 hours of UV LED lamp lifetime

As a result of its rigorous reliability efforts, Phoseon says its life-time testing of lamps has now surpassed 50,000 hours of operational on-time with lamp irradiance being greater than 80% of its original output when the test first began five-plus years ago. For perspective, utilising a single shift workweek of 2,000 hours/year, 50,000 hours equates to 25 years of UV LED operating on-time.

Phoseon maintains more than 50 UV LED curing lamps in various stages of life-time testing at any given time. These light sources are stressed with decreased air flow, high temperatures and other parameters that mimic the harsh working conditions of industrial UV LED curing equipment.

"Claims of UV LED longevity have been more than validated with these results," states Phoseon Vice President of Engineering Scott Igl. "This 50,000 hour air-cooled lamp showcases Phoseon's commitment to supplying high-performance, highly reliable light sources. The technology embedded in today's UV LED lamps is built on this foundation so customers can be assured of many years of high-quality UV LED curing."

In addition to lifetime testing, Phoseon's reliability programme consists of Highly Accelerated Lifetime Testing (HALT), Failure Modes and Effects Analysis (FMEA), and a manufacturing burn-in process where each product is built, calibrated, burned-in and recalibrated before customer delivery. The reliability and development programmes are supported by more than 200 world-wide patents exclusively devoted to UV LEDs. ■

DÜSSELDORF CONFERENCE ANNOUNCES DATES AND DETAILS

This year's event builds on last year's success

ESMA's Peter Buttiens

Steve Knight, owner of Digital Technologies Direct and co-founder of TheIJC

With drupa as its enabling partner, MS Printing as sponsor and ESMA as organiser, The Inkjet Conference returns to take place on 7 and 8 October 2015 in Swissôtel Neuss/ Düsseldorf, Germany. Building on last year's success, the event offers more than 20 hours of industrial presentations and technical lectures on the newest developments in ink-jet engineering and ink-jet chemistry.

"Whilst the ink-jet print-head is at the heart of any system, system performance and productivity are affected by the other components that go into building the digital print process. The Inkjet Conference covers all aspects – print-heads, inks and ink chemistry, data path electronics and imaging software, fluid systems and precision mechanics," explains Steve Knight, owner of Digital Technologies Direct and co-founder of TheIJC. "We welcome ink-jet equipment manufacturers, consumer brand owners and other representatives of the markets affected by the shift to digital production wishing to understand the core technology."

TheIJC 2015 is the knowledge hub of the industry. Some 38 speakers have already confirmed their attendance – all acknowledged experts in their fields. Likewise the Scientific Board is drawn from a wide range of backgrounds and industries and is at the forefront of research into ink-jet and its applications. As observed during the 2014 edition, most of the delegates also possess a high level of expertise in ink-jet integration or market specific applications. Exhibitors and visitors from last year emphasised the positive atmosphere and a sociable but professional networking environment during the conference. As a two-day two track event held in Swissôtel Neuss/Düsseldorf, TheIJC 2015 enables easy access to everybody and welcomes newcomers and old friends alike.

"The interesting part of the conference is the balanced mix with some outstanding academic speakers in the field of ink-jet," states Peter Buttiens, CEO of ESMA. "This is triggering the commercial companies to make sure that they use the latest developments and transform them in market ready solutions. Therefore, TheIJC 2015 has a Scientific Board which helps to guide the process of speaker selection in the right direction."

Now claiming to be the biggest European conference of its kind, the event will address topics ranging from print-heads and ink improvements, integration know-how, new software solutions enabling digital manufacturing, to recent market applications in packaging, laminates, wall covering and textiles.

Delegates at the inaugural IJC conference held in 2014

CONFERENCE PROCEEDINGS

Track 1, Wednesday, 7 October 2015
drupa – Cambridge University – Xaar – Marabu – TTP Meteor – Ricoh – Huntsman – Caldera – IACS/Toshi- baTec – Machines Dubuit – Chemstream – SunChemical – Fujifilm Dimatix – Global Graphics – Adphos

Track 1, Thursday, 8 October 2015
Fujifilm Speciality Inks – Seiko Instruments – Colorgate – Global Inkjet Systems – Malvern – EFI Fiery – Agfa – Konica Minolta – Digital Direct Technologies – Phoseon – Pall – Xennia – GEW – UV Integration Tech- nologies – Intrinsiq Materials – Hönle

Track 2 will feature academic presentations and the submitted papers are currently pending approval of the Scientific Board.

Sabine Geldermann, Director of drupa adds: "drupa is pleased to support the second edition as an Enabling Partner of The Inkjet Conference. Ink-jet is seen as a core enabling technology of digital printing and has grown into a multi-billion euro business in just the last few years. Featuring constant invention and innovation across a broad range of technological disciplines, The Inkjet Conference is an opportunity to ensure printing equipment manufacturers will have access to the latest technology and knowhow before it will be highlighted and focused at drupa 2016." ■

Further information:
email: info@theijc.com
web: www.theijc.com

NEW CALENDAR DATE FOR THE DIRECT CONTAINER PRINT SEGMENT

Leading packaging companies line up for specialist conference

Direct Container Print 2015 (DCP) marks its entrance onto the 2015 event calendar with presentations on low migration inks, UV LED curing and recent developments in screen and ink-jet technology. Organised by ESMA, in co-operation with Chameleon Business Media, DCP is supported by leading manufacturers such as KBA-Kammann, Marabu, Gallus and Sun Chemical. This technical conference introduces printers, packaging manufacturers and brand owners to the potential of direct to shape container decoration on plastics. DCP takes place on 23 and 24 November 2015 at the Radisson Blu Scandinavia Hotel in Düsseldorf, Germany.

"Among several conferences organised by ESMA in recent years, including five editions of GlassPrint, we have noticed increasing interest not only in glass containers but also a need to look into new approaches in plastic packaging, its inscription and designation," says Peter Buttiens, CEO of ESMA. "Every year innovative technologies are offered to the market; therefore it is our goal to inform both the print and packaging industries about the latest direct decoration possibilities for bottles, cups, tubes, and sleeves."

POPULARITY OF PLASTICS

Already a multi-billion business, the packaging market is experiencing its strongest growth in years. Plastic remains one of the most popular packaging materials in beauty and health care, pharmaceutical and food industries. With quality print being the key to success of an inviting and brand-enhancing packaging, new technologies are progressing and changing the costs and benefits of direct to shape printing. Screen, pad and digital print unlock entirely new options in terms of no-label approach for round and specially-shaped surfaces which improve product customisation, as well as the flexibility of the print process and logistics in general.

In this context, highlights of DCP 2015 presentations will include Global Inkjet Systems ("Inkjet and Direct Container Print – Challenges and Successes"), Phoseon ("Benefits of UV LED Curing in Direct Container Printing") and Isimat ("InLine Foiling – Adding a Competitive Edge to Direct Container Printing"). Marabu will provide an overview of product requirements regarding new curing technologies, as well as ink and substrate developments for various plastic materials. Industrial Ink-jet will describe the demands on print-head selection, ink technology, pre-treatment and system design and will illustrate it with case studies of real working examples. Submissions from new speakers are still coming in. ■

Further information:
web: www.dcp2015.org

STRENGTHENING THE FOCUS ON PACKAGE PRINTING

Brussels hosts return of biggest label expo to date

Package printing will be a core subject at Labelexpo Europe as the show prepares to return to Brussels this autumn. Set to be the biggest ever edition in its 35 year history, Labelexpo Europe 2015's show floor and feature areas will firmly put the spotlight on the lucrative commercial opportunities package print production offers.

Taking place at Brussels Expo in Belgium from 29 September to 2 October, the show is aimed at trade professionals including label and package printers, brand owners and designers. Visitors to the show will be able to see and source the latest label and package printing solutions from over 600 exhibitors.

EXHIBITORS OUT IN FORCE

Leading industry suppliers will be there in force with exhibitor highlights including Soma Engineering showing a working press for the first time. Soma will display its mid web Optima CI press platform to present a completely new concept in flexographic printing presses to the label and package printing industry. More commonly perceived as a wide web press manufacturer, Soma has developed the Optima as a mid-web CI press optimized to run label stock paper and film packaging materials, and to bridge the gap between narrow and wide web printing for products such as shrink sleeves, retort stand-up pouches and sachets, in-mold and wraparound labels, as well as paper sacks, cups and plates.

Soma's Optima will be running live job demonstrations throughout the show. The press being displayed will be equipped with eight printing stations and will feature fast web changeover, intelligent impression adjustment to reduce start-up waste and Soma's new, award-winning print cartridge system for spot colors, which offers printers a means of significantly reducing ink costs on printing jobs where expensive colors, special effect and metallic ink formulations are required.

NEW TECHNOLOGIES

In addition, the award winning REVO team – consisting of Nuova Gidue, Flint Group, Apex International, AVT, DuPont, Esko, UPM Raflatac and packaging converter Adare Group – will bring new technology to Labelexpo Europe demonstrating how low migration UV flexo inks can be used to convert flexible packaging. Currently, most food-grade flexible packaging is printed with either solvent or water-based flexo inks or with solvent gravure. UV has been considered problematic because the photoinitiators can migrate if not fully cured. The REVO team claims to have developed a technology to guarantee that every meter of film within a roll has been fully cured, and that brand colors are consistently matched by a seven-color process ink set.

Covering an unprecedented eight halls, Labelexpo Europe will also host an array of educational feature areas. The Packprint Workshop will give practical insight into how

Continued over

DIGITAL PRINTING, FROM ROLL TO FINISHED DIE-CUT LABEL

Gallus is using Labelexpo to showcase its DCS 340, the RCS 340, the ECS 340 and its new Screeny A-Line. These products are complemented by the new self-adhesive Twinlock Sleeve that makes it possible to install printing plates time and time again without any need for double-sided adhesive tape. Dirt can be removed from the sleeve with a simple cleaning technique to reactivate its self-adhesive properties.

The DCS 340 has an ink-jet printing module integrated into a Gallus machine platform to combine digital printing technology with conventional printing and further processing technology. This new machine system – developed as a joint venture between Heidelberg and Fujifilm – results in quality, short-run production efficiency and scope for customisation. A native resolution of 1200dpi delivers print quality that is unmatched in UV inkjet printing today. By combining the strengths of digital printing with an inline finishing process that has been specially optimised for digital printing, the Gallus DCS 340 gives users the chance to varnish, embellish and further process labels inline in a single production operation.

The DCS 340 has an ink-jet printing module integrated into a Gallus machine platform

The success of the Gallus RCS is based on its combination of modular design, outstanding process flexibility and high level of automation. Thanks to maximum, end-to-end automation, the extremely short job change-over times and minimum paper waste deliver optimum operational cost-efficiency.

The Gallus ECS 340 has been a top-selling label printing machine with a short web path, helping converters to increase productivity and cut costs. Installing the new high-performance matrix stripper gives the Gallus ECS 340 an additional feature that further boosts this machine's productivity and cost-efficiency.

The main feature of the new Screeny A-Line is its exceptional robustness, which is particularly advantageous when handling screen-printing plates both inside and outside the press and is ideal for maximising the number of times plates can be re-used. This higher re-utilisation rate is said to be the quickest way to cut costs per screen-printed label.

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DECORATION TECHNOLOGIES

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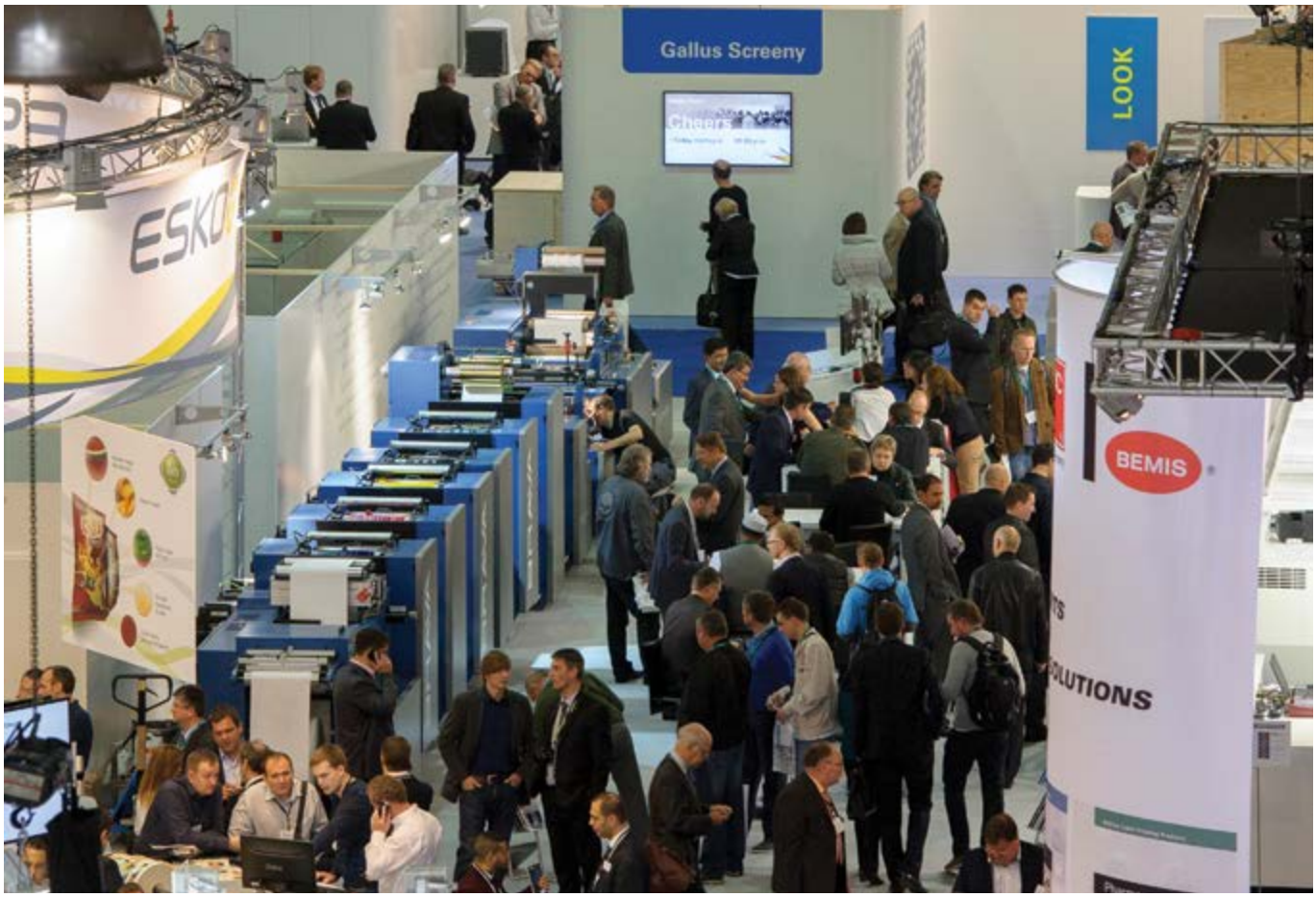

A busy hall at Labelexpo

printers can diversify and grow their business with press demonstrations by Xeikon using its 3500 for digital folding cartons and Nilpeter showing its FA* flexo press for flexible packaging capabilities.

The Smart Packaging Lab will focus on opportunities in intelligent and active packaging, while the inaugural Packaging Design Studio will give show-goers a chance to network with some of the industry's leading creative designers.

HP Indigo and partners will present their package printing solutions with the return of

TAILOR-MADE PACKAGING INKS

Marabu is showcasing its tailor-made screen- and digital printing inks for packaging decoration. Its advanced label and direct printing solutions for the cosmetic, food, and pharmaceutical industry, including its well-established ink series for rotary and flat-bed screen-printing which include 3D metallic effects and digitally printed metallic shades with the new Mara Jet DI-SX Plug&Print ink-jet formulation for the Eco-Sol Max 2 generation of Roland printers.

Marabu's Ultra Pack LEDC LED-curable screen-printing ink

Additionally, Marabu's Ultra RotaScreen UVRS has been developed for all common rotary label printing machines, and is suitable for combination printing with UV letterpress and UV offset.

Ultra Pack UVC features brilliant, high-gloss colour shades that adhere well on pre-treated PE/PP, rigid PVC, PETG and PETA, PC as well as PS. This ink series is highly reactive and ideal for roll-to-roll labels on flatbed screen printing machines. Ultra Star-M UVSM features matt colour shades for flat-bed label printing, and is suitable for printing onto various substrates such as PVC, pre-treated self-adhesive PE and PP films, polyester films, polystyrene, polycarbonate, rigid PVC, paper, and cardboard.

An extremely high ink deposit with sharp-edged definition is the main criteria for Marabu's Braille varnish, essential for clear and unmistakable product marking. The very high ink deposit with constant ink film thickness of the company's UVLB 1 and 2 produces good tactile results. UVLB 1 is suitable especially for rotary screen-printing with stencils from Gallus and StorkScreens, while UVLB 2 is a universal Braille varnish for flat-bed screen-printing machines.

The new Ultra Pack LEDC is an LED-curable screen-printing ink which is suitable for container printing and flat-bed label applications. The good opacity works especially for full area prints or text.

With low-migration UV-curable inks required for the decoration of food packaging, Marabu will meet legal requirements with its packaging inks and is presenting a new ink system at Labelexpo.

the Print Your Future feature area. Visitors will be able to see a wide range of applications, including flexible packaging, shrink sleeves and labels alongside new advanced color management tools and inks. Both the HP Indigo 20000 and WS6800 Digital Presses will be on display.

PACKAGE PRINTING CENTRAL TO LABEL COMMUNITY

Lisa Milburn, managing director of the Labelexpo Global Series explains: "Package printing is now central to the label printing community and Labelexpo experience. With 53% of our total exhibitors showing products for flexible packaging and 32% featuring products for folding cartons, Labelexpo Europe offers all printers the most extensive showcase of package printing solutions available. Nowhere else will print industry professionals find such a comprehensive range of suppliers and technologies which will help gear up their business, improve profitability and add value for their customers."

An early bird discount rate is available until 18 September with entry to the show costing €55. ■

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

FROM CONCEPT TO CONSUMER

Focusing on the theme 'From Concept to Consumer', Sun Chemical will demonstrate its commitment to innovation as a global solutions provider by taking visitors to its stand on a journey through its full-capability product portfolio. This spans the entire packaging and labelling work-flow, from initial package design concept to pre-press, coatings, inks and consumables, brand integrity and compliant packaging solutions, through conversion and beyond to final point-of-sale.

On show for the first time at Labelexpo 2015 will be a new, fully compliant SolarFlex UV Flexo opaque white ink for food packaging applications. Also making an introduction will be Polare, a new innovative, versatile and cost effective ink dispenser range designed to optimise the dispensing of lower volume spot inks. Sun Chemical will also be showcasing a host of specialist ink-jet inks, its latest capabilities in UV LED curing, special effects and coatings, an extensive range of brand protection and colour management solutions as well as its offering for late stage differentiation.

For food and pharmaceutical packaging applications SolarFlex UV Flexo opaque white ink represents an extension to the successful SolarFlex Neutron White ink launched at Labelexpo in 2013. This latest addition offers excellent adhesion to a wide range of substrates. Sun Chemical will also introduce Polare, its new ink dispenser for the label and narrow web market. Developed in partnership with Inkmaker to meet the requirements for lower volume consumption, this compact dispensing solution has 20 print-heads configured for both low and high viscosity inks, which has been designed to deliver the exact amount of ink required, minimising waste and maximising overall production output.

Sun Chemical's digital inkjet division, SunJet, will be on the stand highlighting its latest capabilities and expertise in UV curing inks which provide optimum image quality and reliability on a wide range of substrates. Central to the Sun Chemical offering at Labelexpo 2015 will be its wide selection of anti-counterfeiting solutions, including its array of covert and overt inks, SunShift, SunGuard and SunLock, offering brand owners and label producers enhanced product security.

DCP2015

Direct Container Print 2015

23-24 November 2015
Düsseldorf, Germany

www.DCP2015.org

If you are a printer, manufacturer, brand owner or supplier involved with direct printing of plastic containers, bottles, tubes, pots, tubs or closures for healthcare, beauty, personal care, industrial, domestic, food or automotive fluid applications and want to stay ahead with best practices and the latest technology for decoration, you should not miss Direct Container Print 2015.

The conference and table top exhibition will appeal to brand owners, packaging manufacturers, direct container printers and associated suppliers, with indepth technical presentations from the leading suppliers to the industry, supported by table top exhibits and numerous networking opportunities. The technical presentations will encompass many of the current challenges and new technologies within the sector, including low migration, digital printing, high value packaging, special effects, brand protection and more.

To confirm your interest and check for updates on the latest presentation titles and exhibitors, visit the website at

www.DCP2015.org

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For more details visit our website www.DCP2015.org

TWO DAY FABRIC CONFERENCE PLANNED FOR HUDDERSFIELD

Analogue and digital processes take their own stage

Following the success of last year's Screen Printing Now conference, FESPA UK Association is to provide a similar opportunity for those involved in the world of fabric printing. Fabric Printing Now will be staged over two days in October at the Textile Centre of Excellence in Huddersfield, and will be a thought-leadership event for anyone involved in, or who has a need to understand the opportunities presented by, printing and coating onto a wide range of fabrics.

The event on 7 and 8 October will examine the full range of fabric printing, coating and surface modification techniques, both analogue and digital. The aim is to introduce concepts that delegates may not have previously considered, and to inspire them into new business-enhancing initiatives.

Each day will consist of presentations by industry-leading experts, practical demonstrations, a table-top exhibition and networking opportunities. It is the only event targeted at the development of fabric printing in the UK and Europe during 2015.

Supported by FESPA, the conference represents part of its Profit-for-Purpose programme – in which profits are re-invested into supporting the print community.

Comments FESPA UK Association's Peter Kiddell: "Originally we had planned to include a day dedicated to fabric printing at the Screen Printing Now conference last year, but it quickly became apparent that we would not be able to do justice to this rapidly developing sector, in a single day. We therefore took the decision to stage a completely separate event, dedicated to fabric printing and coating.

"Initial interest in the event, from sponsors, exhibitors and delegates, would seem to justify the decision and we are looking forward to a fantastic two days showcasing world-leading developments in fabric printing innovation." ■

Peter Kiddell at last year's successful Screen Printing Now conference

Further information:
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AN INDUSTRY OF OPTIMISM AND GROWTH

Sean Holt identifies six key trends shaping wide-format

Sean Holt

After almost a year gathering responses from all six continents, at FESPA 2015 (Cologne) in May, we announced the findings of our FESPA Print Census. This is the most far-reaching global industry survey ever conducted by FESPA, was launched in 2014 to provide the global print industry with a picture of the current state of play and global trends.

Since its launch the survey has journeyed to FESPA events in Germany, Italy, Mexico, Brazil, Spain, Scandinavia, South Africa, Turkey and China to ensure the data gathered paints a truly global picture.

Out of the 1200 respondents, 50% were from the Americas, 42% from Europe and 8% from the Asia Pacific region. Participants represented the full spectrum of print businesses including screen- and digital printers, commercial printers, reprographic shops, sign-makers, graphic designers and advertising agencies.

The FESPA Print Census results expose six overarching trends that are shaping wide format print.

OPTIMISM CONFIDENCE SWELLS ON BACK OF REVENUE GROWTH

The key trend that shone through is one of optimism, with 80% of respondents stating they are either very or fairly optimistic for their business. This figure exceeds their overall optimism for the industry by 14%, an indication that printers feel more confident in their own business than the industry's ability to evolve. That confidence is founded on financial performance, with actual revenues on a definite upward trajectory.

CUSTOMER DEMANDS – PRINT IS A SERVICE INDUSTRY

A trend which might not come as a surprise is the change of the print industry from manufacturing to service. Although manufacturing economics are still key for the global print community, the real driver of change is the customer and their evolving needs and expectations.

It's these customer demands that are driving continued efforts to improve efficiency, enable faster job turnaround, just-in-time delivery, delivery to the point of need and versioning and personalisation.

At least 70% of respondents expect these key customer trends to increase or stay the same, reinforcing the idea that today's print businesses are now customer-service driven.

Diversifying into new applications to appeal to new markets was rated as very important by respondents and is something that FESPA proactively drives through educational content and knowledge sharing initiatives, such as the Printeriors feature at this year's FESPA Global Expo.

A CHANGING PRODUCT MIX – FROM MASS PRODUCTION TO MASS CUSTOMISATION

The FESPA Print Census underlines the continued shift away from commodity, high volume production, towards more customised products which enable PSPs to occupy more specialist niches and command better margins while increasing customer loyalty.

While top applications being produced, remain fairly traditional: banners (49%), posters (40%), signs (38%) and billboards (37%), we can see a dramatic growth in textiles for garments, textile for décor and packaging samples, with close to 80% of respondents reporting an increase in demand for these applications.

Respondents also reported an increase in the adoption of digital production for many of these applications, with garments, decals and printed electronics most frequently predicted to migrate to digital in the future.

DIGITAL TECHNOLOGY IS THE CHANGE ENABLER

It's clear that respondents – despite the prevalence in our global survey sample of businesses still defining themselves as screen printers – are continuing to migrate towards digital processes in response to the changing dynamics, and that digital technology remains a key change enabler ten years after we launched FESPA Digital to reflect this shift.

Over half of all respondents indicated their intention to buy digital wide format printing equipment, with a mean spending plan of close to $112,000.

These purchasing plans are dominated by UV-curable printers, textile printers, solvent printers, eco-solvent printers and latex printers. This was also reflected by the trends in ink usage, with UV-curable, eco-solvent, dye sublimation and latex leading the list.

While economical motives for capital expenditure are not going away, printers are showing more strategic thinking in their investment plans, as the majority of those investing stated that they are motivated by the move into new markets with new products or services.

TEXTILE PRINT GROWTH IN GRAPHICS, GARMENT, DECOR AND INDUSTRIAL MARKETS

As identified earlier, the FESPA Print Census highlighted that textile is a dominant growth application. 81% of respondents see growth in textile, and once again digital is a key enabler here as over half of respondents expect digitally produced garments to become an important alternative to traditional screen-printing in the next two years.

Textile printers also feature prominently among investment plans, with 21% of respondents specifically focussing spend in this area, supported by 12% planning to acquire thermal transfer equipment.

THE FUTURE OF SIGN AND DISPLAY PRINTING IS INTEGRATED WITH DIGITAL MEDIA

The final trend to surface is the degree to which respondents report a real or expected impact on their business from digital display.

More than 75% of respondents expect live media and LCD screen advertising to impact the wide-format business in the foreseeable future. 36% of respondents state that these technologies are already impacting the business and 31% 'plan to offer digital signage solutions' to their customer base in the next 12 months.

We're reflecting this through the educational content at our Signage Expos in Europe and Brazil, and will continue to help printers understand the implications of these technologies.

TO THE FUTURE

The FESPA Print Census paints a clear picture of an energised community in which business leaders have a clear and positive vision for the future. Printers across the globe are responding to clients' changing needs and diversifying their product portfolio accordingly. This research, funded through FESPA's unique Profit for Purpose industry reinvestment programme provides terrific insight into the markets that are important to FESPA members and the industry. The findings will help our members to make informed business decisions while also influencing the continuous development and improvement of our events, educational initiatives and member services. ■

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FINDING THE KEY TO SUCCESS

A return to Shanghai brings host of top global and local print manufacturers

FESPA says that the third iteration of FESPA China will take place from 21 to 23 October 2015 at the Shanghai New International Expo Centre. Using the event theme 'Find your key to success', FESPA China 2015 will provide visitors with the inspiration and skills to unlock their business potential through the latest industry launches, product innovation and content led features.

Managed in partnership with CSGIA (China Screen Printing and Graphic Imaging Association), FESPA China 2015 currently expects to fill more than 12,000 square m of floor space – an increase of 13% since the last event in Shanghai in 2013. The event's annual cycle sees it alternate between venues in Shanghai and Guangzhou, enabling FESPA to engage with a broad cross-section of the Chinese market and attract a high number of international exhibitors and visitors.

Global exhibitors already confirmed for this year's event include Kornit, Siser, Dgen, Mimaki, Keundo, Asialink (for Anajet) and Synnex (for Roland). Local participants include Denishi Denbishi Fine Chemical, Ever-Bright Printing Machine, Shenyang Shicheng Printing Machinery, Dongguan and Suzhou Yihui Printing Machinery Factory, Invision Printing Materials, Rugao Tianyuan Garment Printing and Caiyun Printing Supplier.

WIDE-SPREAD VISITOR DELEGATIONS

More than 9,500 visitors from 77 countries attended the inaugural FESPA China 2013 exhibition. In 2014, attendance grew to 15,166 from 91 countries, cementing FESPA China's position as a regional event. After mainland China, the largest visitor delegations were from India, Japan, Korea and Malaysia, with printers also travelling from Hong Kong and Taiwan as well as Australasia, Europe, USA, Africa and South America.

Roz McGuinness, FESPA Divisional Director comments: "We are delighted to be returning to Shanghai for the third iteration of FESPA China. Our launch event in Shanghai in 2013 was met with a fantastic response, and we developed the event further last year in Guangzhou. We're looking forward to building on this success for a bigger and more comprehensive event in 2015. With the number of international exhibitors in attendance, it's clear that FESPA is defining its market position as a key regional event for the major brands." ■

Charlie's Corner has become a regular FESPA feature, hosted by Charlie Taublieb

Visitors discuss technologies at FESPA China 2013

FESPA China 2013's 'Future for Print' conference

Further information:
FESPA China 2015
web: en.csgiashow.org

CHANGING THE PRINT INDUSTRY BOUNDARIES

Michael E Robertson focuses on single-pass ink-jet

Michael E Robertson

The SGIA community – through its focus on wide-format imaging – has become a primary proving ground for ink-jet technology. Our community's imaging needs, which are relatively slow compared to commercial lithographic needs, proved to be a very friendly environment for an emerging technology working through the early stages of refinement – ink-jet. The community's support of ink-jet technology has been a benefit to graphic producers, and has offered environment manufacturers the time and demand required to justify the R&D to take ink-jet to the next level.

Recent developments in ink-jet technology indicate an even brighter future for the technology. The next wave of ink-jet development will bring higher speed, single-pass capabilities to the forefront. Ink-jet will be in direct competition with lithography and other traditional imaging processes where long runs require high-speed printing. The move from lithography to single-pass ink-jet will further blur the lines between the various sectors of the printing industry.

LITHO ADDS WIDE-FORMAT

At SGIA, we're seeing an increase in membership and SGIA Expo attendance as commercial lithographers add wide-format imaging capabilities to their businesses. Lithographers represent our fastest growing attendee segment, and many tell us that they are using their SGIA involvement to advance their learning curve regarding ink-jet, while gaining much-needed access to the manufacturers providing the technology.

It is important to understand and consider the changes we can expect single-pass ink-jet to bring to the competitive speciality imaging market-place in the near future. For starters, large-format graphics producers supporting the retail sector should prepare themselves for increased competition as commercial printers begin to integrate and employ ink-jet technology. Over the past several years, we've seen the delineation that defined the difference between the various printing sectors blur. Looking forward, as ink-jet reaches farther into the printing community, the delineation between the large-format imaging sector and the commercial printing sector will all but disappear. The key to success will be customer support and maximising value for the retail sector. The old adage "whoever has the customer, wins," will be truer than ever.

DECIDING FACTORS

In addition, in talking with many of the leading graphics producers in the US, it's clear that technology and capability are no longer the deciding factor in the bidding process that they once were. In fact, for many customers, the deciding factor is frequently not imaging at all, but fulfilment, design or some other imperative support function. As the competitive landscape changes with the expansion of ink-jet technology, large-format graphic producers need to hone their value proposition and invest the time and energy to fully understand the customer's needs.

At the SGIA Expo, you can see the latest technology and interact directly with manufacturers about future developments. In addition, there is a great deal published about the current and projected capabilities of single-pass or full-array ink-jet in the Association's publications and website.

One thing is for sure… the competitive mix will continue to change. For our community, anticipating this change means maximising efficiencies through automation, and continually monitoring the effects of high-speed ink-jet on the market-place in order to adjust technology when appropriate, and maintain best practices for the customer base.

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

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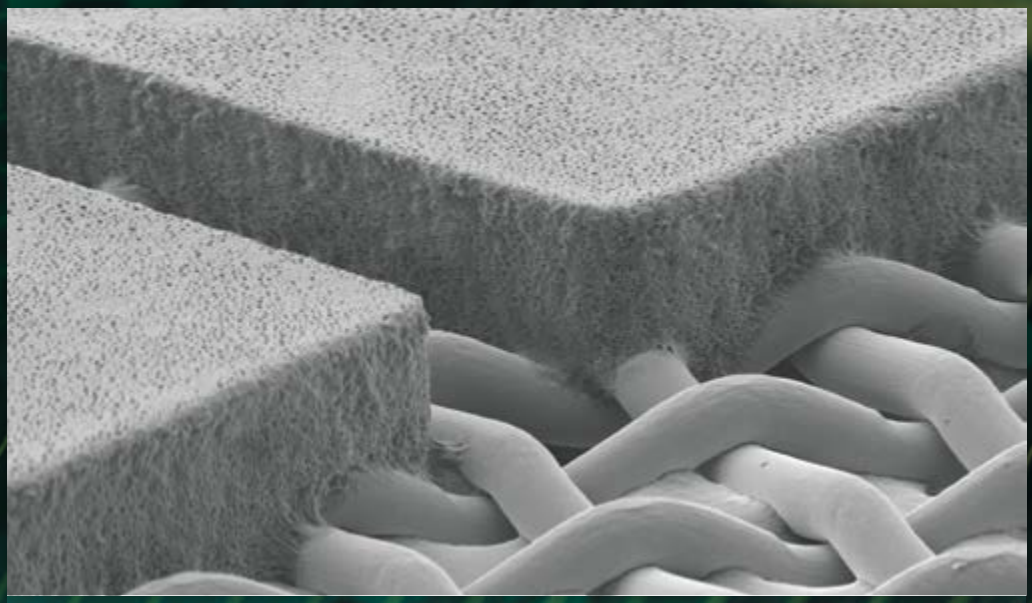

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