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REMEMBERING SOPHIE MATTHEWS-PAUL

Sophie Matthews-Paul, the veteran print technology and communications consultant, died at her home in Herefordshire, UK last November. Diagnosed with an aggressive cancer in January 2017 and given a six-month prognosis, Sophie enjoyed a peaceful departure, in the presence of her son, James, and her three cats. She was 68 years old.

The curriculum vitae of Sophie Matthews-Paul reads like a register of the printing industry's largest and most specialised organisations. Originally a journalist and editor of a number of trade publications, Sophie launched *Screen and Digital Printer* in the 1990s before contributing to a number of other titles, from *PrintWeek* to *Output*, *Image* (Australia) to *Large Format* (Germany). From 2010, she worked with Chameleon Business Media as Editorial Consultant to *Specialist Printing Worldwide*.

Over the last three decades she acquired a wealth of knowledge about the digitisation of the industry, becoming an instrumental influencer in the evolution of digital inkjet's role within the fields of wide-format, textile and industrial print. A renowned international speaker, Sophie was also a mentor to many, both officially and unofficially. Alongside this eminent career, Sophie's diverse passions included photography, aviation and chicken-keeping.

"Sophie's extraordinary charm and intellect left an indelible mark on the lives, careers and hearts of everyone she knew," says James Matthews-Paul. "A potent and effusive life force has gone from the world, but I know she would want each of her friends and colleagues to remember her inimitable spirit with a smile."

"For the past eight years, Sophie was an integral part of the *Specialist Printing Worldwide* team and her unique attributes contributed immensely to our progress during that period," added Dave Fordham of Chameleon Business Media. "We are very proud that she regularly expressed her fondness for both the magazine and her colleagues. Personally and professionally, we miss her greatly".

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A FRESH START

Alex Mammoser looks at the best ways to clean and maintain screens

I have made a living helping people in their screen rooms. It is all too often I walk into a shop and the most neglected area is where they process the screens. People so easily forget that we are screen printers and once the art is done we have the most important job in the shop: make a quality screen.

The first step is finding a good clean screen to burn your stencil with, either on your CTS unit or with film. But for this process to start to with a clean screen it needs to finish just as clean.

Cleaning screens is never anyone's favourite job and is often given to the newest employee as a rite of passage. But having your screen tech properly trained on how to clean a screen and what to look for/do when one is wrongly processed is a skilled job. Many times, the issues we see from burning or wash out has to do with the mesh still being dirty when it leaves the reclaim area. In order to prevent this from happening there are many of variables, but if we reduce these to a crucial few we can eliminate 90% of the issues.

SEPARATION

Keep your reclaim wash out and stencil development to different booths. Having two wash booths is beneficial to keeping chemistry away from clean mesh/stencils. A wash booth that is dirty and has chemistry on the walls will have a tendency to splash back onto the screens causing pre-mature breakdown and unwanted hardening of the screen. This is because the same chemistry that is used to reclaim screens can also harden them if left to dry on the emulsion.

If you hear your chemical rep talking about a flood rinse at the end of the reclaim process, this has two purposes. The first is to check the mesh for any imperfections left; if the water is not sheeting down the mesh like

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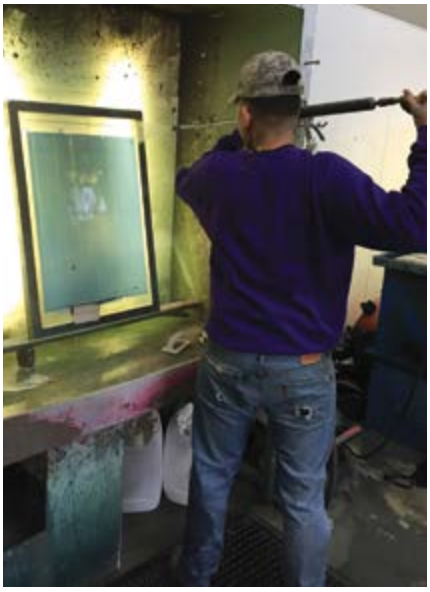

Separate wash booth for chemistry

Flood rinsing the screen (often skipped/missed step)

FOCUSING ON THE PRINTING SCREEN

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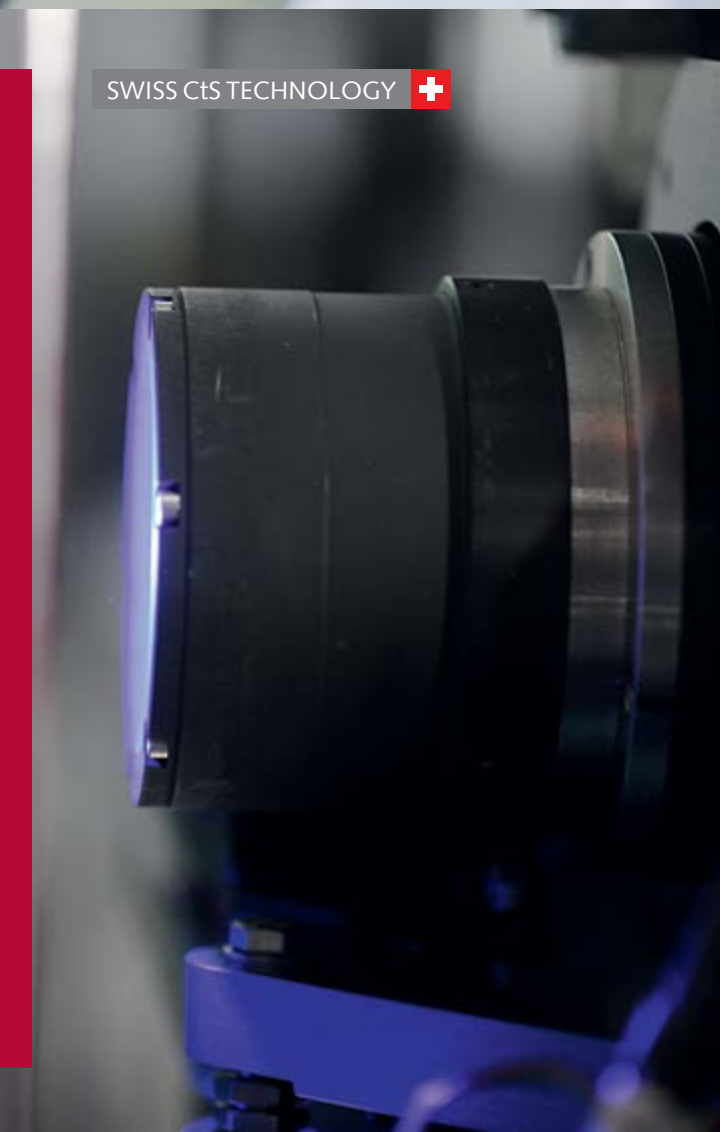

DIGITAL CtS DIRECT EXPOSURE BROUGHT TO PERFECTION

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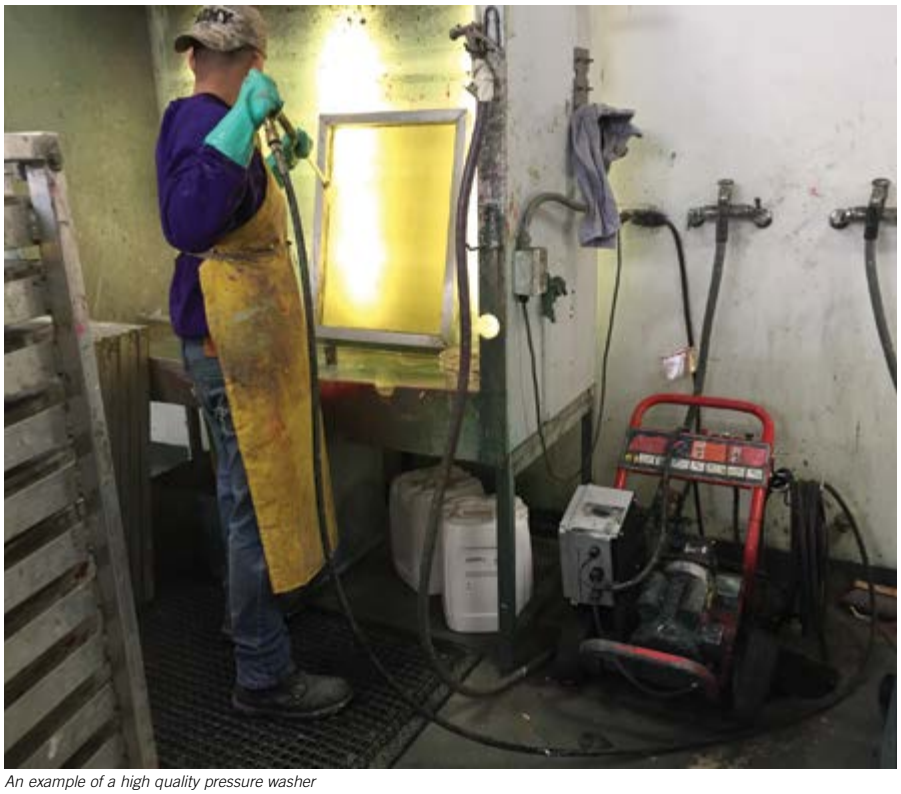
Separate area for reclaim from development

waves on a lake there is likely something left in the knuckles or on the surface that needs to be removed before drying. The second reason to flood rinse is to wash off any of the chemistry that has blown around the wash booth and landed on the screen after you're finished with the dehaze/degrease process. The flood rinse will allow any remaining chemistry to slowly wash off the screen and not re-introduce any new issues.

PRESSURE

I hear so often that high pressure will break or wreck mesh. While this may have been true years ago today's mesh technology has come a long way, and is able to stand up to the pressure. Investing in a $200 [£150] pressure washer is okay for washing our stencils or just getting started, but if you really want to clean the knuckles of the mesh properly and quickly you need high pressure.



An example of a high quality pressure washer

Pin holes and poor development come from left over debris in the mesh. Not being able to completely clean the knuckles will also lead to poor ink flow and cause you to use too much pressure or have to double stroke on press. Investing in a $1500–2000 [£1120–£1490] pressure washer may seem daunting at first, but the benefits far outweigh the initial cost. The pumps are almost always rebuildable and are built to last and the speed at which you can clean your screens, with the higher pressure will leave time on your side at the end of the day.

CORRECT CHEMICALS

Chemistry not originally intended for use in this industry or poorly designed chemistry is the root of many issues. While turpentine, mineral spirits and other hardware store cleaners will remove ink, it usually comes at a much higher cost than anticipated. Employees will soak rags with the chemistry, wipe up as much as they can and then toss the remainder into the bin. Not only is this a waste of chemistry ($$$) but one product may leave an oily residue and the other may make reclaiming very difficult.

Almost all local ink suppliers will have something available that will work better than the hardware store products. But we can do better than that. Look for chemistry that is re-usable; companies will make re-circulation systems that house chemistry that will sediment out ink and separate into two layers with a little time. You can reuse the clean chemical, and you will also have less waste going into the bin. For the reclaim process consider dip tanks. A dip tank is a great way to save money on both ink degradant and emulsion remover. By combining this process, you will eliminate the need to use an ink degradant first (saving on cost) and shortening the time to process screens. After reclaim you will usually be left with a stain/haze. Trying to find chemistry that is non-caustic and non-abrasive to remove your stains/haze is difficult. The easiest products to locate, i.e. caustics, are not great for the health, but work well, and abrasives are not great for your mesh life but work as well.

There is chemistry available though that can remove stains/haze and degrease your screens all at once, again a combination of chemicals reducing cost by eliminating a process and shortening your time to finish will make any owner happy. ■

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GREAT EXPECTATIONS

Navin Jeewanlall looks at what is necessary to guarantee accurate and consistent colour reproduction in digital printing

We will delve into a white paper written by Tanja Polegubic during an internship with Barbieri Electronic as a research component to the Master in Color Design and Technology (1st edition) from the Politecnico di Milano, Italy.

What is process control in digital printing? It is a series of actions which ensure output meets expectation by managing variables which can impact production. The main objective is to ensure accurate and consistent colour reproduction by creating a tailored solution for each printer and media combination.

The FOGRA Process Standard Digital2 (PSD) is an evolving set of guidelines used to evaluate colour in digital print production. Its three objectives are: 1. Output process control to achieve repeatable results. 2. Evaluating colour fidelity using a media relative method. 3. PDF/-X compliant workflows.

CHALLENGES IN DIGITAL PRINTING

Digital printing professionals must ensure colours are accurately reproduced. As technologies evolve and demands change, digital print volumes are increasing and extending into textile, ceramic, glass, laminate and automotive applications among others. Printers will increasingly need to cater to a range of different media, evolving imaging technologies and inks.

Without a cost effective process control, businesses can be impacted by:

- Production downtime.
- Wasted ink and media.
- Shipping, application and removal costs.
- Damaged client relations and reputation.
- Lost revenue and missed opportunities through lack of competitiveness.

On a day to day basis, changes to printer conditions can go undetected, occurring if there is any change to temperature and humidity, media and ink.

STANDARD PRINTING WORKFLOW

The workflow for printer configuration involves selecting a printer configuration and material combination. Calibration and profiling is then performed. The verification process analyses if printing conditions have changed. Measurements are then made on a control strip, generating a quality report and enabling evaluation over time and in multiple locations.

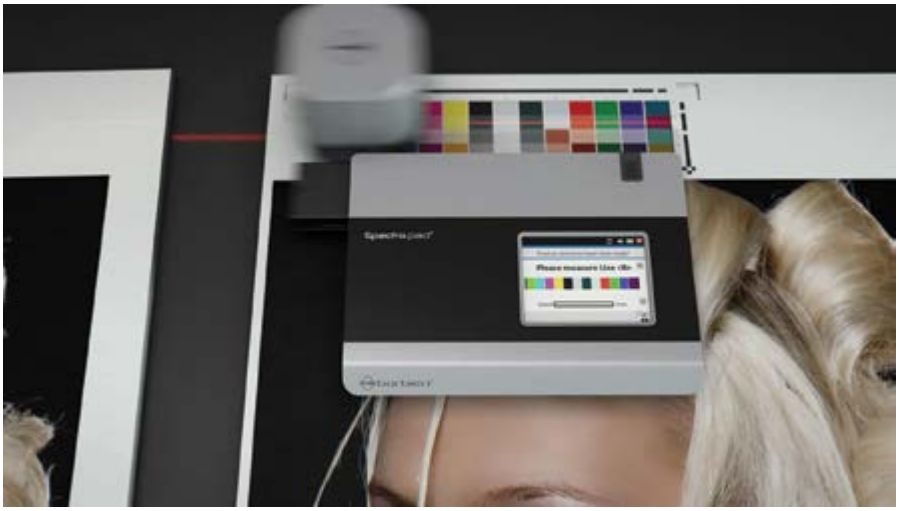
BENEFITS OF PROCESS CONTROL

Improving process control has a range of benefits in digital print production.

- Assesses print conditions daily, before

Spectropad, the Barbieri Process Control device

Colour Accuracy against standards



DOC Control Strip with Spectropad

production starts.
- Eliminates the need to cut large format media (using a portable device).
- Processes measurements on the spot (using a portable device).
- Enables production to be monitored over time and in multiple locations.
- Uses a benchmark, or initial reference file, to determine printing conditions.

BARBIERI DOC PROCESS CONTROL SOLUTION

The Barbieri DOC Process Control Solution provides an instant pass/fail report, analysing if printing conditions have changed before production starts, saving time, ink and media. It addresses the shortcomings of current practice in process control.

POINT OF REFERENCE

A basic requirement for colour measurement is a reference file. This uses the defined printer/media combination to match measurements made on a control strip. Reference printing conditions use a characterisation data set to match CMYK data to the printed output. This characterisation data set is based on the required measurement mode (e.g. M0, M1 or M2) and measuring conditions such as illumination (e.g. D50), media backing and observation angle (e.g. two degrees).

THE CONTROL STRIP

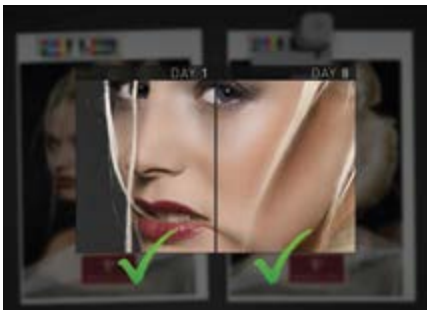
Barbieri DOC operates with an industry compliant, proprietary control strip. It also supports the FOGRA wedge, IDEAlliance and custom strips. The control strip is a set of patches which meet ISO requirements. The ISO standard recommends a 48 patch minimum, including solid process primary and secondary colours, their mid and shadow tones and greys.

Digital wide and large format, flatbed and industrial printing professionals require a cost effective process control solution to achieve accurate and consistent colour. This is especially important given the current and forecast growth of the digital printing industry.

As innovations and production techniques evolve, the guidelines for process control for digital printing also evolve. Outdated practices and limited technologies impact production and revenue by causing printer downtime and wastage. Unseen factors unnecessarily impact production.

The Barbieri DOC Process Control Solution is cost effective and easy to use. It offers flexibility with media types and evaluation methods, customisation and instant results. ■

Navin Jeewanlall is a Software – Sales, Training, Workflow and Colour Management Consultant at Colorflo, a division of Midcomp



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PICK OF THE PLASTICS

Stefan Bruch details the types of film used in inkjet printing and their applications

Using modern coatings almost all surfaces can be printed on using inkjet technology; this article introduces the different types of film and their properties.

We often come across the abbreviations PE, PP, PVC, PET, A-PET and PC but what do they mean, what advantages and disadvantages do these plastics offer, and what applications are they suitable for? With this information, you will be able to find the right film to meet your requirements.

POLYETHYLENE (PE)

In undyed form PE is dull, milky and matt. It has a wax-like feel to it and can be scratched with a fingernail. Its applicability is limited because it starts to soften at 80°C and melts at approximately 105°C, which can be reached when exposed to strong sunlight. It also suffers from low ink adhesion, restricting its suitability for printing. But PE is used for inkjet applications in the form of a spun-bond fleece (Tyvek). Users take advantage of its high elasticity and climatic stability at temperatures of between -85 and +90°C. The film is also very resistant to acids, oils, brine and alcohol. In photo papers, PE is used to coat both sides of the base paper. In inkjet printing it is used as a barrier to prevent inks from penetrating into the paper and causing cockling.

POLYPROPYLENE (PP)

Similar to PE, PP is odourless, kind on the skin and physiologically harmless. As a film, PP is stiffer, harder and firmer than PE and plasticised PVC, especially when the film is drawn in both directions during the production process. PP film is usually made into white films with filler materials: with appropriate coatings, they can then be used for various indoor and outdoor applications, such as for banners, in the POS sector, as a self-adhesive alternative and as a vinyl film substitute for signs, information boards and vehicle advertising. In undyed form, it can also be used as a transparent product for short-term light box advertising. Like PE, however, the PP film tolerates a maximum of 110°C and, in contrast to PE films, soon becomes brittle at low temperatures.

Application	Type(s) of film
Roll-up displays	PET PP Rigid PVC
Pop-up displays	PET Rigid PVC
Films	PET PP
Self-adhesive films	PP Plasticised PVC (calendered and monomer plasticised)
Reprographic films for screen print and pre press preparation	PET
Lightbox advertising	PET
Window advertising	PET

Table 1: Typical applications for different plastic films

POLYVINYL CHLORIDE (PVC)

PVC is the most widely used plastic used in printing. Without the addition of plasticisers, it is hard and brittle. When plasticisers, stabilisers and dyes are added, PVC films can be produced for a broad range of applications, for example as a flexible and stretchable self-adhesive film or as a banner material with an internal plastic fabric. PVC is resistant to seawater and atmospheric influences. It barely decomposes and is therefore largely ground water and environment-neutral when disposed of.

Because highly toxic dioxins can occur when the material is burnt at temperatures below 1200°C, a PVC substitute film is frequently called for. For certain applications a PP film can satisfy requirements.

Films made of plasticised PVC can be divided into three categories:

- Cast films are plasticised with polymers are cast into their final form during production. Because there is almost no shrinkage as a result of the casting process and only minimal brittleness thanks to the polymer plasticisers they can survive outdoors for up to 10 years.
- Calendered polymer-plasticised films are cast and then rolled out width wise and lengthwise. They have a tendency to shrink, but become brittle very slowly as a result of the polymer plasticisers and can be used outdoors for up to seven years.
- Calendered films made of PVC plasticised with monomers are also cast and rolled out width and lengthwise. Because monomer plasticisers emit gas after a while, these films can be used only for a maximum of five years outdoors. These films have a strong tendency to shrink.

Display films may be made from PET or rigid PVC

Window films and lightbox films typically use PET due to its dimensional stability

POLYETHYLENE TEREPHTHALATE (PET)

PET is a thermoplastic that can be drawn in both directions to between two and four times its original size during a special heat treatment, to produce films that are more rigid and dimensionally stable. PET films are available in transparent, opaque, white, glossy or matt form. They are resistant to high and low temperatures, to light, chemicals and moisture. Thanks to their tear strength, they are indestructible image carriers, e.g. as a bright white film with a block-out coating on the back for roll-up stands, reusable display walls, etc. The crystal clear types coated with a special light dispersing formulation are used, in particular, in lightboxes because they do not become wavy despite fluctuations in temperature and humidity, unlike polyethylene films. They can even be used in office copying machines and laser printers. PET films with an adhesion-promoting pre-treatment (readily bondable) surface can also be printed with UV inks.

Whenever firmness and dimensional stability are required, PET films are always the first choice. The production process, however, is considerably more complex and costly than is the case for PE, PP and PVC films.

Roll-up films use PET, PP or PVC depending on the application

AMORPHOUS POLYESTER (A-PET)

A-PET is similar to the PP film, but is generally used only for packaging materials. It is less expensive to produce than pure polyester film.

POLYCARBONATES (PC)

Another clear, transparent plastic film, PC is used to make CD cases, for example. Like PET, PC is hard and dimensionally stable; it is also weldable and bondable. PC films are pigmented in almost all colours and come in all kinds of surface textures. They can be printed on and are used for identity cards and vehicle displays. PC films are generally more complex and therefore more expensive to produce compared to PET. ■

Stefan Bruch is Senior Product Manager, Innovation at Sihl

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POWER WASH

John Murray champions the underappreciated advantages of automated screen cleaning.

If you've expanded your operation lately, you're probably well aware of the many recent high-tech advances in screen printing: faster, more sophisticated presses – and at lower prices; direct-to-garment printing; LED exposure systems; advances in preregistration systems; and more. And even if haven't added any new equipment in the last decade, it would be hard to not notice the headlong drive to automate.

However, those are the more glamorous aspects of the business. In fact, screen making existed in a backwater until the advent of computer-to-screen imaging and exposure systems. At first, screen printers were hesitant to adopt the technology, but once the benefits became clear the rush was on.

Like screen making before it, screen cleaning continues to exist in that backwater, both figuratively and literally. There are clear and quantifiable advantages to automating those processes – as well as some not-so-obvious advantages – but many shop owners give little thought to this *out-of-sight, out-of-mind* aspect of screen printing.

The quality of your prints starts with the quality of your screens, and everyone who touches those screens plays a role in what you ship to your customers. The people who work with your screens play a role in the longevity of those screens, and screens treated with care last longer and perform better than screens that aren't.

And as computer-to-screen imaging and exposure systems – with their ability to quickly create new screens – become the norm rather than the exception, the tendency to hold and store imaged screens for future repeat jobs is likely to diminish. The upside is an operation that requires fewer screens, less storage space, and less labour spent storing and retrieving them. The potential downside is that the mesh on a screen will likely see more use over a given period of time. However, the issue of wear and tear can be significantly mitigated by careful screen cleaning and handling.

ADVANTAGES OF AUTOMATED SCREEN CLEANING

1. Automated processes reduce labour costs, which are typically cut in half – and the employee operating the machine can perform other tasks during the clean/rinse cycles.
2. Direct digital control of volume, pressure, and duration yields consistent results (manually-cleaned screens often require follow-up rinsing or scrubbing because of incomplete or inadequate processing due to operator fatigue, boredom, or inadequate training; processing can also vary from one operator to the next).
3. Reduced environmental impact and lower operating costs from recirculating screen-cleaning chemicals. That precise application of cleaning chemicals enhances the cleaning process and reduces overall chemical usage.
4. Reduction in water consumption from applying the precise amount of water necessary to clean screens; automated screen cleaning can reduce water consumption by as much as 50% (some systems reduce costs further by recycling water used in the wash cycle).
5. Balanced pressure and even application provided by simultaneous sprays from both sides of the screen clean consistently and help maintain screen tension and extend screen life.
6. Fully-enclosed screen cleaning chambers keep the area clean while minimising noise, humidity, and exposure to screen-cleaning chemicals.
7. User-programmed sequences can be called up for various screen-cleaning scenarios, enabling operators to quickly and consistently clean any type of screen, emulsion, or ink in one simple step.

M&R's Eco-Tex automates and simplifies the entire screen-cleaning process

SCREEN-CLEANING STEPS

There are four basic steps in the screen-cleaning process:

1. Ink removal
2. Emulsion removal
3. Removal of haze, strains, and ghost images
4. De-greasing

Only when all four of these steps have been performed successfully can a screen be considered clean.

AUTOMATED SCREEN-CLEANING PROCESS

Here's the typical process on one sophisticated screen cleaning machine:

1. At the start of the shift – or at the close of the previous shift – the operator makes any necessary adjustments to the machine's chemical balance (optimum chemical-to-water ratios are normally available from machine manufacturers and chemical suppliers).
2. The operator scrapes off bulk ink and removes any tape from the screens before loading one or – depending on machine

Continued over

Balanced pressure and even application provided by nozzles on both sides of the screen clean consistently and help maintain screen tension and extend screen life

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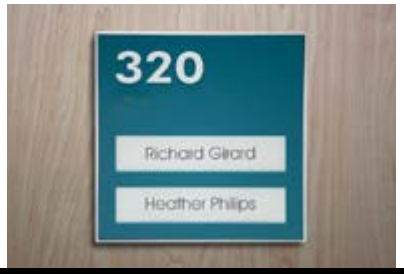

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M&R Companies' product manager, John Murray

capacity – two screens on the infeed rack. Then the operator initiates the cleaning process (at this point, the operator can continue removing bulk ink and tape from other screens or leave to perform other duties).

3. The machine sprays a solvent/water mixture under low pressure for 60 seconds. Then it allocates 60–100 seconds for the mixture to soak in and the remaining ink and chemical solution to drip into the catch basin from which it can be periodically removed. By this point, most of the ink will be gone.
4. Next is the application of clean water through opposing high-pressure nozzles. Duration varies according to emulsion type. The pressure removes the softened emulsion without stretching the screens (as is the case when scrubbing with screens with brushes or blasting water from one side with a handheld sprayer). The water/emulsion mixture is sent down a separate drain as graywater. Ideally, the system should have the ability to send emulsion straight to a graywater drain. Emulsion directed to a holding tank quickly turns into a sludge that can be extremely difficult and time consuming to remove. When considering a system that directs emulsion to a holding tank, the cost of the tank-cleaning procedure should be factored in to the overall costs and productivity of the screen-cleaning operation.
5. Air blowers remove water from the screens for 30 seconds before they're moved out of the cleaning chamber and treated with a chemical degreaser. The entire process typically takes less than five minutes, enabling a single operator to clean approximately 180 screens per eight-hour shift.

THINGS TO LOOK FOR

First, the screen-cleaning system needs to do a thorough job of reclaiming screens. If it can't remove ink, emulsion, haze, stains, ghosting, and grease quickly and completely, you might as well stick with the manual approach. At the same time, the machine needs to be gentle on screen mesh.

Eco-Rinse from M&R automates the process of rinsing exposed screens

In order to maintain efficiency and prolong chemistry life, it's beneficial to have a machine that features a programmable system for injecting a user-set dose of the solvent to maintain the cleaning solution at optimal strength. The user can program dosing based on the number of screens that have been washed or the number of days that have elapsed (data that is tracked by the more sophisticated screen-cleaning systems).

One of the underappreciated advantages of automated screen cleaning is the reduced chance of distorting mesh, not to mention the likelihood of blowing out screens entirely, so the high-pressure emulsion-removal cycle needs paired sets of nozzles that are directly opposite and which spray water at identical pressure and volume.

Stainless steel construction, particularly in the nozzles, holding tank, and cleaning chamber, help ensure long life and minimal maintenance. The machine should also be easy to operate and simple to maintain. Ideally, the operator interface should include the ability to adjust settings like time, pressure, and volume into individually-named programs that can be recalled for the cleaning of similar mesh/ink combinations without operators having to refer to cheat sheets or change settings from memory.

And since not all cleaning agents are created equal, the manufacturer should be prepared to recommend specific chemical cleaners and chemical-to-water ratios that have proven to be effective with the maker's screen-cleaning system. Although there may be some trial and error involved in fine tuning the chemical/water ratio and cleaning time to suit the needs of any given shop, operators shouldn't have to sort through all the available solvents to find one that produces excellent results under a variety of conditions.

The manufacturer should be able to provide per-screen water consumption and chemical costs, as well as the average number of screens that can be processed in an eight-hour shift.

It also pays to look for a manufacturer with a reputation for providing a high level of customer support – and for standing behind its equipment. In fact, there's an argument to be made that this should be the first thing to look for in any piece of equipment.

Finally, the decision to invest – or not – in an automated screen-cleaning system is one that has to be made by each operation based on available funds and its vision for the future. However, three things are clear: labour costs are not going down, customers are not going to start demanding lower quality, and automation will continue to be one of the best ways to succeed in a highly competitive world. ■

John Murray is Product Manager at M&R Companies

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CRYSTAL CLEAR

Pascal Thomas explores a new way to image flexo plates

Market demands driven by shorter print run lengths require flexo plates to be ready quickly and consistently so there is no press downtime waiting for plates. The flexo plate making process consists of many complex and manual steps that not only take time – they also offer ample opportunity for human error. Operators run the risk of damaging plates when moving from one processing step to the next, and by entering platemaking manual parameters erroneously.

There has been a considerable leap forward in flexo plate imaging technology. Imaging resolutions have increased and screening technologies have taken advantage to deliver lighter highlights and richer solids. The imaging process has been able to deliver improved image quality and details and greater productivity with much faster imaging speed than direct engraving.

Even with all these new advancements, production could be better. One area was the exposure frame. Traditional fluorescent tube exposure, the one platemaking step that was not truly digital, had inherent variation coming from tube age and quality, tube temperature, bed temperature, ballast configuration, and many other factors.

Plate makers had waste (in the plate room or press makereadies) associated with plates that were exposed inconsistently. They wanted to ensure any new purchase would be future proof. Plate rooms also wanted to reduce touch points.

Getting consistent light exposure throughout the plate from a frame is difficult to do. Bank lights are not consistent over their lives, degrading in output quality continuously until they reach the end of their lifetimes. To compensate, operators adjusted exposure times quite often. And, new bulbs inserted in a light frame needed to be 'burned in' for eight hours.

Regardless of how consistent main exposure was, back exposure still prevented us from reaching ultimate consistency.

The XPS Crystal delivers both back and main exposures onto a flexo plate almost simultaneously

Both back and main plate exposures from a glass top are offered by the XPS Crystal

CONCURRENT BACK AND MAIN EXPOSURES IN ONE EXPOSURE UNIT

This led to the Esko XPS Crystal, a digitally controlled LED UV exposure unit, providing both main and back exposure, supporting all popular photopolymer flexo plates. Plates are placed onto a glass surface, where very accurate back and main exposures – by patented LED UV light technology that, unlike light bulbs, allows very precise control – are conducted nearly simultaneously. Unlike UV frames using light bulbs fluctuating in output, the UV LEDs don't need warm-up time and always emit consistent radiation that doesn't need adjustment. Using UV LEDs to back expose a plate delivers precise and consistent relief within each plate and from plate to plate over a long period of time.

The 'dwell effect' – the amount of time between main exposure and back exposure – also has an impact on the formation of small elements on the plate, like highlight dots, tiny line work, and text. It has been proven that the shorter the dwell between exposures, the finer the detail that can be held on the plate. This effect is dependent upon the photopolymer chemical formulation, and is therefore plate type dependent (flat top plates show less dwell effect than standard 'round top' plates). The XPS does these exposures nearly simultaneously, providing the absolute highest quality dot and fine elements. In addition, only when this time difference is fixed, are those elements of repeatable, consistent quality.

For example, the optimal relief of a .067 plate according to FIRST is .51mm with a tolerance of ±.05mm. Light frames typically produce a ±.1mm tolerance, due to the temperature of the frame, the inconsistent light, etc. With XPS, customers have reported ±.025mm floor tolerance. Research has proven that consistent relief leads to consistent dots, which leads to consistent print on press because it takes less time to get the press on colour.

MAKING IT SIMPLE

This is all done with a very simple to use interface. There is no longer the need for a highly experienced operator.

The main and back exposures for each type of plate are already built in. When the machine is installed, the user just selects the plate. For back exposure adjustment (to plate batch), the XPS generates a step test with the push of a button. After measuring floor thicknesses and inputting those values, the software interpolates the exposure setting needed to deliver any desired relief. There is no need to change exposure times. The operator just enters the relief depth and the

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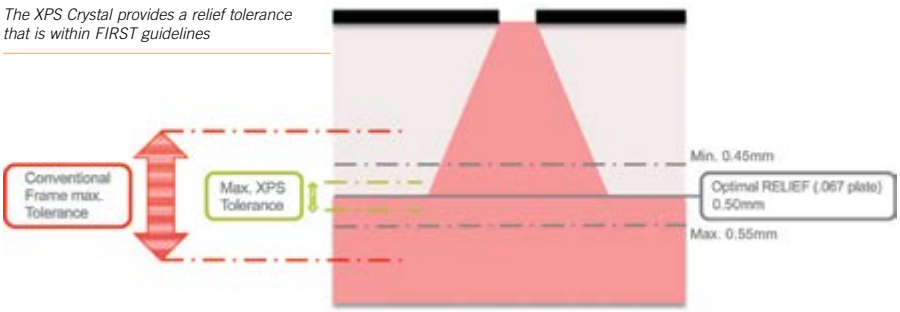
The XPS Crystal provides a relief tolerance that is within FIRST guidelines



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In tests, the deviation from the targeted floor depth was much greater with an exposure frame than with the XPS Crystal

0	Target relief
0.025mm	Deviation ± 0.0005"= ± 0.0127mm
0.07mm	Deviation ± 0.0015"= ± 0.0381mm
0.13mm	Deviation ± 0.0025"= ± 0.0635mm
0.2mm	Deviation ± 0.0039"= ± 0.1mm

system selects the correct exposure based on the original step test. No longer must users 'experiment' with the exposure time. Because LED UV technology stays stable over time, constant adjustments aren't required.

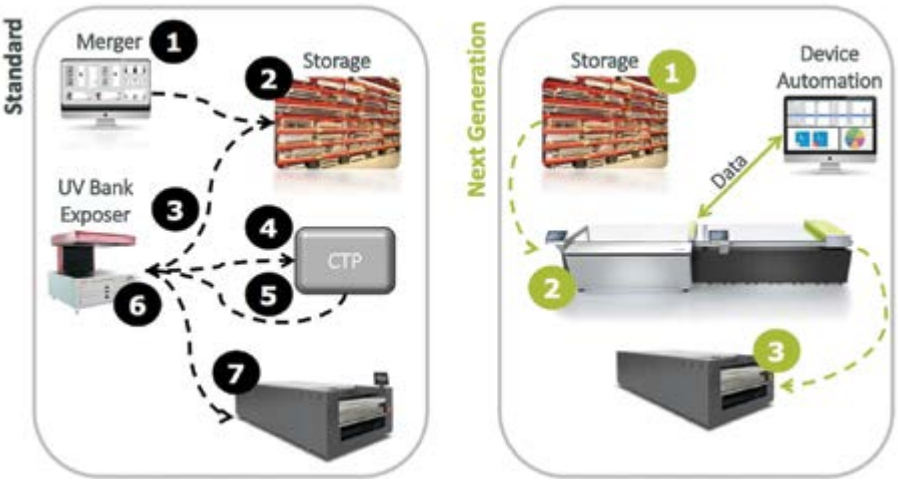
DATA TO SUPPORT PLATE CONSISTENCY

Very thorough research has been conducted to compare results from a traditional exposure unit and XPS Crystal exposure unit in the production of consistent plate floor relief and dots. In a study involving eight plates, nine elements per plate, and four measurements per element, the exposure unit was 2.6 times more consistent than a conventional exposure unit. Maximum variation, on average, was 0.08mm, versus 0.2mm on a conventional exposure unit.

Another, more significant, test explored exposure frames using high intensity bulbs to transfer more energy onto the plate over a shorter period of time. Some frames have been known to output roughly 30mW/cm^2. By comparison, the exposure unit uses a narrow array of LED that outputs high-intensity UV light. Rather than subjecting the entire plate to constant exposure, the LED array passes over the surface of the plate at a set speed.

If the exposure unit is a more consistent exposure method, then a plate should have less measurable variance of floor depth and dot size along the full tonal range. This premise was examined using a test form with dot percentages of 75%, 50%, 25%, and a minimum dot, placed at nine different locations throughout a plate. On a 50 x 80 plate, the conventional exposure frames appeared to have at least a 200% greater range than a plate produced with an exposure unit. In addition, the standard deviation of floor measurements was three times that of plates produced using the XPS Crystal. It produced a plate with much less variance in floor measurement than even a new conventional exposure frame.

The exposure unit appeared to be capable of forming a smaller viable printing dot on a plate than conventional exposure frame. At each point in the tonal scale, its exposed plates had at least half the variance than conventionally exposed plates.



In the near future, flexo platemaking steps will be considerably reduced

BETTER, MORE CONSISTENT, PLATES OPEN DOORS

The production of consistent plates has led to the adoption of technologies that were previously not considered quite viable. For example, with extended gamut printing, jobs are printed with a specific set of inks (often CMYK plus orange, green, and violet). Ink units on press do not have to be washed and replaced with new inks. Aniloxes do not have to be replaced. New plates are mounted, and the next job is ready to go. Also, different jobs, even with very different brand colours, can be combined on the same run. With extended gamut printing, set-up times between jobs can be dramatically reduced. Further optimisation potential lies by better matching the photopolymer plate with the UV LED light sources. With more sensitive plates, productivity could be increased and the cost of the XPS Crystal could be reduced with the use of less powerful LEDs. Plate vendors are considering this.

More important, the entire plate imaging and exposure production process will be completely automated. A plate, after it has been placed on the imager, is automatically taken from the glass top and placed in the drum, where it is imaged. When imaging is complete, the plate is returned to the glass top and then automatically pulled to the adjoining exposure unit. When complete, the plate is moved directly into an attached plate processor. The process is reduced from nine work steps to only one, increasing efficiency and reducing costs. Thus, the process – at least in practice – would be very close to an offset platemaking CTP system.

This could also include the movement of data. There is no reason why there cannot be communication between the plate processor, the imaging/exposure system, and the workflow, digitally delivering all the necessary parameters for the equipment to correctly process the plate. The processor automatically knows everything about the plate – and the software interface always knows where the job is, even within the processor.

The industry demands the highest flexo quality possible to compete with gravure, offset, and digital. Technologies like expanded gamut push us to drive even more inconsistency out of the process. This exposure technology has been successful thanks to its consistency and ease of use. Users remark that the lack of maintenance, alone, makes the exposure unit remarkable. It has been an exciting time for flexo plate production and the next few years promise to deliver even more productivity and quality. ■

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THE FUTURE'S BRIGHT

Chris Stiles looks at a future medium for textile decorating

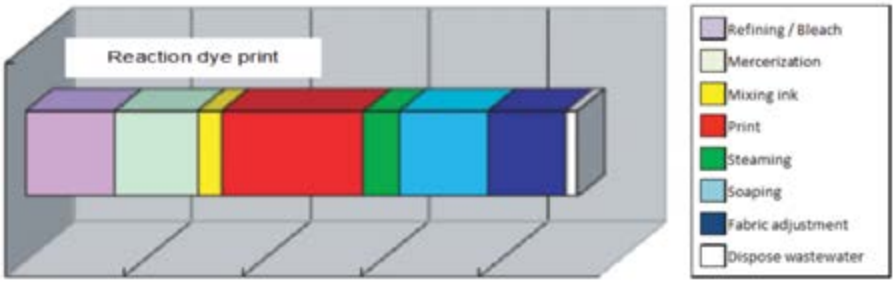
In today's competitive manufacturing world, technology is the driving force. It is the digital revolution that is pushing industrial advancements forward. And for the apparel and textile industries it is no different. Digital printing for apparel and textile industries are where the digital printing options are expanding.

The current methods for textile printing for the most part are either screen or rotary printing. Once the screens or drums are burned, production is set to run the patterns repetitively. For long runs rotary printing is the more preferred method due to the speed of running large rolls. However, it lacks the versatility of printing and short runs. To get to the finished product after printing there are several steps: the printing requires steaming, soaping and fabric adjustment. There can be a diminishing of the colour through the finishing process. The door is open for new and more efficient ways to get product into the hands of the customer.

Vibrant colours and multiple designs in a single run are capable with DigiAce

PERFECT PARTNERSHIP

Marrying micro-encapsulation and nanotechnology, DigiAce brings the stability of micro-encapsulation of water-based inks to the nano technological level. As well as a four-colour process, with eight colours the expansion of the colour gamut is virtually limitless. DigiAce's vibrancy, durability and flexibility offers a one-ink solution for both screen printing and direct textile decorating with only 2–3 minutes drying time for finishing.



Rotary printing can cause colour to diminish through the finishing process

Printing with DigiAce ink

SCREEN PRINTING

DigiAce facilitates printing with fewer screens, and can be used for short runs (down to one design at a time) or multiple designs within a run, without sacrificing time or high definition print quality. It also offers the ability to change from one design to the next without shutting down production, providing extra flexibility during sampling or production.

SUBLIMATION COMPARISON

DigiAce is direct printing onto the fabric and unlike sublimation, it isn't limited to polyester fabric. It is so stable that after curing, there aren't any migration issues to contend with; the micro encapsulation keeps the colour sealed in and where you want it. With DigiAce printing you'll have sharp, crisp edges, precise imaging, superior blending and a stable product.

TEXTILE PRINTING

DigiAce printing covers a wide range of materials from textile prints to textured furniture fabric to carpet. However the brilliance and sharpness will vary dependent on the texture of the material. For example a loose knitted carpet won't have the clarity of a smooth nylon or polyester textile fabric.

Once again because of the flexibility of digital printing, the options of production runs allow the finished colour to be viewed as it is printing. Production can transition from one run to the next without stopping (providing it is using the same material); and two separate prints can be run side by side at the same time. At 320°F [160°C] production cures in 2–3 minutes; there is no breakdown of colour vibrancy and the colour doesn't diminish in the drying process. Whether the fabrics require pre-treatment, post-treatments or not it does not matter with DigiAce.

CONCLUSION

DigiAce offers PVC-free, Phthalate free and eco-friendly inks that meet Oeko-Tex 100 standards. The range is compatible with most print heads, and the viscosity can be customised according to the print head. ■

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A NEW DIMENSION FOR BRANDS

Avner Israeli discusses how retail and exhibition markets could potentially benefit from the 3D printing proposition

Although to some retailers, 3D printing might seem like a relatively new phenomenon, it has in fact been around for over three decades, transforming the production processes within the manufacturing world. Now the technology also presents viable application opportunities for the retail market; opening the door to creative design, marketing and promotional applications.

Unless you've been living on the moon for the last few years, it's highly likely that the continued rise of 3D printing has not escaped your notice. Created around 30 years ago, the technology has gradually strengthened its foothold and is now widely used across a plethora of applications within industry sectors that include automotive, aerospace and medical.

Despite its popularity in such sectors, it's fair to say that 3D printing has yet to properly make its mark on the retail and exhibition industries. However, if you are a retail owner or a marketer the good news is that the 3D printing opportunity might be within closer reach than you thought. 3D printing technology has the flexibility, speed and price point to unlock huge new creative opportunities and drive profitable growth for users in the retail sector.

Last year, we unveiled our own solution for this market – the Massivit 1800 3D Printer. We believe that the Massivit 1800 3D Printer offers something different and new for this sector. 3D printing allows retailers to create vibrant, eye-catching window displays, point of purchase (POP) stands, visual merchandising and exhibitions elements and even bespoke retail outlets that surpasses what can be achieved with traditional manufacturing. With the capability to very quickly produce larger-than-life high quality 3D pieces, we are beginning to see examples of it transforming the way high-level advertising, visual merchandising and POP and POS displays are created within the retail space.

Avner Israeli and the Massivit 1800 3D printer

MASS PERSONALISATION WITHIN BUDGET

At the heart of this is our new proprietary technology, GDP (Gel Dispensing Printing), which cures rapidly under UV-light, enabling instant solidification of the printing material and consequently achieving very high-speed printing. Not only that, but the printer also utilises techniques that allow it to print non-vertical walls and ceilings, without the need to produce a solid object or intensive support structure.

These unique material properties mean the Massivit 1800 can produce impressive objects, while also reducing material costs and weight. One example of this advantage is a project from E.S Digital, one of our Israeli customers. It was approached by 'Bridge by Coca- Cola' (a start-up accelerator programme managed by Coca-Cola) to produce a host of

Continued over

Larger-than-life Coca-Cola bottle 3D printed on the Massivit 1800 by E.S Digital

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eye-catching 3D printed interior decorations for its launch party, which would later also be housed inside its facility.

Utilising the Massivit 1800's ability to produce two individual parts simultaneously, E.S Digital 3D printed nine iconic Coca-Cola bottle caps in a variety of sizes in just five hours. These were then finished in a combination of Coke-red, black and white paint and self-adhesive vinyl to spell the word 'The Bridge'. According to Eyal Shemesh, CEO of E.S Digital, The Bridge and Coca-Cola staff and executives were amazed by the quality and the ability for mass customisation. The company was so impressed by the results that it also commissioned a 3D printed human-sized Coca-Cola bottle to serve as the statement piece in the entrance to the building. Although super-sized, the bottle was remarkably lightweight and it was soon being passed around by guests as the unofficial party mascot, featuring in an endless number of selfies.

BUILDING BRAND AWARENESS

The Coca-Cola example highlights the important role that the technology plays in increasing brand awareness. After all, it goes without saying that retailers and brands will always be seeking to maximise their budgets with as much wow-factor as possible. The ability to offer attention-grabbing, added-value visual communications that better engage target audiences achieves this. Moreover, it makes engaging – and subsequently, retaining such customers much easier.

This is exemplified in another project which saw E.S Digital approached by new Israel-based chocolate shop, 'Little Switzerland' in a bid to strengthen its brand identity and make the store more appealing to its target market. E.S Digital 3D printed an oversized 1.7m-tall (5.57ft) replica of the company's mascot to welcome shoppers and boost the company's brand identity in-store. Since its introduction, 'Little Switzerland' has reported an increase in sales and even online visits.

OPENING THE SHUTTERS TO NEW BUSINESS

For retailers, incorporating 3D printing into your campaigns is a great means of differentiating your offer and enhancing how you capture and maintain customers' attention. With recent studies suggesting that 3D advertising has five times the stopping power and four times the staying power of 2D advertising, it is clear why this is the technology for retail and advertising applications.

With large format 3D printing, print providers can produce incredible wow-factor applications with better brand engagement

3D printing could also be a means of unlocking the door to new business. A prime example of this is Australian specialist 3D print provider OMUS, who applied its print expertise to construct what is believed to be the 'world's first' 3D printed pop-up retail store for luxury fashion brand, Louis Vuitton. The attention-grabbing 9m-wide, 10m-long and 2.7m-high (29.5ft x 32.8ft x 8.85ft) structure was 3D printed in under 18 days and served to promote the company's latest menswear range. The entire display was finished in chrome mirror self-adhesive vinyl and adorned with distinctive Louis Vuitton designed animal prints matching the theme of the brand's collection, which caught the gaze of shoppers at Sydney's Westfield shopping centre.

'World's first' 3D printed pop-up store for luxury fashion brand, Louis Vuitton 3D printed on the Massivit 1800 by OMUS

TIME TO ENTER A NEW DIMENSION?

Whatever the driver, there are myriad benefits to integrating 3D printing into your marketing operations. For retailers and marketers, it crucially offers the capability to very cost-effectively elevate applications to a new dimension with maximum impact.

Looking ahead, I think we will see 3D printed retail displays and advertising campaigns become commonplace as more companies realise the vast benefits the technology provides in terms of customer engagement, brand awareness and ROI. ■

Avner Israeli is CEO of Massivit 3D

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CUTTING IT FINE

Manuel Kalt explains why laser is the perfect solution for cutting textiles

The market of printing on textile fabric is growing rapidly but many companies are facing bottlenecks caused by fraying, as a result of using the wrong cutting solution.

Laser cuts and seals the edge of the fabric to avoid fraying, precluding many finishing applications in sewing because the edge needs no hemming. Furthermore, laser cutting is a contactless method and will not move or stretch any sensitive material, thereby offering a more precise and accurate cut.

CHOOSING THE RIGHT LASER-CUTTING SOLUTION

There are many different laser types available on the market. First, the correct power has to be chosen; in the soft signage market this should be between 70–120 watts to allow the client a sufficient cutting speed and the highest quality on the cutting edge (no burning and brown colour.)

Furthermore the right laser cooling, mirror and lens system are very important to get an equal cut quality over 3–5m width of the roll.

Before investing, you should think about which fabric width you want to cut in the future.

Fabrics are getting wider and wider. More and more print shops are investing into 5m textile printers and this of course needs a 5m cutting solution as well.

OTHER ASPECTS TO CONSIDER

Motorised unwinding: to guarantee no stretch on the material. Fabric has a memory effect, which means that after you stretch the material, it will shrink back to its original size/shape. This can cause problems when, 24 hours after cutting and finishing, the panel is suddenly 2cm shorter.

Edge control system: to spread out the fabric without waves onto your cutting surface.

Print detection – there are 3 different models available:

- ICC cameras which read registration marks. This is the slowest solution on the market but has been widely used in the past. The ICC camera has to move from dot to dot in order to detect exactly where the print is located.
- Laser projection, which projects the cut path onto an image. This solution is very quick if you are printing mainly big panels and using a flatbed cutter; what you see is what you get.

Conveyor cutting surface

- Scanning system. This scans your entire print and detects the image positions. This is the newest and most efficient detection system. Within a few seconds, the machine is ready to cut and no time is lost in this segment of the cutting process.

CONVEYOR BELT OR FLATBED?

Another important aspect to decide for the correct machine is the surface.

The advantage of the flatbed is that you can spread out the fabric up 8–15m depending on the flatbed size and your preparation and detection time will be much quicker. The flatbed is recommendable if you are doing mainly big panels.

If you are printing medium size 0–4m long pieces or even smaller, the recommendation is a conveyor belt, otherwise you will lose a lot of time picking up the cut piece from a flatbed table.

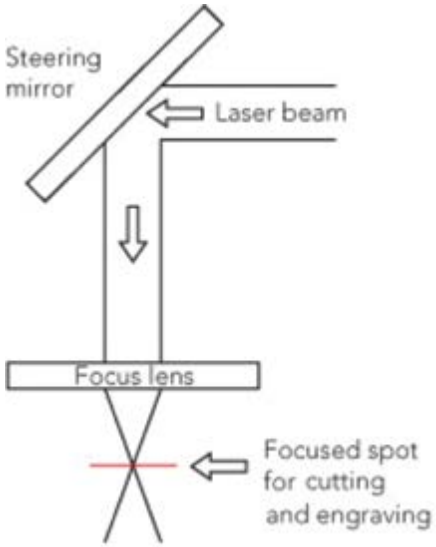
The table surface is also a key consideration in cutting by laser because the laser is a light beam which reflects in the surface. With the correct surface the cut will be nice and clean; with the wrong surface the cut will be not homogenised and will create brown edges. Ensure that you have a good stainless steel surface in your flatbed (which needs regular cleaning) or select a stable conveyor belt chain which guarantees a 100% flat and level cutting area. It is crucial to have a flat and level surface to obtain a perfect cutting result. If you have tolerances in this surface, the cutting result will be not equal. This happens due to the laser-focusing height; every laser beam has a focusing height – the lens system is responsible for it and it just reaches the max. adjusted power on a certain adjusted distance (see diagram).

Hardware wise, it's advisable to find a conveyor belt system which offers you a self-cleaning chain system. Without this, you face wasting a lot of time by cleaning the chain – especially in materials with PU coating, as the PU will stick to the chain. Often people forget to think about down time of a machine, which means cleaning, changing tools, etc.

There are already a few machines on the market and if you want to have a great ROI, you should invest in something for long-term use and maximum output. ■

Manuel Kalt is Sales Manager at Matic

Flatbed cutting surface



Workingway of the laser beam

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NEW ERA FOR SCREEN PRINTING

David Forrester Zamith explains how ceramic decals have been reborn due to CTS technology

The history of ceramics goes back to antiquity. The expression 'ceramics' relates to the Greek symbol for clay, which is the Greek word keramos – pottery. The Chinese were the first to invent white, translucent hard-paste porcelain under the Tang dynasty (618–907AD) when they learned to fire a mixture of china clay and china stone at very high temperatures.

The Chinese kept their recipe secret and with that their monopoly on production.

In the mid-16th century Chinese porcelain began to be exported to Europe, first by the Portuguese, who acted as intermediaries in Asian trade, and then also by the Dutch. Hundreds of thousands of pieces came to be traded in Amsterdam. Porcelain was so expensive that Europeans called it "white gold".

PRESENT DAY

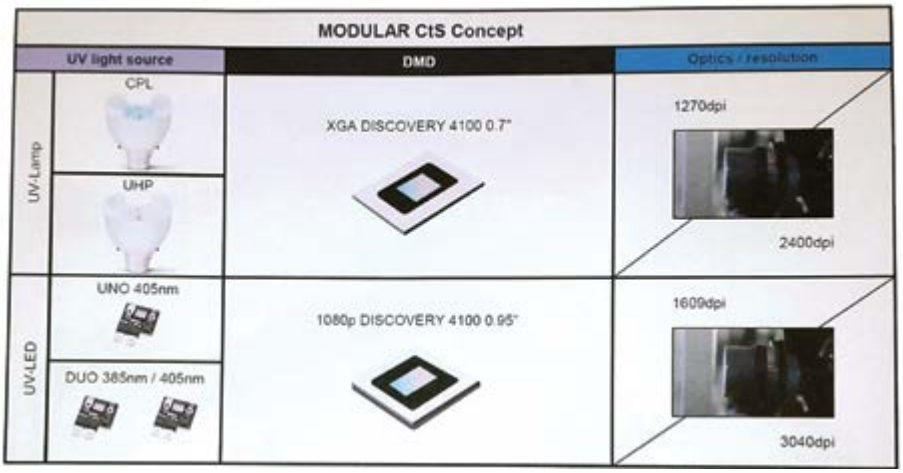
Today, ceramic decals decoration add value in the decorating, labelling and branding of porcelain. Advances in the industry include:

- Number of colours has decreased
- Multi colours has been replaced by four to seven-colour process
- Faster deliveries
- Fewer job repetitions
- Better line resolutions and high definition half tones
- More designs, images and functional innovation
- New concepts for tableware
- Firing temperatures up to 1400C
- Print process standardisation

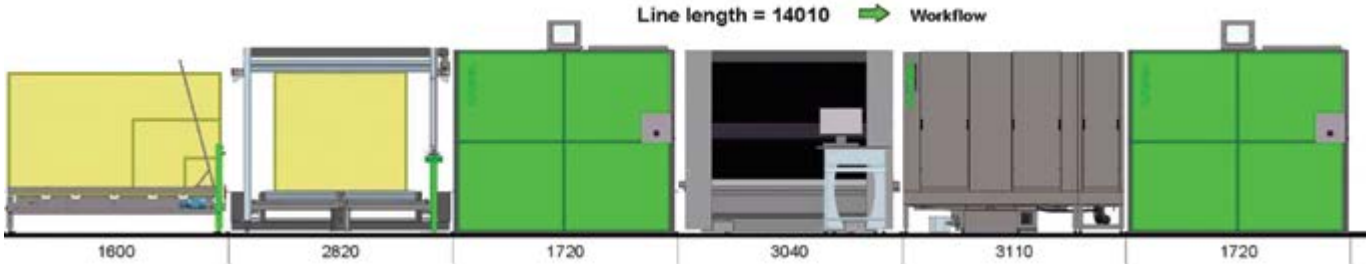
CTS TECHNLOGY

Three Portuguese Ceramic Decal manufactures have been pioneers of CTS (Computer-To-Screen) Technology using semi-automatic digital light CTS flat exposing. More recently, after several industrial testing steps in Portugal and Switzerland, independent company Decordecal substituted that horizontal technology for new CTS Technologic

STM in-line decals



STM modular concept



Full automation on screen pre press

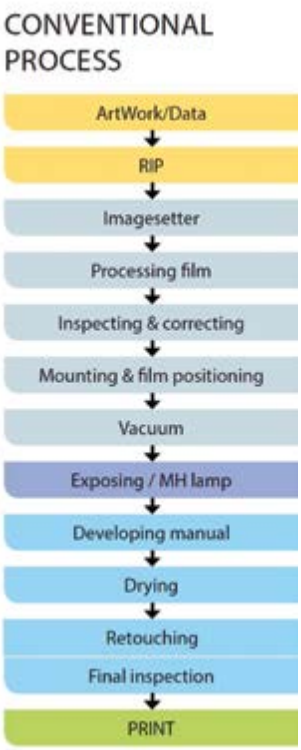
Vertical Exposing, turning it into a fully automatic process handling several screens on the feeding unit, light exposing, developing, drying and unloading unit, STM from Swiss SignTronic AG. Vista Alegre Atlantis Group, the oldest porcelain factory in Portugal, followed the same industrial testing and invested in similar STM CTS fully automatic technology.

PRE PRESS ANALOGUE VS DIGITAL CTS

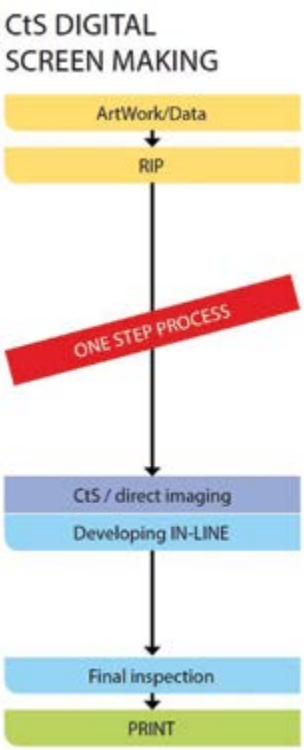
Prepress analogue 'computer to film' (CTF) is time consuming and involves the monitoring of film production steps, chemicals, environmental issues, dust, scratches, thick glass, temperature, film thickness, light intensity absorption, vacuum control, emulsion exposure inconstancy, film montage, light exposing control and film archive. Digital pre press – computer to screen is a 'filmless' one step process.

In screen making, film requires several processing steps; it decreases the quality of the final image and is slower and less cost-efficient, creating bottlenecks. Filmless screen making is a one step process in automation, producing higher image quality and any image quality degradation is compensated for by increase of screen stability.

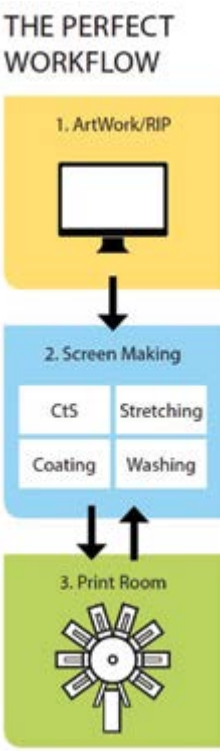
Filmless STM CTS technology allows for production with thinner layers of ink, without loss of image quality. Lead time is reduced by around 40%. Using ColorGATE CTS Rip Software system screen printing is simplified with fewer processes and more automation.



Conventional process



CTS digital screen making



Perfect workflow

THE FUTURE

Industry 4.0 (I4.0) is determined by the intensity of innovative technology used side by side with its degree of automation. Nowadays we see a growing trend, in Europe and USA for reshoring – a return of delocalised industries – as a new axis of development for the future European production, based on high-end products or high technology and automation. I4.0 will focus on an acceleration of the implementation of new technologies to manufacture products under the conditions that the market requires: efficient, faster, flexible and cost efficient.

We believe that screen printing technology will give a positive pull for the future I4.0 due to its intrinsic advantages when combined with cutting-edge technologies in automation, on pre-press, printing or finishing; at graphic, textile, industrial or functional applications.

A new target based on the digitisation (I4.0) is by changing the actual processes started by the operators, moving to a new dimension where machinery will do this itself and the operators will act when necessary to stop the autonomously running processes. This reduces errors and enables more jobs per hour, for a new rethinking of all industrial processes steps targeting higher productivity, faster deliveries and cost reductions. ■

David Forrester Zamith is CEO of Ruy de Lacerda

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Inkjet printing is knocking at the door of printed interior décor

PRINTED INTERIOR DÉCOR

Examining the ongoing evolution of the décor industry, the late Sophie Matthews-Paul explained how inkjet is knocking at the door

In a white paper commissioned by Agfa Graphics, Sophie Matthews-Paul explained the ongoing evolution in the décor industry in great detail. It was Sophie's idea to have a shortened version of this white paper published in *Specialist Printing Worldwide,* where she was Editorial Consultant between 2010 and 2017 (see page one for obituary). The full white paper can be downloaded from: www.agfagraphics.com/global/en/articles/papers/printed-interior-decor.html

Led by visual appearance and texture as key components, the esthetical strengths for the interior décor industry sector are now being matched with the desire for longevity and mass customisation. Both of these show the critical role of digital technology's flexibility, which can either supersede or be used alongside existing analogue processes.

INTRODUCTION

The remit that covers the term 'interior décor' is vast and encompasses every area in domestic and commercial premises that requires, or benefits from, decoration. While much of this is considered necessary for aesthetic appeal, there are also instances where specific applications and their materials also include practical benefits.

Where analogue processes were relied on totally for interior décor, the only way in which it was practical to obtain a personalised or one-off result was to employ a specialist decorator with artistic skills. Today the options for printed interior décor have broadened as the scope available to designers, architects and end users has diversified to make personalisation and low volumes or one-offs practical, affordable and profitable options. This has enabled homes, offices and other commercial areas, such as hotels and restaurants, to individualise their premises and/or to promote a brand while being able to version the location with local appeal.

Printed interior décor [PID] follows many of the same criteria as the fashion market today, being driven by trends and production principles. As in other areas of the printing industry, there is increased pressure for on-demand production but, although this is feasible within the graphic arts and display segments, the practicalities within the arena for interior décor is less straightforward.

PID'S CHANGING DYNAMIC: MATERIALS AND APPLICATIONS

Across the years the materials and substrates utilised for interior decoration have incorporated natural and man-made products, plus those constructed specifically to emulate their more costly counterparts. The utilisation of digital print for many applications has extended the range of base products that can be marked to provide both aesthetic qualities and lower costs at attractive prices and with minimal turnaround times. Traditional substrates such as wood and natural fabrics are often superseded by man-made equivalents that can be decorated and coated to emulate the texture and appearance of more costly materials. Where these are employed, the overall effects can be tailored via mass customisation to provide limited editions or unique reproductions.

Nonetheless, there are challenges that are often governed by durability and the tactile finishes required on some surfaces, along with the need for a good hand, or feel, on fabrics and the elimination of static on carpeting and soft furnishings.

There are substrates that also logistically benefit from moving away from analogue production processes, and where lower volumes are not the primary principle for the advantages to be gained from digital technology. Where shipments of heavy and fragile materials are involved, some applications that can be produced using digital inkjet technology are now benefiting – such as ceramic tiles. Because these can now be manufactured using a non-contact process, the unit thickness can be considerably lower with fewer breakages during the decoration process and the ability for more tiles to be packaged in the same sized container.

Continued over

PID

Printed interior decoration

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SUITABILITY OF INK TYPES: BENEFITS AND DISADVANTAGES

In terms of digital ink chemistries and their respective formulations, considerations need to apply that go beyond the relative simplicity of colour matching but, also, must incorporate durability and suitability for interior applications. Many inks, despite their assurances of longevity, rub-fastness and the ability to withstand scuffs and knocks, still require a final coating or overlamination in order for them to become suitable for décor purposes. Not only are surface treatments important, but so are ink-to-substrate interactions and health and safety considerations. These include compliance where applicable, and available, for standards that include environmental, architectural and regulatory requirements which apply, for example, to wall coverings and soft furnishings.

Present day ink formulations were, for the most part, not designed specifically to cater for interior decoration but have found their way into this market sector as the potential for market growth was realised. The suitability of the different chemistries depends upon the material being printed, and whether or not it is flexible, rigid or fabric based. This can be categorised further to become very fragmented, for example, with the use of frit-based products for printing direct to glass and ceramics. Additionally there are the varieties of chemistries for textile production, these being separated into acid, reactive, high energy disperse, low energy dye sublimation or pigmented-based formulations that are largely dependent on fabric type and end use. Complementing these are a wealth of existing types that have proved their strength across different types of production principles, with some being more suitable than others for interior applications that need to consider health and safety aspects regarding air quality and touch as well as durability and adhesion.

BENEFITS OF DIGITALLY PRINTED INTERIOR DÉCOR

Inkjet printing has areas, which are of specific benefit to the interior décor market, as well as providing the obvious advantages of low volume capabilities and personalisation. The development of wide-format printing machines has extended the maximum width that can be throughput at any one time, with many flexible materials available in sizes up to 5m wide. Conventional wallpapers and coverings, where practical restrictions meant they were produced in narrow rolls, can now be produced in a single piece and installed without compromising patterns or requiring tiling or joins in the application.

Likewise, the printing of textile applications using digital technology has also proved to be beneficial for interior work, with aqueous-based inks used in low-energy sublimation and high energy disperse dyes being suitable for applications where polyesters and mixes are the selected materials. As industrial analogue textile printing has come under heavy criticism for its energy usage and waste water, digital alternatives are growing in popularity with ink developments, such as pigmented alternatives that require minimal post treatments, continuing within this market segment.

However, without doubt, the two principal considerations when a manufacturer is primarily considering the transition from analogue to digital methodologies are the shortening of lead times and the ability to incorporate mass customisation.

Inkjet printing across textiles, carpets, glass, flexible and rigid natural substrates and plastics and their derivatives has also become a prominent force in sampling and specials that crosses the borders between branding and interior décor. Typical examples are hotels and conference areas, leisure centres, and cruise ships as potential markets. High footfall and traffic, combined with the desire to refresh designs more regularly, lend themselves to the advantages of digital print, as do decorations for specific events where brands want to find novel and practical routes for self-promotion. The ability to meet short lead times and, indeed, to be able to generate low volumes for limited-life end use has also made digital print a popular method for decoration for functions where impact carries greater importance than durability.

PRODUCTION SYSTEMS AND METHODS FOR DIGITAL PRINT

In recent years advances in print engines, print heads and inks have led wide-format technology to be able to add printed interior décor to its growing list of assets, with roll-fed and flat-bed materials suitable for printing high quality colour accurate results without compromise on most substrate types. However, the demand is also growing for products where compatible machines are already being used with success in the industrial sector. The organic cross-over between functional and decorative processing is particularly apparent in the ceramics segment as well as for certain flooring elements, such as narrow width laminates and wood, tile or stone slab emulations.

One of the principal advantages of inkjet production is that it is a truly non-contact process and this means that items which, traditionally, could not handle the pressure applied by gravure, screen printing and other methods, can now be decorated using digital technology.

The cross-over with functional print has

Conventional print creates high inventories; digital alternatives can be produced to order

Digital print allows for a personal touch in any decoration project

Various interior design elements can be (mass) customised

UV curable inks in Agfa's Anapurna and Jeti configurations offer the ability to print on nearly all substrates

resulted in the ability to use single-pass print head arrays for high speed production of applications and, in functional environments such as floor coatings, this is already achieving widths of 2m using continuous arrays of print heads and commensurate curing (LED) lamps and post-processing units for fast, consistent productivity.

Scanning print heads are constructed and employed in variants where both the head carriage and substrate move or, with some flat-bed devices, there is a moving gantry and the material remains immobile. Universally accepted in wide-format production, the print heads work laterally in relation to the media's positioning either as a sheet or a roll and are reliant on constancy for each pass, and minimal dwell time, to prevent banding. For the majority of wide-format applications, particularly those of a decorative rather than a functional nature, existing equipment serves the requirement for printing décor. For higher volumes and mass customisation, single-pass technology provides the speed capabilities required to match production criteria and can sit successfully alongside conventional.

DISADVANTAGES OF DIGITALLY PRINTER INTERIOR DÉCOR

The very nature of inkjet print brings with it disadvantages that tend not to be present in analogue production that involves processing that doesn't depend on jetting capabilities and is able to handle heavier viscosities and formulations that are not always possible using digital technologies. The production quality and its relationship to the throughput speed using digital print for interior decoration carries similar principles to those applied for general wide-format work in that the greater the number of passes, the slower the print rate. Unlike billboards and many retail applications, standards of output tend to be more crucial for décor given that most applications are designed for close, and not distance, viewing. Conversely, designs tend not to contain the same content as a regular print job, with greater attention paid to repeatability, and strong colour saturation. It is of paramount importance that digital runs of any width are not compromised by malfunction of print heads or ink performance beyond the built-in levels of acceptable error that cannot reasonably or practically be rectified during a print run. Ink formulations must also be tolerant and compatible with final surface coatings whether they have been applied for added depth and texture or merely as a protective layer to prolong longevity for the finished product.

Where fabric printing is involved, the ink type must be commensurate with the textile being used, providing the correct hand or feel, and the necessary durability to maintain rub-fastness and wash resistance, where specified. Additionally, many fabrics used in interior applications must adhere to compliance regarding fire retardant criteria in line with the manufacture and construction of soft furnishings.

SUMMARY

The market opportunities for digital printing of printed interior décor and associated products is growing as manufacturers and end customers both realise the potential for obtaining decorative items that suit their specific requirements. High volumes will still tend to favour analogue methodologies because of the lower running costs and more competitive ink and material pricing when acquired in bulk. However, there is a shift to using digital capabilities for printed interior décor that falls in line with the desire for individuality.

With industrial wide-format equipment like Agfa Graphics' Anapurna and Jeti printing presses, creative designers service a portion of the home décor market as well as interior and exterior decorations for events, trade-shows and the like. The demand for variability encouraged by the digital print sector is bringing the realisation to the commercial and domestic worlds that personalisation is now a straightforward process. ■

Sophie Matthews-Paul, September 2016

AGFA GRAPHICS TAPS INTO DIGITAL TECHNOLOGIES WITH PARTNERSHIPS

Traditional printing techniques of laminate décor paper (furniture/flooring) require large volumes to make the process economical. Therefore both customising décors and launching new décors is a costly process consuming a great deal of time and effort. Although digital printing has been around as a dreamt-of solution for several years, the development efforts of Unilin have now made it ready to also breakthrough in the flooring and furniture industry.

Unique features of this technology include:

- Water-based inks from Agfa Graphics, which can be adapted to different types of print heads and existing printing lines
- Low ink consumption
- The ability to image dark décors
- Excellent compatibility with existing DPL technology
- Extensive patent protection thanks to a combined patent pool of UNILIN, AGFA, FRATI, PERGO, HÜLSTA/PARADOR for digital printing and ink
- CMYK + R or CRYK: customised red ink for wood décor printing

As in the fashion industry, the trend for more personalisation is setting new expectations for the interior décor market

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VIRTUAL REALITY

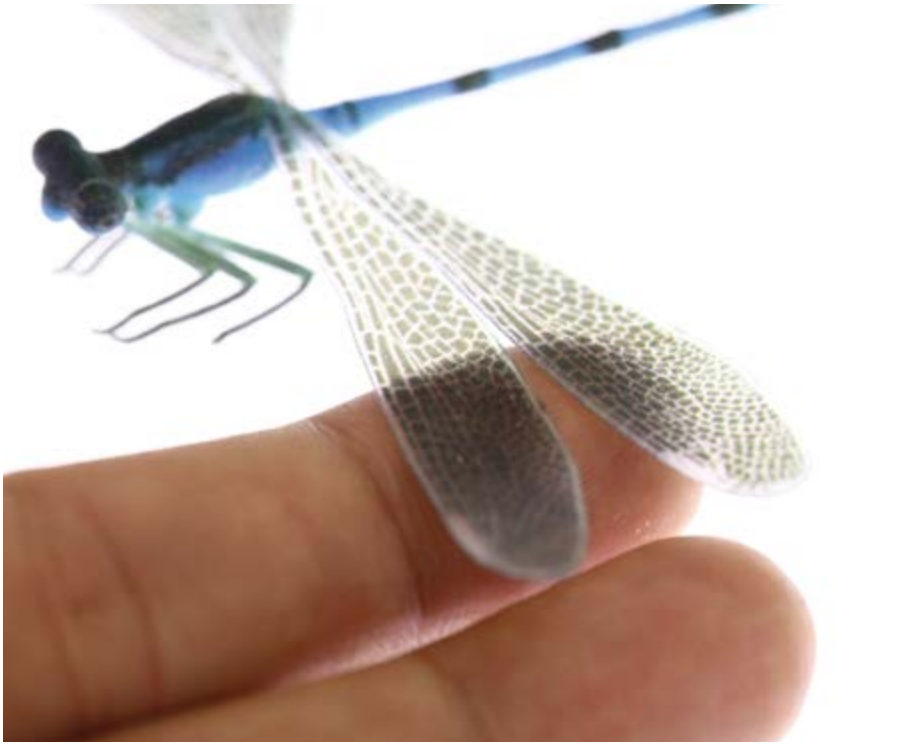
It's time to get real. The potential for 3D printing is limitless, says Peter Cocu

3D printing, also referred to as additive manufacturing, has been around for a number of years. Like many emerging technologies, it went through a period of what some would describe as 'excessive hype' and was perceived more as a novelty than as a disruptive technology that could significantly impact traditional manufacturing strategies.

But over the past few years, we have begun to see hype meet reality as the market is beginning to see exponential growth. According to a market forecast produced by Wohlers Associates, Inc.[1] in 2015, the 3D printing market may finally be entering a hockey stick growth phase. It's projected to grow from about $7 billion in 2016 to $21 billion in 2020.

The same study pegged market share by geography at 40% in North America, 28% in Europe and 27% in Asia. According to the study, 'The consumer electronics and automotive industries each contribute 20% of the total 3D printing revenue … using the technology primarily during the prototyping stage of production. For example, smartphone manufacturers are slowly using 3D printing for more than just prototyping – some component parts are now manufactured with 3D methods.'

The medical device industry is the third largest user of 3D printing and uses 3D printing for mass customised finished goods such as hearing aids. In fact, the U.S. hearing aid industry converted to nearly 100% 3D printing, a conversion that took less than 500 days.



3D printing sample: dragonfly

Yet with all the growth and projected growth, it is still a largely untapped market. Today, the market share of 3D printed materials is minuscule. Wohlers Associates, Inc. believes 3D printing will eventually capture 5% of the global manufacturing capacity, which would make 3D printing a $640 billion industry.

It is for this reason that the manufacturing of 3D printing engines is an attractive opportunity being pursued by a number of companies, including Mimaki.

Mimaki's 3DUJ-553 is the company's first foray into the 3D market

WHO IS MIMAKI?

Founded in Japan in 1975, Mimaki has steadily grown by reputation and influence into a global printer manufacturing company, establishing itself as a leading manufacturer of wide format inkjet printers and cutting machines. These can produce a variety of applications, such as indoor and outdoor signage, packaging, promotional gifts and soft furnishings, to name a few. With 1.580 employees worldwide, the company generates revenues of approximately €375 million annually. Europe is its biggest market at this point.

Making the leap from UV-curable 2D inkjet printing devices to 3D printing was a logical step for Mimaki, and the company has dedicated significant R&D resources to its 3D development efforts. The Mimaki 3DUJ-553 is the company's first foray into 3D market, using a technique based on its UV inkjet printing technology. This printer was unveiled at Formnext, held in Frankfurt from 14–17 November 2017.

3D printing sample: topographic map

UV-CURABLE INKJET PRINTING

The inkjet printing that most people are familiar with uses water-based inks, which require specialised substrates to minimise the amount of ink absorption, and for higher volume, more professional applications, inkjet printing systems include elaborate drying systems to remove water from the paper, leaving the ink pigments behind.

Systems using UV-curable inks deliver a more durable product. With UV curing, ultraviolet light and visible light are used to initiate a photochemical reaction that generates a cross-linked network of polymers. It is instantly dry and typically bonds well to a wide range of substrates. It is a low-temperature, high-speed, solvents process that can be used in printing, coatings, decorating, and – yes – 3D printing.

3D printers come in a variety of forms. Input materials can be various types of powders, filaments and liquids, but what they all have in common is the ability to deposit material in layers to create the desired object. This is referred to as additive manufacturing, as opposed to more traditional manufacturing models where material is subtracted to create the object – such as drilling, milling, lathes, etc. Because it is a digital process, it can be used to create one-of-a-kind objects or longer runs of the same object at a relatively consistent cost per part, with the quantity and type of deposition material – plastic resins, metals, ceramic and more – being the driver for total cost.

THE MIMAKI APPROACH TO 3D PRINTING

Mimaki chose to adopt an approach where the 3D printer jets successive layers of ink, which are instantly cured by UV light until the object is fully formed. Fine layers accumulate on the build tray to create one or several precise 3D models or parts. Where overhangs or

Continued over

3D printing sample: bike

complex shapes require support, the 3D printer jets a removable support material. It uses LED curing for reduced energy usage and is differentiated from other 3D printers in a number of aspects, including:

The ability to print full-colour objects with more than 10 million colours. Colour profiles can be used to ensure accurate and consistent colour. This means no overpainting is required, saving time and labour.

It offers white ink, as well as a clear ink overcoat that adds vibrancy to the printed product.

Its support materials can be removed with a simple water wash, eliminating the need to manually cut tags or other support structures, which used to be a very time-consuming activity.

It features a maximum build size of 50 x 50 x 30cm, larger than comparable 3D printers.

Drawing upon its many years of UV-curable inkjet printing in the 2D world, Mimaki has also equipped the 3DUJ-553 with its proprietary core technologies, including ink circulation system to prevent clogging and Nozzle Checking Unit (NCU). Print head nozzles are automatically checked for any malfunction, with an effective nozzle substitution strategy that enables continuous printing, even if a nozzle is not operating correctly. In addition, the printer is equipped with an internal monitoring camera that enables operators to monitor the progress of the printing.

As well as additive manufacturing applications, the Mimaki 3DUJ-553 is also suitable for other uses, including:

- Prototyping during the design process
- Full-colour prototyping for early market introduction
- Printing test parts for fitting
- Creating models for the architectural, shipbuilding, off-shore and other industries that previously had to create models manually

3D printing sample: stadium

3D printing sample: castle

The 3DUJ-553's build tray enables fine layers to accumulate to create a 3D result

3D PRINTING: THE TIME IS NOW

3D printing's time has arrived. After many years of development and experimentation, a wide variety of industries are now adopting 3D printing for a number of different uses. As the technology continues to evolve, the economic cross-over point between 3D printing objects versus using traditional manufacturing processes will continue to rise.

Whether it is printing replacement parts in space for the International Space Station, creating unique home décor items, producing a realistic architectural model, or simply producing promotional items, the potential for 3D printing is limitless.

In addition, as the market increasingly demands more customisation, more versions and SKUs, and more manufacturing of parts and other items at the point of need, production run lengths are shortening, creating even more demand for 3D printing capabilities.

For more information about 3D printing, Mimaki's 3D printing approach, or ideas about how 3D printing can enhance your business, Mimaki experts are available to share their expertise and ideas. ■

Peter Cocu is 3D Printing Consultant at Mimaki Europe

Reference

1. Wohlers Report 2015: 3D Printing and Additive Manufacturing State of the Industry Annual Worldwide Progress Report.

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YOU CAN DO IT

Marvin Foreman shares the key to success in craft beverage packaging

You've created an excellent craft beverage, but how do you take it to market and maintain healthy margins?

As a printer converter, I'm currently hindered by the economics of traditional can and bottling technologies – how can I serve the craft beverage growth market?

As a contract brewer, how can I increase my brand awareness and drive sales?

Recognising the significant growth in the worldwide craft beverage market, as an investor, what are the opportunities available to me?

These are all the questions being asked by existing suppliers to the craft beverage market, or those looking to capitalise on its growth. And the answer to many of those questions lies in the brand new, cutting edge technology that enables the canning of craft beverages at very low cost, and with no restriction on run lengths.

Really? Well quite literally, new digital can printing technology is unchaining the traditional craft beverage industry, and removing one of the most expensive and restrictive part of its production – traditional bottling and labelling.

These technologies have stifled the growth of this market for 100 years or more. So how can you benefit?

CRAFT BEVERAGE PRODUCERS

Digital can printing will enable craft beverage producers to print and can their product, exactly as they want it, and in exactly the quantity they need it, too. It provides this at low cost, ensuring that craft beverage producers can maintain healthy profit margins.

Tonejet direct-to-can digital printing

In addition, it now enables them to capitalise on short runs or special brews, specifically for seasonal campaigns or events, where they need to cost effectively can products in small batches. What's more, by supplying produce in digitally printed cans, craft beverage producers are able to utilise the 360-degree area of the can, with much more surface area compared to bottles, to brand their products and better tell their unique story.

PRINTER CONVERTERS

Due to the traditional analogue printing process used for can decoration or labelling, and the economic crossover point with these technologies, minimum order quantities of around 100,000 and lead times of several months have been a huge barrier for the craft beverage market. But for printer converters looking to capitalise on this burgeoning market, an in-house, custom digital can printing operation such as the Tonejet Digital direct-to-can printer [the Cyclone], provides the flexibility for smaller batch can production (5000–50,000) and a route to profitable new business opportunities.

CONTRACT BREWERS

By their very nature, contract brewers choose a contract-based business model to enable them to focus their capital, time and energy on building brand awareness and developing sales – and not on brewing, packaging and production logistics. This has been a popular 'start-up' model for many businesses for some years.

But with an increased focus on branding and consumer communication, contract brewers have increasingly looked to cans. Cans enable 360-degree on-pack communication, and with the use of digital can printing utilising technology like Tonejet, also the opportunity for valuable personalisation too.

Cans are also more light-proof, lighter and more reliable than glass, so mixed with digital printing for special event branding, they are ideal to serve the outdoor event market. With the availability of new digital can printing technology, the shift to cans is not only predicted to increase but to rise dramatically once the services become more widespread.

POTENTIAL CRAFT BEVERAGE INVESTORS

The craft beer market, specifically, has been widely reported on in the last two years. Today in the USA alone, there are over 5,200* individual craft breweries producing in excess of 24 million barrels every year.

In 2016, the US craft beer market grew by 8% with exports at 16%, that's 446,151 barrels. With those kind of figures, it's easy to see that the craft beer market is in great health, with good and continued predicted growth representing a compelling investment opportunity for many. In realising this potential, digital print technology for metal can decoration, whether that be in craft beer or non-alcoholic craft beverages, wines or spirits, is expected to deliver the variety, flexibility and choice that producers need to succeed.

While digital can printing is extremely popular among craft producers who have access to it, there is still a lack of availability to these services in most countries through the world. As such, printers from manufacturers like Tonejet and its partners, are seen as the key to unlocking significant investment opportunities, for a variety of craft beverage packaging business models – be that simply as a financial investor or in setting up individual custom digital can printing operation. ■

Marvin Foreman is Sales Manager at Tonejet

Reference
1. Brewers Association
www.brewersassociation.org

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CRITICAL CLASSIFICATIONS

ESMA Driving Print Excellence

Gabriele Heller warns how the REACH low volume registration deadline may affect suppliers and users of chemical products to the print industry

Gabriele Heller

The REACH regulation 1907/2006/EC requires manufacturers and importers (M/I) of substances to register relevant substances at ECHA (European Chemicals Agency). For 'Phase-in-substances' the regulation allows for transition periods, depending on volume and classification (hazard category) of the substance in question, if the substance has been pre-registered at ECHA before December 2008. 'Phase-in-substances' are substances already on the EU market before REACH entered into force.

The regulation requires [manufacturers and importers] to provide test data on hazard properties when registering a substance. If the test data shows the substance to be hazardous, a risk assessment must be carried out, and advice on how the risk can be controlled must be provided. The test data provided when registering a substance depends on the volume the substance is manufactured or imported with.

DEADLINES

Printing inks and other chemicals used in printing (for example chemicals for screen coating) are usually not substances but mixtures manufactured by mixing several substances together.

The first deadline, referring to substances manufactured or imported in amounts >1000t per year per M/I or classified as very toxic to the environment or as CMR Cat 1a or 1b ran out on 30 November 2010. ECHA received 197,772 registration dossiers for 2700 substances until that date. Those high volume substances, however, had been tested thoroughly already under the 'before REACH' legislation, thus neither manufacturers of printing chemicals nor the printers have been influenced much by the outcome of those registrations.

The second deadline, referring to substances manufactured or imported in amounts of 100–1000t per year per M/I, ran out on 31 May 2013. 9000 additional dossiers for 3000 more substances have been provided by the M/I to ECHA until that date. For some substances new test data had to be derived in order to comply with the requirements, resulting in classification changes for some substances.

Manufacture/import was stopped for some substances. This forced manufacturers of printing chemicals to re-formulate products containing those substances. For some products concerned, supply has even been stopped [permanently].

In some cases, classification changes resulted in re-formulations due to customers' requests, as some customers don't want to use printing chemicals with very severe hazard classification. Customers still using chemicals with critical classifications had to adopt their risk management measures.

The third deadline, referring to substances manufactured or imported in amounts of 1–100t per year per M/I will run out on 31 May 2018. Currently 12,918 registration dossiers for 5865 substances have been provided to ECHA with regard to those 'low volume chemicals'. As 15,000–25,000 substances (depending on the information source) are expected to be registered by the deadline, it is foreseeable that not all of those low volume substances will be registered by a M/I and thus many of them will disappear from the market.

BREXIT EFFECT

More substances may disappear from the European market due to Brexit. Registrations by companies settled within the UK will no longer be valid after Brexit, as they can only be done by companies settled within the EU.

The coming years will provide a challenge for manufacturers and users of printing chemicals. Re-classification of some products is expected, due to re-classification of substances contained, possibly leading to further adaption of risk management measures in the print shops. The main problem, however, will be that manufacturers will have to re-formulate products containing substances disappearing from the market due to non-registration or to Brexit. As those low volume substances often are specialities giving the product a certain, required property, substitution of those substances will in some cases be difficult, so some printing chemicals may also disappear, when substitution is not possible. Even in the case of successful substitution, printers may have to re-qualify their printed articles with their customers.

Unfortunately, lack of information from suppliers on whether or not the raw materials will be available in the future means that formulators are not currently able to foresee which of their products may be affected. ■

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SLIPPERY WHEN WET

Jeff Stadelman outlines three things you need to know about the latest slip resistance specification

The Consumer Product Safety Commission (CPSC) notes that floors and flooring materials contribute directly to more than two million fall injuries annually. In 2015, the American National Standards Institute (ANSI) and the National Floor Safety Institute (NFSI) announced the mandating of a new slip resistance specification known as ANSI/NFSI B101.3. After decades of following recommended floor and flooring test procedures set forth by the American Society for Testing and Materials (ASTM), the announcement established a new national standard in floor safety.

The previous slip resistance specification, ASTM-C1028, was withdrawn in 2014, and is widely recognised to be inappropriate for assessing pedestrian safety. It gave 'safe' ratings to very slippery surfaces and did not successfully address all of the safety concerns associated with possible end-use applications. Additionally, although many floor finishes are still tested and classified under ASTM-D2047 as slip-resistant, this test is not appropriate for floor coverings and cannot be tested under wet conditions.

However, to date, there's still some confusion and uncertainty within the wide-format graphics and printing industry regarding compliance with and usage of ANSI/NFSI B101.3. To provide added insight and clarity, materials distributors, printers, floor graphics installers and others in the graphics industry should commit to memory the following three things about this latest specification.

1. TESTING SPECIFIES DCOF VERSUS SCOF

ANSI/NFSI B101.3 is the first-ever floor safety specification for slip resistance in the US to specify the wet dynamic coefficient of friction (DCOF), as opposed to static coefficient of friction (SCOF). The primary difference between DCOF and SCOF is people or objects already in motion versus those in a static position.

While it's challenging to directly compare DCOF and SCOF methods, static coefficient of friction (SCOF) is the frictional resistance one pushes against when starting in motion. Dynamic coefficient of friction (DCOF) is the frictional resistance one pushes against when already in motion. For SCOF and DCOF, a slip occurs when pushing off with more force than the surface can resist. DCOF is becoming recognized globally as a truer and accurate measurement than SCOF.

(Neither DCOF nor SCOF is a property of the flooring alone, but rather a relationship between the shoe sole and the flooring surface.)

Displayed on high pedestrian-traffic sidewalks in Las Vegas, Mactac's PermaColor FloorGRIP overlaminate was used to help ensure safe entry to the 2016 SGIA Expo

Mactac's high-traction certified PermaColor FloorGRIP overlaminate protected numerous floor graphics and helped provide a slip-resistant walking surface at the 2016 SGIA Expo in Las Vegas

In high pedestrian traffic areas especially, floor graphics need to meet the latest slip resistance specification

Floor graphics materials that have been tested and approved by NFSI per ANSI/NFSI B101.3 are in compliance with necessary slip-resistance requirements

2. RESULTS ARE BASED ON TRACTION RANGES

Unlike past testing methods, with ANSI/NFSI B101.3 results are recorded in DCOF numbers, but reported as high, medium or low traction. A high traction surface has a wet DCOF equal to or greater than 0.42. The wet DCOF for a moderate traction surface is between 0.30 and 0.42. And, wet DCOF values below 0.30 are considered low traction.

To determine traction results, one uses an NFSI-approved tribometer, which is designed to accurately measure wet DCOF. Common tribometers include the GS-1 (Gold Standard) or the BOT-3000 (Binary Output Tribometer). In either a laboratory or field setting, the tribometer uses hard rubber sliders, or test feet, to test to the ANSI/NFSI B101.3 specification.

3. SLIP RESISTANCE IS A REQUIREMENT, NOT A RECOMMENDATION

ANSI/NFSI B101.3 is a required specification, unlike previous specifications, which were only recommendations. Thus, failure to comply implications can be severe. For starters, there are litigation implications to consider. ANSI/NFSI B101.3 is the standard most often accepted by the court system so if a property owner is being contested in a slip and fall case, for example, compliance with ANSI/NFSI B101.3 is certainly an advantage.

Additionally, insurance-related implications are another consideration. Company insurance premiums are based, in part, on assumed and predictable risk. Company floors that are specified by ANSI/NFSI B101.3 as high traction can lead to lower insurance premiums. Furthermore, to avoid implications from the U.S. Department of Labor Occupational Safety and Health Administration (OSHA), every employer must designate a qualified person to perform walkway inspections for compliance with ANSI/NFSI B101.1. Actions like deep cleaning or degreasing can affect wet DCOF values, so failure to maintain the walking surface can result in implications from OSHA.

STOCK, SPECIFY, SELL AND INSTALL

Now that you are aware of the three most important things about ANSI/NFSI B101.3, the best way to ensure you are in compliance with the specification is to stock, specify, sell and install NFSI-approved and certified high traction products.

Included on NFSI.org is a list of high traction-certified products, such as Mactac's PermaFlex FloorGrip PF6600, which is a properly textured 6.0-mil clear matte laminate that offers superior pedestrian traction, even under wet conditions, and exceptional durability. It is designed to deliver excellent protection of printed graphic images and is ideal for both indoor and outdoor settings. Additional product features, include:

- High-tack adhesive compatible with all digital inkjet and UV inks.
- High traction matte finish that is also designed to help eliminate glare.
- Protection from abrasion, moisture and reduced color fade caused by UV light.

No matter your role in the graphics industry – but, especially if you specialise in floor graphic installation or the printing or selling of floor graphics to property owners – equipping yourself with the knowledge and solutions needed to comply with ANSI/NFSI B101.3 will bring numerous benefits to your business. ■

Footnote: PermaColor, PermaFlex and FloorGRIP are registered trademarks of Mactac

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SOLVING THE SCREEN PRINTING PUZZLE

Bruce Ridge interviews Joe Clarke, President of Clarke Product Renovation

Joe Clarke is President of Clarke Product Renovation

BR: After travelling the world going to printing facilities for over 30 years, what do you think identifies a successful business?
JC: I believe business is always about the people. When people leave a job they may say it is because of money but I think the more common cause is their frustration. So the primary mission in a business should not be to mask or overpower frustration, but to eliminate it at its source. There are two paths to take in doing this: marketing and research, and development to assuage the natural tension between sales and operations, where sales tends to over commit, and operations to under deliver. Marketing and R&D are the grouting to keep this mosaic balance and to keep operations challenged and sales realistic. The balance will reduce frustrations on both sides of the equation.

BR: These seem like things you would recognise after being involved with a company in-depth. Are there any telltale signs that give you the immediate impression a company is successful?
JC: I think so. The first thing I look for is what inference I get from the people I am speaking to: is there harmony, is there a sense of accomplishment, or is there frustration? Getting a new machine, or new mesh, or even a new building will not eliminate the frustration I am talking about.

BR: You have worked in practically every screen printing application. What initially attracted you to the screen process, and what still intrigues you today?
JC: I am the consummate puzzle solver, a psychologist would tell you I am a type C personality. I have yet to find a better puzzle than screen printing but our craft can be both exciting and frustrating. My approach is to try to apply science to the manufacturing process, and screen printing warrants the application. Look at what HP is offering with digital printing: a closed loop system which is plug-and-play – in contrast, screen printers don't often dedicate an adequate percentage of their time to improve any one part of their system. For the most part, the printers place the responsibility for this improvement on the manufacturers.

BR: You mention your love for science. Was that something you were good at in High School or College?
JC: No I was better at flirting with the girls and joking around with the guys. I would have been the valedictorian of goofballs. However when I was a child, more than anything else I wanted to become a scientist. I find applying science to the screen printing process very satisfying.

BR: Is there something you have seen or been involved in the last year that has really taken your interest in this manner?
JC: I would say most recently, the work we have done to prove that you can screen print Coroplast against the flutes and achieve even colour without the stripes. We are proving in production, screen printing can be both faster and more durable than inkjet printing, which is contrary to common industry beliefs. I am willing to take a chance and to fail in order to learn and it is this risk [and my willingness to weather the verbal abuse] which allows me to achieve things that were considered unobtainable.

BR: For someone that has as much experience in as many areas as you have, I notice you seem to learn something new from everyone you meet. Tell me something new you have learned recently from someone?
JC: Thank you for the kind words Bruce. There was a book I read a long time ago titled Report to Greco by Nikos Kazantzakis. It was dreadful to read. But I learned "success is in the struggle". Many people want instant knowledge or success but I love the process of learning and trying to stay open minded. My fear is I may begin to believe someone that says I am a guru. What level of expertise I may possess is due to the fact that I started earlier than most people in this industry, regularly work 80 hours a week and I always want to be willing to change my mind.

Six years ago I started the Smilin'Jack business. Prior to that I thought I knew precisely how a squeegee worked but now I realise I was absolutely wrong! Today my opinion is we have been screen printing at least *the hard way* and at most *the wrong way* since the ninth century. With high-shear transfer we are achieving breakthroughs; for example, printing Coroplast against the flutes, we have documented results where we have increased throughput by 20 times while improving print quality. I am working with textile printers that are printing single-pass whites and electronics printers that are printing high-aspect ratio 100-micron circuit traces and soon to be 50 microns. We are not just achieving a single print to demonstrate this is possible, but creating a process where it can be applied on-demand and made available to other companies.

BR: Have you had mentors in this industry and how have they inspired you?
JC: A long time ago something I discussed with Marvin Page when we talked about industry experts is the fact [that] these people usually do two things well. They stand up and speak to a group to explain their ideas, and they write those ideas down in articles or books. So early on despite no journalistic experience and a phobia of public speaking, I committed to doing both in order to communicate my ideas. Today I enjoy the chance to speak to a group to express my opinions and ideas. With respect to the Academy, many of my mentors have been fellow academy members but some of these people have not made it into the Academy yet.

BR: When you were first starting in the business, who gave you the initial opportunity to get you a job or get you started?
JC: Mel Green at Advanced Process took a liking to me and he gave me guidance to take the next steps in my career. At the time we met, I had been running a small manual printing shop and Mel gave me the opportunity to work with one of the industry leaders in 1977.

BR: Do you still have mentors today? We usually think of mentors as good influences at the start of our careers, but how about currently?
JC: Today I use you [Bruce Ridge], Peter Walsh, Tim and Tony Quinn, Mike Ruff, Kreg Levine, Robert Magana, Alan Johnston, Al Brown, Gene Hasch, family members and on and on. I rely on a lot of people that provide me with valuable information on a regular basis.

BR: The Academy Chair, Mike Ruff has done a great job in taking your product to the industry in the last couple years. How has that helped?
JC: Mike has done a marvellous job taking our product to a huge audience with his unique, one-two punch of sales and technical ability. Mike operates as if he has no rear view mirrors – he does not look back. Notwithstanding it is very difficult to sell a life preserver to people that don't even know they are in the water but Mike was able to communicate to the industry [that it] will suffer until the wholesale adoption of high-shear printing.

BR: Has being a member of the Academy been an influence on what you do?
JC: Yes, absolutely. When I sit in the room with the Academy members, it is both humbling and exhilarating. The raw horse power, the intelligence, and the experience are awe inspiring because there is no *average* in the room. I see a lot of specialists, whereas I am a jack of all trades so many of them have been great role models for how I might proceed or tackle something new. Truly the Academy [ASDPT] is the greatest resource for our industry and it is high time we do more for the industry including promoting the group and what we can offer.

BR: Your book Control Without Confusion was the first book many of us read on how to screen print process colour some 30 years ago. I know you have recently worked with the modern process colour experts Mike Ruff, Tim and Tony Quinn. How has the process progressed?
JC: In a word; "systems". We have reached a point of fully integrated screen-printing for four-colour process. Recently, Tony Quinn and I went to an account with Cary Wise and in two days, we were able to calibrate their screen making, their press, and drastically reduced their set up time to achieve predictable, consistent colour. We significantly increased throughput all the while increasing their print quality. Integrated systems are here and are real, providing the end user is open minded and will allow us the few hours necessary to implement the upgrades.

BR: Do you have any of the shirts photographed in the *Control without Confusion* book?
JC: Yes. Mark Coudray (Academy member) printed those in haste and still did a phenomenal job. I got so much help from Mark and so many others who made *Cw/oC* a reality. My sample prints remind me of the Herculean effort which went into some of the projects back then. They also remind me of a great book called *Made to Stick* by Chip and Dan Heath. It is a marvellous book that describes how abstraction is the domain of the expert – I sent Mark the title.

BR: Do you have a stock pile of old classic t-shirts from the very early days of process colour printing on shirts?
JC: Never ask my wife (Collen Lynch) that question. She thinks I gave my shirts away and then give her shirts away! I have a few stashed away but the shirt I am most interested in is the one I am about to print next.

Continued over

BR: What is the biggest challenge in getting printers to adopt new ideas?
JC: I am not sure that I know the answer but I am flattered that you would ask me that question. As I mentioned earlier, high-shear printing is the life preserver but most printers don't even know they are in the water. A company I visited recently would dig their feet in and resist trying anything different. Such companies are not the ones that will embrace technology. Text books will tell you that only 3% of people will become early adopters. My biggest challenge is to sort out the printers to determine onto which to focus my energy.

BR: What has been the biggest challenge for your business in 2015?
JC: I need more hours in the day. I talked to a gentleman the other day and he said he needed more day in his hours; I am still thinking about that one. The blade business has finally taken off. So the hard work is finally paying off. And tomorrow we will be releasing a new textile ink. I am grateful to have a good bit on my plate.

BR: You are one of the few people in the screen industry that constantly works in both the graphics and textile printing areas. How does that work?
JC: I take what I learn from one segment and use it in the others. For example, it is astonishing how many commonalities there are between t-shirt printing and printing flexible electronics. None of the work I do in any one area is done in a vacuum nor is it isolated to that particular process.

BR: In the interview I did with Rich Hoffman, he said the screen printing industry is bigger than ever and continues to grow. What is your perception on this?
JC: I think that M&R and my company are diametric opposites at least in our size and our scope. Rich might have told you his business' growth is coming not only domestically but also internationally. In the USA, we always think that screen printing is labour intensive and the labour rates here are very high but if you do it well, it isn't so labour intensive. Doing it well would require the industry population to be open to education yet we don't have an apprenticeship programme for screen printing. Maybe I am just as responsible for that shortcoming as much as anyone else. We seem to consider training too expensive and once digital became practical for graphic applications, most people considered that to be the end of commercial screen printing. Nonetheless, three of the largest projects I am working on are all reliant upon the efficiency of screen printing, so I agree with Rich that screen printing is and has been on the rise.

BR: There has been such overwhelming sentiment that screen printing is a dying process. But it will continue to be the process of choice for heavy controlled ink deposit and the benefits associated with that characteristic.
JC: Well the three inventions/developments that I am currently working on now are associated with controlled [thick] deposit inks and compounds. The high aspect-ratio at a high resolution is something only the screen printing process can achieve. There will continue to be a need for that type of application of inks and coatings.

BR: One of your major contributions to this industry is by educating through writing. You have been awarded the Swormstedt Award six times. Do these awards help you get business?
JC: Indirectly I would say all the time. But to put it in perspective, I have written over 600 articles which have been published; this means that I am running about 1% in getting awards. But seriously, there have been several of those article series that have led directly to consulting business because of the volume of data they contained about a particular subject such as lenticular imaging, circuitry, and nylon.

BR: What do you think about trade shows today? Have your expectations changed?
JC: I still get enormous value. Consider all organisations immediately develop two prime directives: 1) self- preservation and 2) independence through financial growth. This explains why SGIA has moved so heavily towards an inkjet-based trade show. Considering this fact a problem is clearly not realistic. Shows exist because the capital equipment guys need to have lots of people to see our equipment and then all the support items follow. The trade show is a participation sport. If you are not getting anything out of it, I think it is because you did not put enough into it or prepare in advance.

BR: What are your favourite places to go to find new information on the industry?
JC: I look to people both within and outside of the Academy. I used to travel long distances in order to find libraries and used book stores with relevant information but that has been replaced by the Internet which I use constantly. The problem now is one of sorting the information as the quantity is great but editing is sparse. I will be greatly disappointed if the day comes when books are no longer available, because I love books. These days I participate in forums and blogs and I encourage Academy and other experts to help. Within five minutes on most days on most of these sites, it becomes brutally obvious – the need not for more unsubstantiated opinions but for substantive, quality information. ■

The Academy of Screen and Digital Printing Technologies (ASDPT) is composed of professionals that have dedicated a large part of their career to the education, development and innovation to the industry. This interview was conducted by Bruce Ridge, Director of Technical Service, Nazdar Ink Technologies. Bruce has been a member of the Academy of Screen and Digital Technologies since 2004. Updated from an article originally printed in the SGIA Journal and reprinted with permission, this is the latest in a series of interviews intended to provide insight to the future of our industry from the perspective of Academy members.

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DIGITAL GAINS

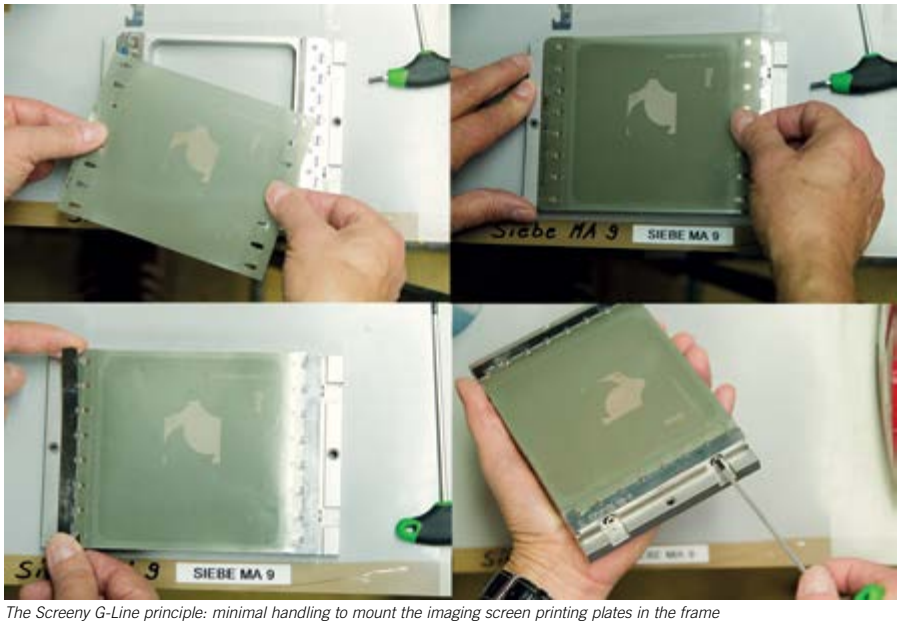
A new, comprehensive screen printing system has brought economic and production-related gains for a writing tools specialist

A member of the Schwan-STABILO Group, Karl Meisenbach specialises in printing writing tools, working on small-scale flat screen printing machines. In summer 2016 the company made the technological leap from analogue screen production to digital processing with the Screeny G-Line by Gallus (see box).

Since then, Karl Meisenbach has been sourcing print-ready screen plates from Gallus in trimmed sizes industrially coated with photo emulsion. The printing plates are exposed on a Phoenix computer-to-screen system by Heidelberger Druckmaschinen AG (Heidelberg). They are then developed in an automatic washing-out unit. The dried surface of the hardened layer has a mean roughness depth (Rz value) of less than five microns.

Gallus has developed an innovative quick-action stretching frame made of light metal for inserting the screen printing plate into the printing machine. On the narrow sides, the screen printing plate is precisely fixed in place in a clamping device by means of punch holes and tensioned with a pre-defined spring force. An adhesive tape seal on the long sides of the frame prevents ink from escaping during the printing process.

Karl Meisenbach exposes motifs on the Phoenix CtS system with a screen ruling of 60 lines per cm



The Screeny G-Line principle: minimal handling to mount the imaging screen printing plates in the frame

STANDARDISED PROCEDURE MEANS PRODUCTION RELIABILITY

The transition from analogue to digital results in economic as well as production-related gains for Karl Meisenbach. Gallus now cuts the screen printing plate and coats with photo emulsion in one standardised procedure, as these are work steps which have a significant influence on the printing results. The angle of the weave and the thickness of the emulsion are precisely defined and do not vary. Karl Meisenbach also profits from a reliable process

SCREENY G-LINE: A COMPLETE SYSTEM

The Gallus Ferd. Rüesch company has developed complete system solutions for screen printing under the brand name Gallus Screeny. Gallus has now expanded its portfolio with the addition of Screeny G-Line. The new flat screen printing system prints cylindrical objects made of plastic, metal or glass. Screeny G-Line is designed to work with thermoplastic and UV hardened inks as well as with one and two component inks.

Screeny G-Line is a comprehensive overall system: the machine-made screen printing plates are cut to size at the desired angle using laser technology and coated with the photo emulsion. A foil protects the emulsion against dust and damage.

The screen printing plates are clamped in special quick-action frames. All it takes is a few steps and an Allen key tool. Gallus offers quick-action frames in sizes suitable for all standard screen printing machines. The frames are electrically conductive and consequently ensure homogeneous distribution of heat energy, thus facilitating work with thermoplastic inks.

Gallus uses calendered screen mesh made of stainless steel for Screeny G-Line. Calendering smooths out the mesh where warp and weft threads overlap. Gallus refines the screen mesh with a nickel layer in its own electroplating centre in Herisau near St. Gallen, Switzerland. The finishing results in balanced tension values in the mesh. At the same time, electroplating seals the mesh; the doctor blade can apply the ink carefully onto the substrate through the mesh to produce a smooth print image.

Karl Meisenbach specialises in printing writing tools. In summer 2016, the company converted from analogue to digital production of screen printing formes

when it comes to exposure: the computer-to-screen technology builds the imaging points with precise, repeatable screen angulation.

Thanks to Screeny G-Line, a screen printing plate is ready for production in four steps: exposure, washing-out, tensioning and preparation (sealing the long sides of the screen). "Compared with the previous, mostly manual technology, up to 60 minutes can be saved per screen printing forme," says Marco Farina, Head of Design at Karl Meisenbach. Gallus estimates overall cost savings of up to 25% per screen print.

PHOENIX: CTS SYSTEM WITH PRECISION OPTICS BY ZEISS

An important link in the digital production chain is the new Phoenix computer-to-screen system. The imagesetter works with a UV LED light source, with radiation energy being diverted to the emulsion by means of DMD technology (Digital Micromirror Device). Precision optics by Zeiss and predictive focus control ensure that the imaging elements on the screen printing plate produce edge-sharp exposure. As Marco Farina says, Karl Meisenbach achieves "excellent printing results" by exposing on the Phoenix with a screen ruling of 60 lines per centimetre.

Phoenix is a dual exposure system. Water-cooled LED UV lamps emit UV energy at 385 and 405 nanometres. The two wavelengths are cumulated into one exposure beam. According to Heidelberg, this leads to a differentiated hardening on the surface and deep within the emulsion. As a consequence, print forme lifetimes are prolonged and highly reproducible.

SCREENY G-LINE TAKES THE LOAD

According to Marco Farina, there are no downsides to Screeny G-Line and digital exposure compared with analogue procedures: "We are faster, the screen dot is sharper, and the print image is more finely detailed," he explains. At the same time the changeover is going smoothly. While Karl Meisenbach works solely with Screeny G-Line and Phoenix for new jobs, for repeat jobs the transition is taking place one step at a time "because we need to adjust the colour formulas and printing process to achieve identical results," says Farina. But the proportion of work shifting towards the new technology is growing. After 10 months, about 70% of Karl Meisenbach's job load is being completed with Screeny G-Line and the Phoenix CtS system. ■

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READING THE SIGNS

Sign printer turned apparel printer handles high growth with equipment upgrades

When Doyle Roger took over his father's sign shop in 2003, he soon realised the company was missing out on a lucrative business opportunity.

"Art-Fx Signs & Graphics focused on vehicle graphics and signage," says Rogers. "But after owning the business for a couple of years it became apparent that our sign shop clientele were the same customers who were purchasing apparel."

In the late '90s, Rogers' father had dabbled in screen printing, so Rogers dusted off the shop's old equipment – a three-colour, one-station tabletop press and a flash dryer – and began taking orders for custom-printed merchandise. According to Rogers, work was slow at first, and the equipment was limiting. But as word spread and orders ensued, he bought a secondhand six-colour, four-station manual press and a small conveyor dryer.

"Our business has thrived on word of mouth," says Rogers. "Our customers are small businesses, local breweries, and schools. We print a lot of T-shirts, jerseys, and uniforms for little league baseball and softball teams."

INVESTING IN THE FUTURE

While the secondhand six-colour press served its purpose, the machine was old and Rogers found that it could not hold registration. "A lot of parts were worn and out of whack," he says. "It needed fine-tuning, and looked like it would cost a lot to fix, so we decided to buy a Vastex V2000 HD six-colour, four-station press.

"It was a huge improvement over what we had before," he admits. "We didn't have to worry about the registration moving."

Rogers can also adjust the registration on the fly with a couple of levers. "With our old press, we had to use a wrench to adjust the off-contact of a screen," he says. "Sometimes we had to make adjustments with every job, so this was a huge upgrade for us."

The new press also has a rear-clamp system, which differed from Rogers' previous side-clamp press: "With a side-clamp system the lateral movement of your screen is limited," he explains. "The rear-clamp system gives you more freedom to move your screen left and right and accommodate larger screens if needed."

The rear-clamp press also allowed Rogers to invest in Vastex' DiGiT athletic numbering system for sports jerseys and T-shirts. The system uses two screens, each with five numbers that slide left and right and lock-into position for each number. It also compensates for the thinner #1 by reducing the extra space between an adjacent number, while centring the entire two-digit number.

The V-2000 6-station, 4-colour press has raised productivity at Art-Fx Signs & Graphics

"The numbering system is versatile," says Rogers. "You can print the number 11 on one shirt and 45 on the next shirt without removing the screen from the press."

Prior to using the numbering system, Rogers numbered garments by applying vinyl heat transfers to the jerseys with a heat press. "It was time consuming, and there were inconsistencies," he says. "Also, when we started doing more performance fabrics, like moisture-wicking shirts, the heat transfers didn't adhere well."

EQUIPMENT UPGRADES RELIEVE BOTTLENECKS

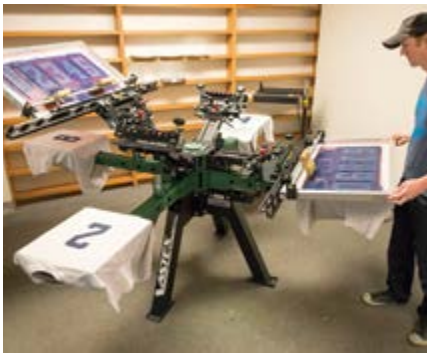
Each spring, Art-Fx Signs & Graphics faces an influx of business as tourists flock to the area and businesses ramp up advertising. The shop is also inundated with orders for baseball uniforms and other sports apparel, according to Rogers.

"During certain times of the year the work piles up, and we would have a two-week backlog on our screen printing orders," notes Rogers. "One person and one press could no longer support the workload, so we purchased a second V2000 HD, identical to the first press except with four colours instead of six."

Micro-registration allows fine-tuning of registration and off-contact of the V-2000 print head

Rogers added an EconoRed II conveyor dryer with a 137cm belt, thereby doubling the capacity of his previous dryer and allowing both presses to feed into the new dryer. "We previously couldn't have a second person screen printing because the conveyor dryer was unable to keep up," Rogers remarks. "We also gain control over the drying process because we can adjust the temperature, speed, and height of the heater."

In addition, Rogers purchased a Vastex



The V-2000 press's rear clamp system accepts Vastex' DiGiT athletic numbering system. Two screens, each with five numbers, slide left and right, and lock into the desired number

The E-2000 LED screen exposure unit with vacuum hold-down exposes screens in 10–20 seconds

The Auto-Flash function of the Red Flash unit rotates the heater away from the pallet to prevent over-flashing.

Art-Fx signs & Graphics feeds the output of two presses to an EconoRed II 137cm wide infrared conveyor dryer

46 x 46 cm RedFlash flash cure unit with an AutoFlash upgrade. The AutoFlash device rotates the head of the flash cure unit into place above the pallet with the touch of a foot pedal and automatically rotates the head away from the pallet after a user-adjustable dwell time has elapsed.

"The flash cure allows us to cure a larger area compared to our previous unit," says Rogers. "We also have better control over the amount of time each print is flashed. Before, if we paused the printing process for a few seconds, we had to move the flash dryer out of the way before it scorched the shirts or over-flashed the prints."

Rogers also invested in a Vastex E-2000 LED screen exposing unit. "The LED bulbs are more efficient and faster at exposing a screen, so what used to take five minutes now takes 10 to 20 seconds," he says. "There's no bottleneck to burning screens anymore."

The screen exposing unit's vacuum hold-down produces a tight screen-to-film contact, which yields greater detail and crisp images. Prior to the upgrade, Rogers had to stack weight on top of his exposure unit to press the image against the glass in an attempt to simulate a vacuum hold.

According to Rogers, the new equipment has boosted efficiency: "For an entire year, we had a two-week backlog, and we couldn't take on any more work. Now we're in a position where we can.

"I think we're going to outgrow our space in the next few years," he continues. "When we do, we will make similar equipment upgrades and potentially hire more people." ■

Further information:
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PrintFactory to challenge status quo at ISA Sign Expo

In keeping with ISA Sign Expo 2018 'Dare to be different' theme, software firm PrintFactory will present a new perspective on colour management in wide-format print.

Exhibiting alongside its US distributor, GMG Americas, the technology company will explain the benefits of an improved workflow and how new technologies can improve consistency of output – leading to time, media and ink savings.

"Daring to be different isn't necessarily about staying ahead of the technology curve – sometimes it's simply about having the foresight to question the norm," said PrintFactory's CEO, Erik Strik. "In-built inefficiency could be stalling progress and very often that comes down to the colour management platform of choice."

The management team behind PrintFactory's holding company, Aurelon – formerly of GMG Color – are seeking to simplify wide-format set-ups with total automation, building on the streamlined workflows for its software-as-a-service (SaaS) client base.

"While we're making significant in-roads with our SaaS offer, there is a significant chunk of the market that isn't ready to take it that far yet," observes Strik. "Transitioning from legacy platforms, fear of change or security concerns with the cloud are common perceived obstacles. Having a system in place that can support longer term ambitions of going automated, however, is a savvy move while short to medium term issues are resolved with the pre-press process. Be confident the fundamentals are covered off and then look to move forward."

In the meantime, "demand more from your colour management", he advises. "Only then can you benefit from truly transformative technologies that could take your business to a level of productivity you never thought possible."

The ISA Sign Expo 2018 trade show takes place from 22–24 March at the Orange County Convention Centre in Orlando, Florida. ■

Rapid growth of 3D printing for medical application

The market for 3D printed medical and pharmaceutical products will rise from $400 million as of 2016 to $6 billion by 2027, according to findings from Smithers Rapra's study 'The Future of 3D Printing for Medical and Pharmaceuticals to 2027'.

The report notes that the key driver of the rapid adoption of 3D technology in healthcare is the potential it offers in delivering personalised medicine – the new mantra of modern medicine.

3D bioprinting of tissue models to study disease development or to perform drug screening, or drug mechanistic safety testing, and to assess drug toxicity at the preclinical stage is also expected to be a high growth area over the next 5–10 years, while Food and Drug Administration (FDA) approval of the first 3D-printed oral drug, Spritam, highlights the potential of 3D for drug formulation, which will be a significant area of application as the drug industry seeks to treat rare conditions.

Almost all hearing aid shells are now customised to individual patient anatomy using 3D technology, and dental practice has also benefited from better fitting customised dentures, crowns, implants and aligners; and speedier production/delivery of dentures.

According to the study, anatomical models and prosthetics will continue to improve in quality and scale of adoption at a steady rate over the forecast period and beyond. For example, the FDA approves over 3,000 medical devices every year; and less than 100 3D printed medical devices have been approved by FDA – demonstrating the potential for conversion to 3D printing technology in the medical device arena.

Available for £4,500, Smithers Rapra's study provides quantified market data, segmented by material type, end use and geographic region. The study also provides detailed analysis of the new value chain emerging for personalised medicine, as key players and new entrants alike combine to deliver next-generation solutions. For more information, visit www.smithersrapra.com. ■

Textile Printing Now 2018 announced

FESPA UK Association, in co-operation with the British Interiors and Textile Association will hold its fourth annual Textile Printing Now event on 13 March 2018.

Held at the Textile Centre of Excellence in Huddersfield, the one-day conference will again feature a mix of presentations, displays and networking and will examine the full range of textile printing, coating and surface modification techniques – both analogue and digital – and introduce concepts that delegates may not have previously considered, to inspire them into business-improving initiatives.

Speakers will include Mutlu Chaouch Orozco (WTiN) giving a 'Global Digital Textile Market Overview'; Mark Harrup (Which PLC) – 'Digital Disruption in Fashion'; Debbie McKeegan (Digetex) – 'Design and Print in a Personalised World'; Julian Mainwaring (Mainwaring & Partners) – 'Pioneering Innovation in Textiles'; Tian Carey (Cambridge University) – 'Textiles with Inbuilt Electronics' and Gavin Thatcher (Stead McAlpin) – 'Digital Print in Textiles'.

"The Conference is intended as a celebration of textile printing and will point the way towards a very bright future for this vibrant sector," commented Peter Kiddell, director of FESPA UK Association. "We have already secured a stellar line-up of industry experts to speak, making this a must-attend event for anyone keen on gaining a competitive edge in this rapidly expanding area of print."

A pre-event networking dinner has also been arranged for 12 March when delegates will have the chance to join the FESPA UK team, along with speakers and sponsors. ■

The 2015 Fabric Printing Now conference

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New CEO for Gallus

Christof Naier has been appointed CEO of Gallus, taking over from Klaus Bachstein who made the decision to leave after 15 years at the helm of the Gallus Group.

Christof Naier became CEO of Gallus in January

Bachstein joined Gallus Ferd. Rueesch AG as Director of Marketing, Business Development and Screen Printing Business on 1 October 1995, subsequently also taking over responsibility for Service and Sales. In June 2002, he became CEO of the Gallus Group. This phase saw many important developments, including the introduction of the Gallus RCS, servo-driven label printing press, the development and introduction of the Gallus Labelmaster, and the Gallus Labelfire.

In mid-2014 the Gallus Group was taken over by Heidelberger Druckmaschinen and continued corporate development of Gallus as part of the Heidelberg Group will be headed up by Christof Naier from January 2018 onwards.

Naier joined Gallus in July 2012, first as Head of Sales, Marketing, and Service Label Business, and since July 2017 as General Manager Label Business. He will continue to implement the growth strategy for Gallus initiated three years ago and work to drive the expansion of the digital business. ■

Inkcups opens new European headquarters

A brand-new office in Freudenberg, Germany, will serve as the European headquarters for printing equipment and supply company Inkcups.

Equipped with a demo room to showcase the latest technology, the new location also serves as a warehouse to house most of Inkcups' equipment and supplies in order to decrease turnaround time for European customer orders.

The Freudenberg headquarters will be led by Inkcups' European Sales Manager Christian Fischer, who will look to expand the Germany office. The company is also equipped with a local technician to service its machines, train customers and offer technical support. ■

Industrial printing reinforcement at ColorGATE

Jan Seguda has joined ColorGATE's business development team as 'Product Manager Industrial Printing' to extend the company's business expertise in Industrial Printing.

Working in the Ceramic Development Digital Printing team at German tile producers, Villeroy & Boch, Seguda was responsible for the conversion of Rotocolor and the production of existing digital print series; and when chemical industry company Zschimmer & Schwarz strengthened its digital printing sector in the tile sector with him, he gained insights into ink development and the chemistry behind ceramic production.

Jan Seguda is the new "Product Manager of Industrial Printing at ColorGATE

From communication design to tile production to a chemical industry company, moving to software development at ColorGATE was the next logical step for Seguda.

"ColorGATE was the door opener to Colour Management for me, which I have always been looking for," he explained. "In the daily business of the industry, it is important to be able to rely on its tools. Even if challenges emerge that have not been asked before, good software will be able to react to them."

Drawing on his expertise in design, knowledge of the requirements of industrial production processes and his experience in diverse production sites, Seguda will be the interface between user-specific needs and the product-specific solutions.

"With the commitment of Jan Seguda as PM IP, we are taking account of the growth in Industrial Printing," commented ColorGATE CEO Thomas Kirschner. "We have gained a Colour Management expert for digital surface decoration and an IP experienced employee who is further expanding the field as a technology-oriented expert and supporter of the management." ■

Luescher-Tschudi flags up new printing technology

Swiss company Luescher-Tschudi and its partner Fahnen Tschudi have developed a technical solution to eliminate known problems in textile and flag printing production.

The flag fabric commonly used for digital inkjet printing generally has a material thickness (weight) of approximately 110g/sqm. This is often problematic with the printing of the dyes (penetration) on the back side, since, as a rule, too little ink is applied during the use of heavy flag material to achieve a passable printing speed, and the printing result on the back of the flag is particularly severe.

Increasingly, customers demand a more robust material thickness, up to 160g/sqm. Although these stronger textile materials offer longer service life in the outdoor area, it can be difficult for ink to penetrate through the fabric during inkjet printing, making the printed image on the back of the flag significantly paler.

However, Luescher-Tschudi claims that its new digital printer RAPTOR 320 delivers an 'almost 100% colour through print result' using its water-based inks, with UV light fastness unchanged at 6–7 on the Wool scale.

The RAPTOR 320 digital printer is delivered in a machine configuration up to 3,200mm wide and equipped with eight colours using eight Konica Minolta industrial print heads. ■

GLASSPRINT 2017 ATTRACTS RECORD ATTENDANCE

The largest ever GlassPrint conference and exhibition presented the latest decoration trends and developments to an international audience in Düsseldorf, Germany, last November

Staged for the seventh time and powered by glasstec, a record attendance of over 200 visitors travelled from 28 different countries, not only from mainland Europe and the UK but also from long distance destinations such as Chile, India, Iran, Israel, Japan, Korea, South Africa, Taiwan and the USA.

Key stakeholders represented included glassmakers, decorators and brand owners such as AB InBev, AGC, ARC, Ardagh, Blasé, BSH, Bormioli Luigi, Corning, Gürallar, Heinz-Glas, Kurz, Libbey, O-I, Pasabahce, PSL, Saint-Gobain, Schott, The Absolut Co, Verallia, Vetropack and William Grant.

EDUCATIONAL PROGRAMME

GlassPrint 2017 provided delegates with the opportunity to discover the latest innovative advances in screen printing, dynamic strides in digital technology and revolutionary techniques such as 3D printing via a two-day programme of conference and networking sessions.

Opening with a keynote address covering glass printing trends, technologies and geographic markets by Dr Sean Smyth of Smithers Pira, technical experts working for various companies in the glass decoration sector then delivered a series of presentations that demonstrated processes and ideas to add extra value to the end product, cut production costs and make processes more efficient:

- Novel transparent inks for highly efficient light diffuser glass devices (EPTAINKS).
- The value of glass decoration (FERRO).
- Direct to bottle printing with a scalable easy to use system for screen printing (Gallus).
- Atmospheric pressure plasma for patterned inkjet printing and coating on glass (HEIG-VD / HES-SO University of Applied Sciences Western Switzerland).
- Digital glass gilding technology for decoration (Heraeus).
- How to benefit from cloud computing and Industry 4.0 as a glass printer (KBA Kammann).
- True3DGlass: A revolution in glass processing (Karlsruhe Institute of Technology).
- Screen printing of hollow and flat glass: Latest developments, advantages of organic inks, effects for the beverage industry (Marabu).
- Ceramic digital printing without glass frit (Ormo Print).
- Digital printing opens a new way of marketing glass bottles (Rosario C2C/ Curvink).

Continued over

Gallus Screeny

Rotary screen printing
The Screeny A-Line products are based on proven processes and new technology and represents the characteristics of extreme spring hard, strength and high speed. The recognised high quality of Screeny screen printing plate is enhanced with new strength properties, which include extreme spring hard factors. This particular feature is created by the new base structure which combines high strength and an excellent resiliency. The extreme stability of the Screen printing plate is particularly well suited for longer and larger print jobs and for maximum reuse.

Flat screen printing
Gallus offers an end-to-end solution for industrial glass / container screen printing – a fully integrated printing system with machine-produced screen printing plates. The new Gallus Screeny G-Line and C-Line screen printing plates set new standards in cost-efficiency and production reliability when decorating hollow glass and containers with industrial screen printing techniques.

gallus

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Over 200 attendees participated at GlassPrint 2017

- Stencil technology for close tolerance printing (SAATI).
- Screen printing: The importance of a perfect screen (SignTronic/Grünig).
- Decoration of architectural glass using inkjet printing (Tiger Coatings).

Five additional keynote addresses were made covering the flat and hollow sectors. Marcello Montisci, Chairman of the FEVE Marketplace Committee and Head of Corporate Sales, Marketing and Planning for the Vetropack Group, looked at current and future challenges and opportunities for the glass container industry, while Bertrand Cazes, Secretary General of Glass for Europe, presented 'Healthy buildings and what it means for flat glass'. Later, Dr Johann Overath, Director General of Bundesverband Glasindustrie eV, evaluated the current situation and trends in the German glass industry and an update of glasstec 2018 was provided by Birgit Horn, Project Director at Messe Düsseldorf and Professor Ulrich Knaack of the Technical University of Darmstadt.

Simone Tiozzo from Stazione Sperimentale del Vetro also examined compliance to food contact and REACH Regulations.

Anyone who missed GlassPrint 2017 and would benefit from viewing the proceedings can visit www.esma.com/shop/glassprint to purchase the presentations.

Birgit Horn, Project Director at Messe Düsseldorf and Professor Ulrich Knaack of the Technical University of Darmstadt

SOLD OUT EXHIBITION

The conference programme was supported by intervals dedicated to the accompanying sold out tabletop exhibition area and at the end of the first day, delegates benefited from networking with their peers and suppliers during an evening dinner. Exhibitors who displayed the latest developments in inks, pre-press technology, printing equipment and supplies included: ColorGATE, Curvink, EPTAINKS, Fermac, FERRO, Gallus, glasstec/Messe Düsseldorf, Glass Global, Global Inkjet Systems, Grünig-Interscreen, HEIG-VD/HES-SO University of Applied Sciences Western Switzerland, Heraeus, ISIMAT, KBA Kammann, KIWO/Kissel + Wolf, Lüscher, Marabu, Mimaki, Ormo Print, Peyer Graphics, Pröll, RK Siebdrucktechnik, RUCO, SAATI, Sefar, SIAK Transfers, Sun Chemical, Tecno5 (Cerve), Tiger Coatings and Uviterno.

The conference programme was supported by a sold out tabletop exhibition

Bastian Rapp of the Karlsruhe Institute of Technology (KIT) examined 3D printing on glass

GLASSPRINT LIVE SESSION

Following its successful introduction to the programme in 2015, the GlassPrint LIVE session returned to bring together a specially selected panel of experts to discuss topical issues affecting hollow and flat glass decoration. Panelists included Jochen Christiaens (Inkjet Consulting Christiaens), Harald Gavin (ISIMAT), Oliver Kammann (K-Flow), Eelco Venema (Rosario/Curvink), Rino Messere (Saint-Gobain) and Bob Nersesian (Sun Chemical). Moderator was Sun Chemical's Robin McMillan in his role as Chairman of ESMA's Technical Exchange Committee.

SPONSORS AND ORGANISERS

GlassPrint was jointly organised by Chameleon Business Media, publisher of *Specialist Printing Worldwide* and *Glass Worldwide* magazines and ESMA, a European association for specialist printing manufacturers of screen, digital and flexo technology. As well as being powered by glasstec, GlassPrint 2017 was sponsored by SGIA.

Having reaffirmed its importance on the global glass events calendar, the organisers are already planning to repeat GlassPrint in 2019; details on the location and dates will appear in future issues of *Specialist Printing Worldwide* and interested parties can register their interest at www.glassprint.org.

The March/April 2018 issue of *Glass Worldwide* will include the Annual ESMA Glass Publication 2018, a special guide to glass decoration. To subscribe, visit www.glassworldwide.co.uk ■

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POSITIVE RESULTS FOR INPRINT

The third edition of InPrint in Germany attracted some 3,000 industry professionals

Held from 14–16 November 2017 at the Munich Trade Fair Centre, the exhibition was attended by 2,951 visitors from 63 countries and saw 153 exhibitors showcasing their technology for print applications in industrial production.

In addition to activities on the stands, a supporting programme in two conference theatres offered visitors insight into prevailing trends and the latest developments in functional, decorative and packaging printing.

'InPrint has now firmly established itself as the seminal event for print applications in industrial production,' commented Nicola Hamann, Managing Director at the organisers, Mack Brooks Exhibitions. 'What we can see as a result of this year's show, is that InPrint is clearly evolving from a developmental networking event into a networking and trade exhibition, with increasing sales activity on the show floor.'

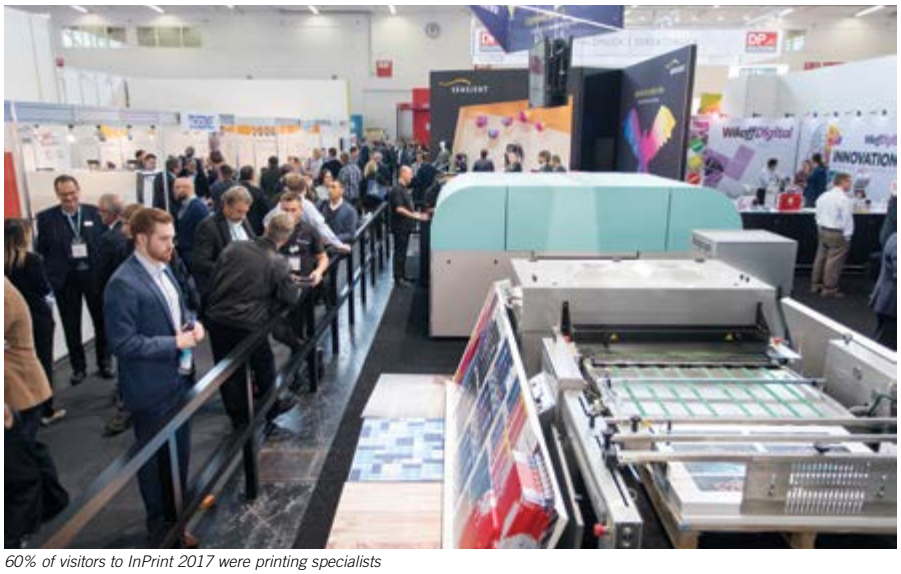
'While individualisation of many products and materials was previously mainly possible for small individual batches or on a made-to-order basis, innovative printing applications now enable long-term mass customisation within the industrial production process,' added Frazer Chesterman, Co-Founder of InPrint. 'Many manufacturing sectors see huge market potential in these printing applications, as they allow companies to enhance their value chains and gain competitive advantage.'

The InPrint 2017 Innovation Awards acknowledged innovative products and partnerships and a special award acknowledged Sophie Matthews-Paul

WIDE RANGE

Industry sectors represented by visitors to InPrint 2017 ranged from the automotive industry, interior design, fashion, electronics production and white goods to toys, sports, pharmaceuticals, food & drinks, ceramics and many more. Visitors included delegates from brands such as adidas, Audi, Boehringer Ingelheim, Continental, Daimler, EVONIK, Fischersports, LEGO System, Marc Cain, Mercedes-Benz, Nestlé, Procter & Gamble Manufacturing, Ravensburger Spieleverlag, Rodenstock, Swarovski, Swatch Group and uvex sports group.

The exhibition survey shows that while 60% of show visitors were printing specialists, a third were from different sectors of the manufacturing industry and some 7% came from the packaging sector. According to the survey, the majority of visitors came from Executive Management, work in Research & Development, or are marketing professionals or production specialists. Visitors mainly operate in the digital printing sector (38%), in inkjet (26%), screen printing (20%) or speciality printing (9%). Areas of most interest to visitors were machinery and printing systems, inks, fluids and chemicals, print heads, screens and other special parts; materials and substrates; hardware and software, as well as integrated and customised parts.



60% of visitors to InPrint 2017 were printing specialists

WINNING IDEAS

The InPrint 2017 Innovation Awards, sponsored by Ricoh, acknowledged innovative products and partnerships between companies driving advancement in industrial printing and manufacturing. Winners in the category 'Innovative partnerships' were CEFLA, Italy, and Tonejet Ltd, UK. Prizes in the category 'Extraordinary Products' were awarded to Sioen Chemicals, Belgium, and Thallosjet, Italy. A special award acknowledged the lifetime achievement and outstanding contribution to the development of print technology made by InPrint ambassador Sophie Matthews-Paul. ■

InPrint will return to Milan, Italy, from 20–22 November 2018.

Further information:
web: www.inprintshow.com

FESPA ASIA 2018

Aiming to build on the success of the 2017 event, FESPA Asia returns in February

Running from 22–24 February at the BITEC exhibition centre in Bangkok, Thailand, the FESPA Asia 2018 exhibition for the wide format, screen, textile print and signage markets will feature over 100 exhibiting companies.

International brands already confirmed to participate include: M&R, Siser, d.gen, Multicam, JK Group, Caldera, Fimor, Sensient and Hexis, the official World Wrap Masters Partner. New exhibitors Stahls, Monti Antonio, Foilack, Chemica and many others have already placed confirmed stand bookings for the 2018 event, which currently has an exhibitor re-book rate of 60%.

Visitors will have access to a programme of educational content including a textile printing workshop, the Wrap Masters Asia and a series of seminars featuring speakers from Asia and beyond.

The wide format print and signage event brings together 100+ brands

LOCAL SUPPORT

To demonstrate its commitment to the Asian market, FESPA has strengthened its direct communications in the region by appointing an Asian Business Development Manager, Hannah Pan, to liaise and assist exhibitors in the local language. FESPA is also working with local marketing and advertising agencies in the pan-regional promotion of the exhibition.

The 2018 event is supported by Thai Garment Manufacturers Association, Thai Advertising Business Development Association and the Thai Textile Institute (THTI) who are proactively promoting the exhibition to members. Further support comes from FESPA's ASEAN member associations in India, Sri Lanka, Nepal, Republic of Korea, Japan, China, Philippines and Australia, who represent a combined regional membership of more than 2,000 print service providers.

REPUTATION FOR SUCCESS

The inaugural FESPA Asia, which took place from 15–17 February 2017, attracted over 4500 visitors. Attendees travelled from 63 countries, with the largest delegations coming from Thailand, Singapore, India, China and Malaysia.

FESPA Asia 2017 attracted over 4,500 regional and international visitors

"Having delivered a successful event in 2017, we're delighted to have such strong commitment from many major international companies for FESPA Asia 2018 and such resounding endorsement from a broad spectrum of regional Associations," commented FESPA Divisional Director Roz Guarnori. "Visitors from across the ASEAN region can benefit enormously from the opportunity to access such diverse international exhibitors all under one roof in Bangkok."

International visitors travelling to FESPA Asia 2018 can take advantage of discounted flights with Thai Airways. For more information on how to benefit from cheaper rates, visitors should visit the FESPA Asia website. ■

OTHER FORTHCOMING FESPA EVENTS INCLUDE:

- FESPA Global Print Expo, 15–18 May 2018, Messe Berlin, Berlin, Germany
- European Sign Expo, 15–18 May 2018, Messe Berlin, Berlin, Germany
- FESPA Africa, 12–14 September 2018, Gallagher Centre, Johannesburg, South Africa

Further information:
web: www.fespa-asia.com

RECORD-BREAKING IJC

The 2017 Inkjet Conference broke all records and has now revealed its plans for 2018.

Attracting 525 attendees from 23 countries with its inkjet engineering and inkjet chemistry offerings, TheIJC 2017 saw a 30% increase in attendance compared to the 2016 show, with the majority of delegates visiting the show for the very first time.

"As a first-timer, I enjoyed the presentations and meeting so many passionate people in the industry. I will definitely be there next year and I have already recommended this conference to my friends," said Amadeusz Wieteska from University of Lodz.

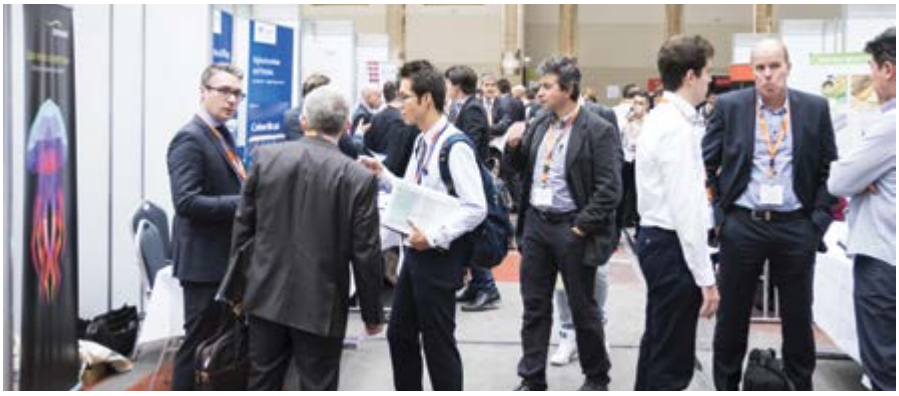
TheIJC 2017 also featured an extended educational programme and a packed tabletop exhibition.

A WAY WITH WORDS

A total of 62 presentations were held on three parallel tracks at TheIJC. New for 2017 were the plenary sessions which opened each day. "TheIJC is an excellent place to understand latest print head technology," commented Dan Denofsky, Director – Partner Business Development at Kodak.

All speakers competed for the prestigious Best Speaker Award voted by the audience via the conference app. The winners were:

- Best Speaker Plenary Sessions: Shin Ishikura (Kyocera); runners-up: Shane O'Neill (Fujifilm Dimatix) and Angus Condie (Xaar)
- Best Speaker Track 1: Rob Day (TTP); runners-up: Dr Stéphane Biry (BASF), Dr Nick Campbell (Inca Digital)
- Best Speaker Track 2: Dr Els Mannekens (ChemStream); runners-up: Dr Thomas Willers (Krüss), Dr Kevin Poelmans (Allnex)
- Best Speaker Track 3: Enrico Sowade (TU Chemnitz); runners-up: Daisuke Hamada (Kao Collins), Prof. Marc Van Parys (TexZeppelin)



The majority of delegates at TheIJC 2017 were visiting the show for the first time

FRESH DIRECTIONS

Altogether 87 companies and research institutes showcased their solutions in the networking arena; 42% of them exhibiting for the first time.

"I was surprised to see a lot of new technologies every year since the first edition of the conference," said Daijiro Kikuchi from Toshiba Tec, while Volker Steffen from KBA-Kammann commented that "TheIJC is more than helpful for an equipment manufacturer". The Inkjet Conference delivers a "refreshing, encouraging and inspirational recipe of academic lessons and cutting edge developments," concluded Jordi Limiñana from Limitronic.

Following positive participant feedback, the organisers are already putting together the agenda for the first TheIJC USA at The Westin O'Hare Chicago on 12–13 April 2018. TheIJC returns to Swissotel Düsseldorf on 15–17 October 2018 for its fifth anniversary edition. ■

TheIJC 2017 saw a 30% increase in attendance compared to 2016

Further information:
web: www.theijc.com

WHEN MARKETS CONVERGE

Ford Bowers introduces a new SGIA trade show that aims to consolidate the technologies available to printers looking to expand

Ford Bowers, President & CEO of SGIA

The introduction of digital printing processes begun several decades ago has taken root in many segments of the printing industry, and as a result, the world of print is dynamic and constantly changing. Recently, in fact, the effects have accelerated the convergence of once-distinct market segments. Among our members and at our annual trade show, the Specialty Graphic Imaging Association (SGIA) has seen how digital print production is allowing printers to expand their offerings much more rapidly than in the past.

BRANCHING OUT

Once printers establish the workflows that accommodate these trends and master the ability to print digitally, the addition of other capabilities that can expand their product offerings and the markets they serve is easier. We have seen printers, once squarely tied to a specific technology, adopt digital printing first to augment operations, then use it to respond to increased demands for short runs, lower inventories, personalisation or regionalisation of print campaigns, and so forth. The barriers to entry into these new product and vertical markets are essentially reduced to the price of new hardware and a learning curve related to new substrates and finishing models. Where once a litho shop might not venture into the graphics display world, or vice versa, we see this much more regularly now. Likewise, labels, garments and industrial are branching out. Packaging converters are adopting digital technologies, and offset printers are picking up the same technologies.

On the OEM side, there is, among some of the larger companies, a much wider array of offerings based on a core technology of digital print engines that are quickly adapted to adjacent markets. The challenge for many is that their R&D outlays in this area are not always matched by an equal expansion of marketing spending. Exhibiting at trade shows, the cornerstone of many marketing efforts throughout the year, is becoming increasingly expensive and can strain even the most robust marketing budgets. Consolidation is needed.

PRINT UNITED

SGIA is responding to these changes with a new trade show, one that will benefit printers and manufacturers. Therefore, after 2018 SGIA will retire the SGIA Expo. In its place, SGIA has partnered with NAPCO Media, publishers of *Printing Impressions, In-plant Graphics* and *packagePrinting* magazines, to bring Print United into being beginning in 2019. As an association, SGIA is the home of graphic producers and installers, garment decorators, industrial and printed electronics, while NAPCO is the voice of the commercial and in-plant markets and is rapidly establishing itself in the packaging converter arena. This partnership will allow us to bring the widest audience together for an unprecedented expo experience.

This new exposition will also bring together the widest range of printing technologies under one roof. The benefits will be twofold. Printers will be able to explore a range of technology in one place, rather than going from show to show. Whether industrial, sign and graphic, garment and apparel, commercial or packaging, exploring the options for adding products and services will be much easier than in the past. Combined with a broader array of education, this will be the most advantageous three days for determining your next steps to increased profitability, services and product offerings.

For the exhibitors, bringing together a broader audience of companies from all of the above segments will represent a more efficient way to engage in the community and will allow them to take advantage of this convergence in a way not possible before. Based on our conversations with them over the past few years, this is a long overdue development.

As an association, we are grateful that we have already built a platform to launch such an ambitious plan. Certainly, there will be challenges, but there is no doubt that the market itself, from printers to exhibitors, will benefit from the success of such an endeavour.

We hope to see you at the inaugural edition of Print United in Dallas, Texas, 23–25 October 2019. Be on the lookout for press releases and articles detailing the exhibitors that will be attending and features we will incorporate in this exciting and information-packed event. ■

Ford Bowers is President & CEO of SGIA

Specialty Graphic Imaging Association

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