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IN THE FRAME

Patrick Brunner advises on the optimal stretching process and how to select the best screen printing frame

Producing a mesh that meets the requirements for high-quality screen prints is a continual challenge in a steadily changing environment for the screen printing mesh manufacturer. The right choice of screen printing frame and the optimal stretching process are crucial to produce the best results from the stencil.

FRAMES

Materials: For screen printing frames, the materials used are wood, steel and aluminum. Wooden frames have a high sensitivity to water and climatic influences so are not recommended for commercial screen printing. Steel frames with the correct profile dimensions make stable stencil carriers; however, they are relatively heavy and should be zinc coated to protect them from strongly corrosive acting stencil remover agents. Today, screen printing frames are mainly made from aluminum. With the correct dimensions they are able to maintain high tension levels, are manoeuvrable and also less sensitive to corrosion.

Frame profile: Selecting the right profile dimension depends on the frame size and the required tension level. The market for screen printing supplies offers frame profiles which are constructively modified to achieve higher strength with lower material usage. The so-called 'slope' frame profile has proven to be very effective for screen printing applications, with less distortion even on high tension levels.

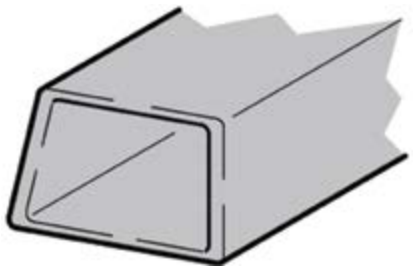
Unfortunately, in practice often the frames used are too weak, making a high and constant level of tension impossible. For example, an automotive dial printer using a 40x30mm frame section with a wall thickness of 2mm on a size of 110x125cm cannot reach a final equal screen tension of at least 22 N/cm. Inconsistency in dimension stability is unavoidable when printing a multicolour step-and-repeat layout job on polycarbonate foil which has subsequent processes like punching, thermal forming and backmoulding.

Frame size: In order to achieve a proper ink release, the snap-off (the distance between substrate and stencil bottom) has to be taken into account. The snap-off results in an additional burden for the mesh, because an increasing distance between stencil and printing substrate has to be compensated for by increased squeegee pressure in the printing process. To reduce this additional burden, we recommend considering the clearance (distance between inner frame edge and printing image) when determining the frame size.

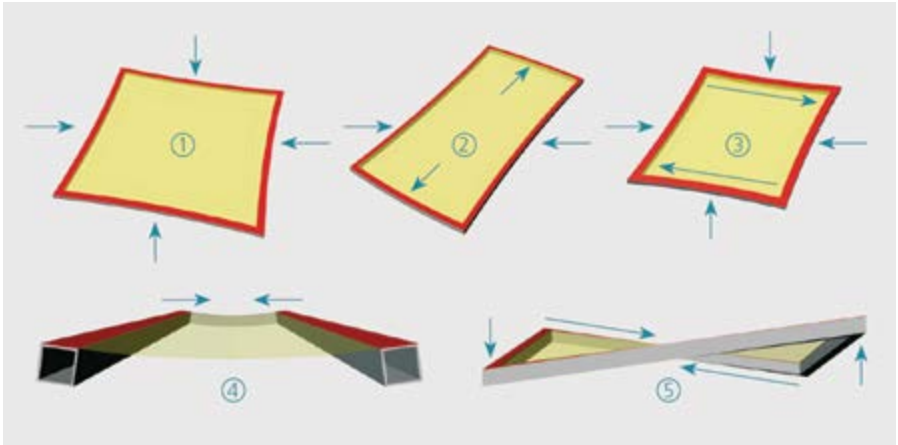
Frame preparation: The frame surface should be clean, slightly roughened and completely level before stretching. To avoid the mesh tearing during the stretching process, hard adhesive residues at the frame edges should be removed. If the adhesive layer shows depressions, this may cause contact difficulties between frame and mesh. In such a case, the adhesive layer has to be at least partly removed. This can be done by grinding or by high water pressure. If the layer has to be ground down to an equal level, try to remove as little as possible of the frame substance.

Frame handling: Attention! Avoid hard shocks to the stretched screen. The smallest frame distortions can cause an immediate tension drop. Even if distortions do not appear immediately, there is still a risk that the frame material may have been weakened by various small shocks. Typically, shocks may occur in transits between stock, coating, copy and print.

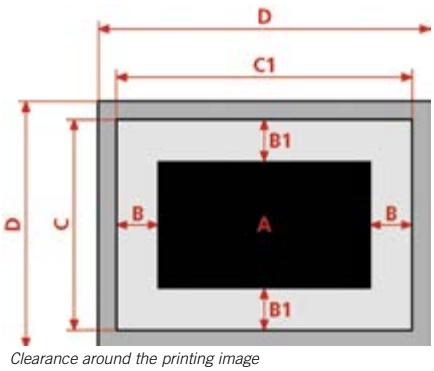
Continued over



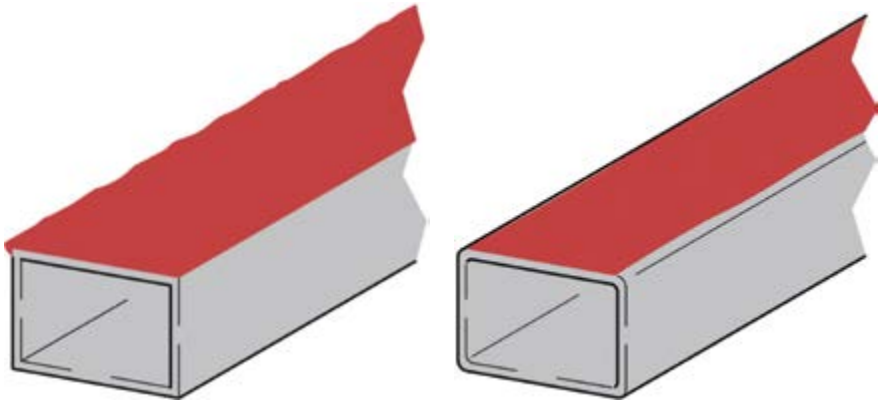
'Slope' frame section



Typical examples of distortion



Clearance around the printing image



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Avoid hard shocks

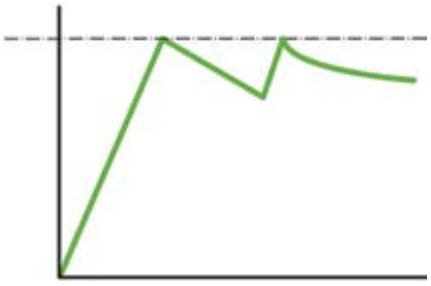
Mechanical stretching system

STRETCHING SYSTEMS

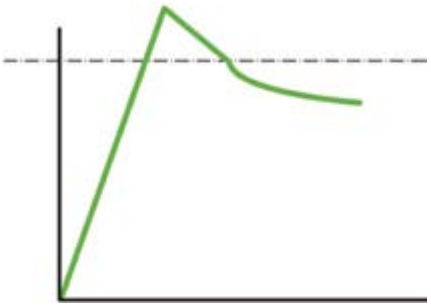
Screen printing stencil carriers for the glass industry are mainly stretched by means of mechanical stretching systems or pneumatic stretching clamps.

Mechanical stretching system: This method allows stretching of multiple frames in a very efficient way. If desired, frames can also be stretched and angled to the thread direction of the mesh. The disadvantage of this process is a more distinct tension drop, which appears after releasing the tension from the stretching system because the tension force now transfers directly from the stretching system to the frame section. To prevent this effect, the suppliers of mechanical stretching systems offer pre-stretching equipment.

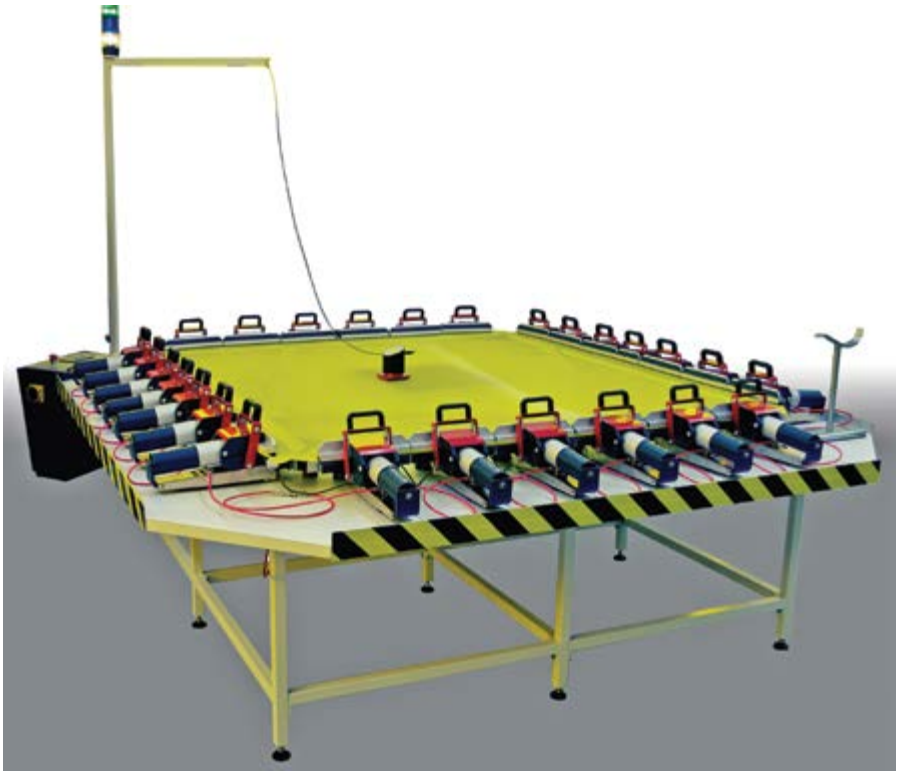
Loss of tension may also lead – especially when weak frame profiles are used – to



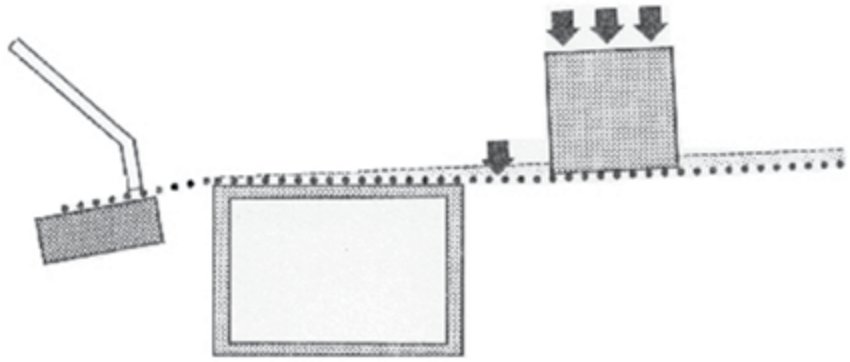
Standard stretching method



Quick stretching method



Sefar 3A pneumatic stretching clamps



Optimal contact between frame and mesh

Sefar Tensocheck 100 tension gauge

distortion in the appearance of the mesh at the edge zone.

Pneumatic stretching clamps: Here the frame gets pre-tensioned; so only a marginal tension loss occurs. Another advantage of this stretching method is that even if the frame shows a slight deformation, there will be less distortion to the mesh. However, pre-tensioning of the screen printing frame only works in an optimal way if the mesh can be stretched straight to the frame section.

STRETCHING PROCESS

Processing: There are two methods to reach a desired final tension. With the so-called 'standard method' the desired final tension will be reached directly. After a relaxation time of approx. five minutes the tension loss is going to be compensated for while rising up again to the desired final tension. As soon there is no more significant tension drop, the gluing process can begin.

With the 'quick stretching' method the desired final tension will be exceeded according to the expected tension drop.

In general, total tension loss is reduced with a longer relaxation time before gluing. It does not matter which stretching method is applied; it is important that all stencil carriers used for the same printing job are produced with identical tension values and relaxation times.

Adhesive: Today mainly two-component polyurethane adhesives are used to ensure permanent bonding between screen printing mesh and frame. These two-component adhesives require – depending on the fineness of the mesh – between 15–30 minutes until they can maintain permanent screen tension.

For maximum stability, no further print processing should take place until 24 hours after releasing the screen from the stretching system. Irrespective of the brand or the mesh type, the greatest tension drop always happens the first 24 hours after the stretching process.

To maintain as equal tension as possible in the printing area, keep the corner area free of stretching clamps, otherwise there is the risk of overstretching the mesh there. Fine mesh types should be even released in a corner area when being inserted into the clamping jaws. To ensure an optimal contact between frame and mesh, weights parallel to the inner frame sides are very helpful.

Measuring methods: Achieving reliable screen tension requires a tension gauge. When pre-tensioning large frame sizes we particularly recommend using a tension gauge to differentiate the tension between warp and weft direction as accurately as possible.

FINAL NOTE

As already mentioned, too-weak frames are often the reason for excessive tension loss. The incorrect insertion of mesh into the clamping jaws, unilateral pulling clamps or too-short waiting time before or after gluing may also lead to excessive tension loss. When reclaiming a screen, the used ghost image removers can weaken the mesh, which may also lead to tension loss or even mesh rupture. ■

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TESTING TIMES

Tiffany Rader Spitzer provides a step-by-step guide for checking exposure times

Pre-press is the most important area in a screen print production shop. I cannot impress this enough on the shops I travel to, pun intended. Most of your production issues can be fixed when you go back to pre-press and evaluate your processes and procedures.

Not pulling the detail from film or CTS to the screen on press? Having wash out and/or reclaim issues? Screens breaking down on press? Emulsion coming off on the tape? It's probably time to check your exposure times. A commonly skipped step with guesses and estimations put in place instead. This easy step by step, with troubleshooting, will walk you through the process and save you countless time, effort and headache.

EXPOSURE CALCULATOR

One of the most misunderstood and neglected areas of pre-press – and printing in general is properly exposed screens and exposure testing. So what exactly is an exposure calculator? They are film positives that have been printed with a series of images designed to help printers determine exposure time.

You should either have a general idea of what the exposure time should be before using an exposure calculator, or start with the time suggestions on the tech sheet for your specific emulsion.

We're going to go through exposure testing using a step wedge exposure test. A step wedge can be used for SBQ Photopolymer, Dual Cure and Diazo emulsions. When using a step wedge for the latter two emulsions, you'll be checking the colour change of the emulsion and will likely need to print through the screen and evaluate the results to determine exact exposure time. (**Figure 1** shows an example of a step wedge test)

Under exposure is often the issue in most shops when it comes to difficulties reclaiming and holding the stencil on press, especially for water-based jobs. It's easy to under expose and merely image the screen rather than actually fully exposing it. But what happens is that you don't fully expose the screen, and will lose crucial emulsion on the squeegee side

An underexposed screen will lose crucial emulsion on the squeegee side

needed to resist mechanical abrasion and breaking down while on press.

Each screen mesh count will need to be tested to calculate the most accurate exposure time. Different mesh sizes hold different amounts of emulsion, due to how big the holes in the mesh are. For instance, a 110-mesh screen will hold much more emulsion then a 305-mesh screen. You will have to adjust your exposure times slightly for different mesh sizes. A finer mesh screen that holds less emulsion will expose faster than a lower mesh screen that holds more emulsion. The colour of the mesh is important too. Dyed screen mesh absorbs the light up while white mesh prevents or deflects the light. The light has the possibility of scattering in the white mesh that will not capture the more detailed images. Dyed mesh will take longer to exposure than white mesh. However, you'll be able to acquire more detail and clearer and more distinct edges with a crisper print with higher count dyed mesh.

If you have more than one exposure system, each screen mesh count of each colour will need to be tested on each exposure system. While the differences among the above may only be slight, when you add them up they can have large implications. Have an exposure system that has a built in light integrator? Use light units. This is the most accurate way to exposure as the integrator measures the amount of light, not time. If you don't have a built in light integrator, use seconds. Just understand that you will probably need to rerun your exposure test more frequently due to lamp age and potency loss over time.

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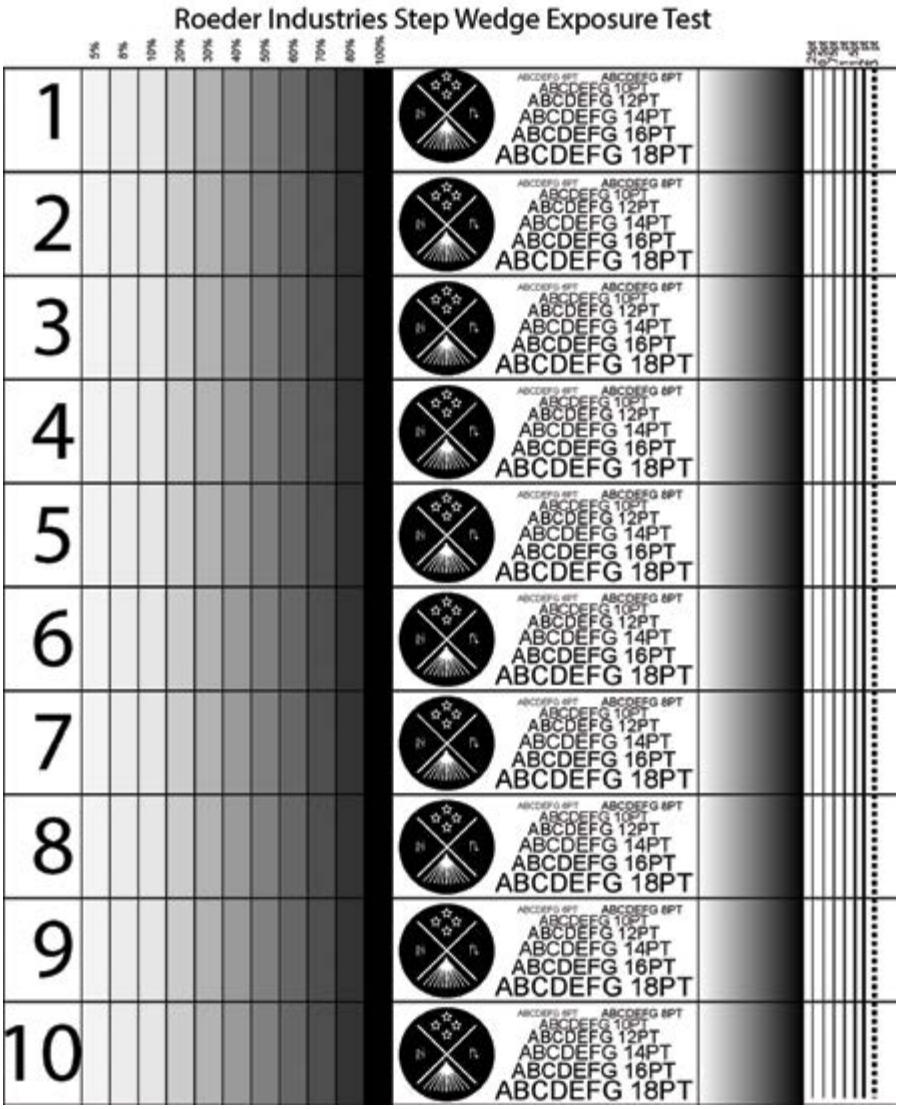

Fig.1: Example of a step wedge test

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GET TESTING

Finally, step one! Make or get an exposure test. You can typically make your own or ask your emulsion manufacturer or distributor about purchasing one. (**Figure 2** shows a step wedge test via CTS on a screen coated with SBQ emulsion, pre-exposure.)

Next, you'll need to calculate your exposure time. Estimate approximately how long you think it will take for your screen to burn (e.g. 120 seconds). Take that amount of time you guessed and multiply by 1.5. (e.g. 120x1.5 = 180 seconds). Take your new time and divide that by 10 (e.g. 180/10 = 18 seconds. Tape the calculator to the screen and cover all but the first row with thick, opaque paper, rubylith or thin cardboard. The idea is that no light shines through the paper. If you can see through it holding it up to the light or shining your phone flashlight through it, it is not opaque enough. Next, put the screen in your exposure system and expose for the amount of time you ended with (18 seconds). Now, move your paper down revealing section 2 (so only section 1 and 2 are showing). Put back in the exposure system and expose again (18 seconds). At this point, section 1 has been exposed twice (36 seconds) and section 2 has been exposed once (18 seconds). You'll continue to move your paper down, reveal one additional section at a time and re-exposing for the same time frame, until you have exposed all 10 sections. At this point, section 1 will have been exposed for 180 seconds; section 2 will have been exposed for 162 seconds; section 3 will have been exposed for 144 seconds; and so on, with section 10 being exposed for only 18 seconds. (**Figure 3** shows examples of the sections covered during different times of the testing process.)

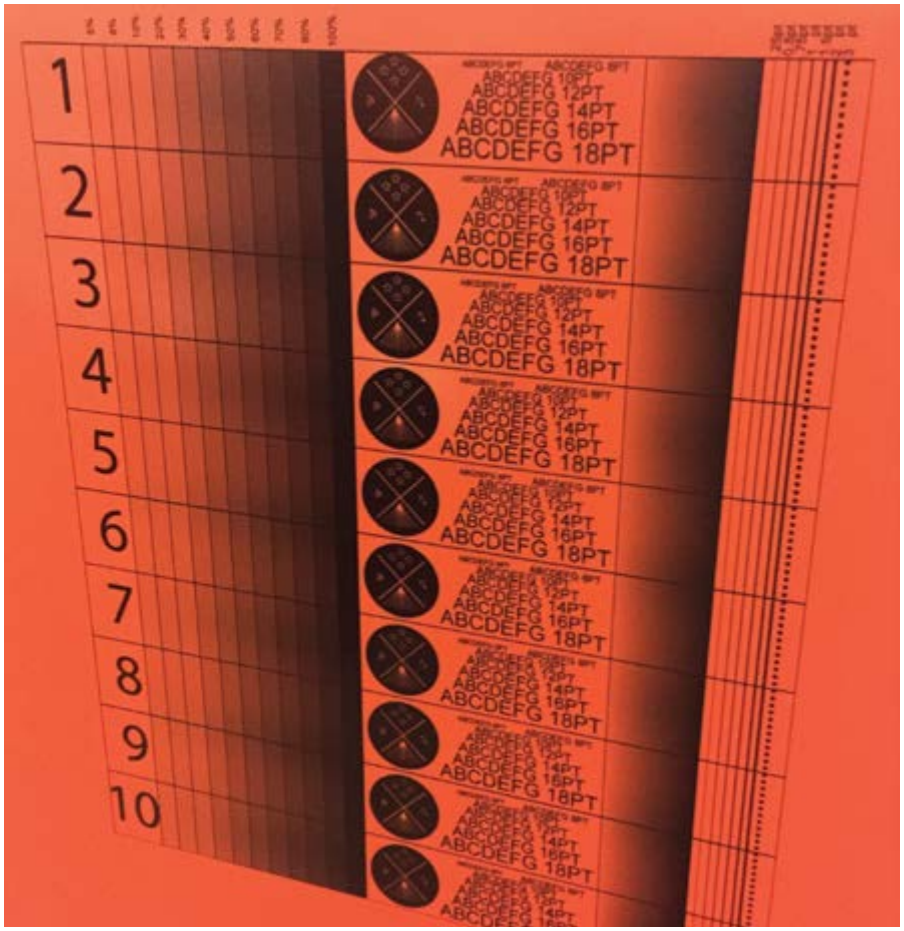

Fig. 2: Step wedge test via CTS on a screen coated with SBQ emulsion, pre-exposure

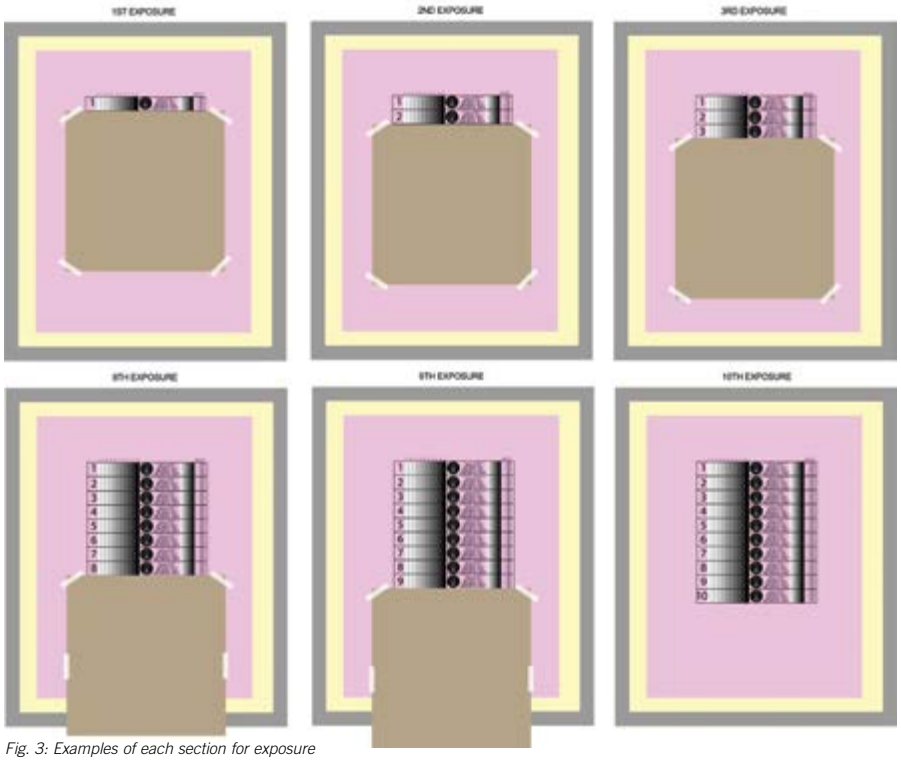

Fig. 3: Examples of each section for exposure

I like to print out a results sheet. (**Figure 4** shows an example of the results sheet using the times from above.) It allows you to keep track while you are doing the exposure test, in case you get distracted. You can also save them to evaluate your previous results the next time you have to do an exposure test to quicken the process for finding your specific screen exposure times.

Once all 10 sections have been exposed, it's time to develop the screen. Wet both sides and let emulsion soften for a minute. Using a pressure washer, wash screen from print side only. Examine the image of the exposure calculator that appears on your stencil. (**Figure 5** shows an exposure test washed out, ready for examination.) The squeegee side of the screen needs to be examined for underexposed emulsion. At some point one of the middle panels will transition from underexposed emulsion to complete exposure, no slime, and feel the same as the print side. You have (most likely) found your exposure time! If you used wide variables for each of the ten sections, you might want to redo it to allow a more precise time. This will be more important for your SBQ Photopolymer emulsions.

Tips, Tricks and Troubleshooting

- Standardise your coating procedure. Make sure all personnel that coat your screens adopt the same method to keep your stencil thickness consistent. If the stencil thickness is different, the exposure times will vary.
- Your film and ink density (DMAX) will make a difference as well. You want your film to be crystal clear and the black of your image not to let any light through.

Roeder Industries Step Wedge Exposure Test Results

Date: 03/05/2019
Exposure Unit: Example
Emulsion: Example
Mesh Count: Example

Step 1
Approximate Time: 120 sec

Step 2
times (x) 1.5 : 180 sec

Step 3
divided by (/) 10 : 18 sec

Calculating Your Exposure Time
Approximate how long you think it will take for your screen to burn (Ex. 120 seconds)
Take that amount of time you guessed, and multiply by 1.5 (Ex. 120 x 1.5 = 180 seconds)
Take your new time calculated in Step 2, and divide by 10. (Ex. 180 / 10 = 18 seconds)
Tape the calculator to screen, and cover all but the first row with thick, opaque paper.
Expose the screen for the amount of time you came up with in Step 3.
Move the thick, opaque paper down to where it is covering all but the first 2 rows.
Expose the screen for the amount of time you came up with in Step 3 again.
Continue moving the paper down and exposing until you have reached the bottom.
Wash out the screen, allow to dry, and determine which row came out best.

	EACH	TOTAL	
1	18 sec	180 sec	Loss of detail
2	18 sec	162 sec	Loss of detail
3	18 sec	144 sec	Loss of some detail
4	18 sec	126 sec	<---- Winner winner
5	18 sec	108 sec	Slightly underexposed
6	18 sec	90 sec	Underexposed
7	18 sec	72 sec	Underexposed
8	18 sec	54 sec	Underexposed
9	18 sec	36 sec	Underexposed
10	18 sec	18 sec	Underexposed

Fig. 4: Step wedge exposure results

- Make sure your emulsion is fully dry before exposing. If the middle or inside of the emulsion is not completely dry when you expose, you'll have uneven exposure, pinholes and premature breakdown on press. When the humidity is high, use a dehumidifier to expedite the process.

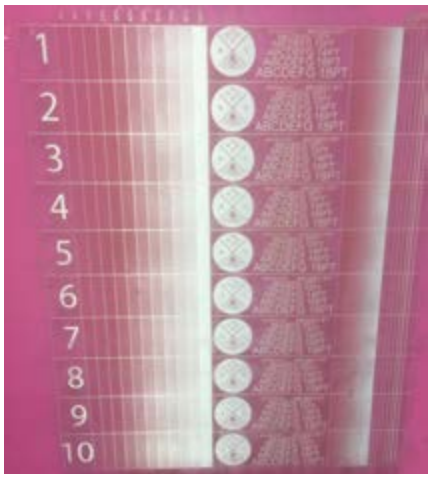

Fig. 5: Exposure test wash out; ready for examination

- Write it down! Once you've completed your exposure testing, post the LTU or Seconds for each mesh count and colour near the exposure system so everyone in the shop knows.
- It seems like a lot of work up front but in comparison to the time you will save with on press, reclaim and breakdown issues, it's a no-brainer.
- A strong stencil is often the easiest fix in a shop. Screens will hold up and print better on press and reclaim becomes faster and more efficient.
- Post-expose your screens to make them more resistant on press for water-based printing. ■

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PREVENTING PINHOLES

Mick Orr shares a valuable lesson he learned about solvents in screen wash

Every screen maker in the world knows about pinholes. In many shops they are a way of life. One comment I repeatedly hear is that no matter how careful the screen maker is, they still get pinholes. How come?

In the past, I've talked about screen preparation and how important it is to have the best screen possible to coat. Abrading, degreasing and drying are still just as important as ever and should not be overlooked. If any of these steps are ignored, you are just asking for trouble in the form of stencil breakdown – pinholes.

Yet, even the best-prepared screen, prepared by the best screen maker in the world can break down on the press if it is mishandled by the printer. That's what I want to focus on here, because sometimes the problem is how the screen was run on the press, not how the screen was made.

WATCH THE 'OLD PRO'

Have you ever noticed how a new screen printer usually goes through twice as many screens as an experienced, skilled printer? Well, I have.

When I was foreman at a large shop, I quickly learned to give the tough jobs to my seasoned printers. The short runs went to the new printers. I could always count on the new printer showing me a print full of specks caused by pinholes. What on earth caused them? They weren't there when the screen was set up in the press. They just magically appeared. The 'old pro' printer just kept on printing without a problem.

Both used the same mesh, the same ink, the same press, even the same emulsion system. Yet this new printer was having all the pinholes.

Watching these two side by side for a few days revealed the difference was in the way they handled keeping the press running. The new printer was constantly stopping his press and cleaning his screen for every 'bug' he saw. Not only did he soak the stencil with screen wash, he would also wipe the stencil dry with yet another rag.

The experienced operator only stopped his press for either reloading or for breaks. If he saw a problem, he would correct it on the fly. His rags were damp but not saturated with screen wash. When a bug would appear, he would merely touch the stencil wherever the bug appeared. Then he would run a couple waste sheets through the press and start printing again.

So what did that tell me? It told me that maybe one reason the new printer was getting more pinholes was because of the way he used the screen wash. When I made him use less screen wash, and apply it to the screen as the seasoned printer did, the pinhole problem was suddenly solved; however, I didn't know why the solvent was giving me a problem.

TEN YEARS LATER

Well, I now know why the solvent was giving me so many headaches. All reclaimable stencils are not only hygroscopic (absorb water vapour), but they also absorb alcohol, glycol, acetone, and ketones. When these solvents are absorbed, the stencil will swell, get sticky, and lose adhesion to the mesh or simply dissolve. Lo and behold: pinholes!

Most inks and screen washes have some level of these solvents present. While it is impossible to avoid using ink, it is possible to avoid using screen washes that have these solvents. I'm not saying to stop using screen wash. Just don't use so much of the stuff at the press. Every time that new printer stopped to clean his screen, he was subjecting it to these extra harsh solvents.

One last thing: after using a screen wash, make it a habit to let the screen aerate for a few minutes before starting up again. This will give the stencil time to evaporate some solvents and re-harden. ■

Ikonics' Training Specialist, Mick Orr

Mick Orr is Applications Training Specialist at Chromaline Screen Print Products

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GO LONG

Alan Buffington explains how running a successful print company is akin to competing in a marathon

Our industry has a mixture of companies, from recent start-ups, to midsized businesses, to large established corporations or apparel companies. The age of the machinery can vary from first generation carousel presses to new ovals with more printing heads and flashes. For many companies the growth levels off after their first few years of growing pains and the business achieves a level of production that pays the bills and starts making money. Then there are those that simply never stop growing and add on presses every year or so to meet demand.

At some point in a company's life there can be a letdown in growth as a shop loses focus and becomes complacent. Complacency in an intense production business like textile printing is like starting a marathon race and then stopping at the first drink station and calling it quits, even though the company appears to have all the tools and personnel needed to finish the race.

Complacency often starts with little changes. A weekend marathon runner may invest a little less time or effort in training. They may choose running shoes that are adequate but cost a little less than the previous pair. They may drop a couple of days of training a week or stop eating well and lose stamina. A runner who thought they could finish a marathon often comes up way short due to lack of effort, equipment choices, or lack of focus on what matters.

Training is essential to be able to run long distances. To get prepared for a marathon a motivated runner will ramp up their mileage to be able to run non-stop for 26.2 miles. They will fine-tune their body to have stamina, endurance and confidence that they can finish and possibly place high in the finish results. They invest their time; they invest in the right running shoes, what they eat; and more importantly they see all of their efforts focused on the marathon.

CURBING COMPLACENCY

In screen printing companies the first couple of years are a period of investment in personnel, training and ramping up sales to fill the expensive presses with work. There is euphoria about the process and the results. Inspecting the first difficult sim process is motivation to make it better and discovering that printing is as much of an art process as the original art was to create. As time goes by, however, success may mean just paying the bills and finding a way to survive. A couple of years into the process and partnerships can become strained if profits aren't enough to meet income expectations. The production floor can show signs of age. Warehouses can get completely gridlocked to the point where orders can block aisles, work is delayed, new incoming orders strain the logistics of material handling, deadlines are missed and all orders start to become an emergency.

Long run textile printing is a marathon – it's vital to stay on track

Managers and lead personnel scramble to catch up. Daily production output seems to be less than when the company started and financial returns start to stagnate without additional presses and space. Overtime labour is needed to meet deadlines as job completion dates are extended. Too often an established company becomes complacent and decides that to make money they need to cut costs. Now the marathon race can become a struggle for employees that cannot reach a good production pace due to using products that help lower purchasing costs, but make production difficult. The company winds up trying to save money and cut corners instead of focusing on making money.

Instead of great printing and growth, the company accepts mediocrity and lower output and loses sight of the finish line and goes off course. Presses get beat up due to lack of maintenance and morale suffers in a messy environment due to complacency. Screens suffer breakdown much earlier due to an emulsion that was chosen for price, not performance.

When management realises their shop is incapable of completing the marathon effort of production, pinpointing the decline may be too late to help. The competition may have lured valuable customers away. A company's best customer, an apparel company, may have poor 'sell through' and show slow sales of the clothing the apparel company produced. Store personnel may do a quality control check or look at returns and may notice a slow moving item and trace it back to poor print quality. Complacency not only affects today's production, it affects the company's future.

PERFECTING PERFORMANCE

Contrast this to a similar company where management invests time in their plant. They didn't get into the screen printing industry to play golf on Wednesdays. They got into screen printing because they love screen printing. Complacency is absent. They eat up technical data and they strive to accomplish the most difficult prints. No challenge is too hard.

"85-line portrait work for what band?" This project gets their creative juices flowing. They study the art with skills derived from several years of separation and applying all the tips and tricks they could learn at seminars. They dial in the channels, often

putting in more work than they bill for if it has the potential to land them more work. The first sample is not rubber stamped with an approval to show the customer. Their ambition to be great printers can't allow them to send the sample out without modifying a highlight plate, or adding more contrast to the base plate or adding another colour. Perfecting the print is how they trained themselves and the company to operate. Yes, labour is costly, but losing customers is really expensive.

When the job is approved they are prepared to win the marathon print run that is in front of them with finely tuned production recipes documented by the sample department. The screens are made with low elongation, high quality mesh. S mesh is chosen for its more open area to make their base plate pop with opacity. Their overprints are on 350S to print the fine 85-line halftones. They prepare the inks and colour proof them to match exactly to the sample print but are not afraid to modify colour on the press or pull inks for an entirely different PMS colour, or to add a touch of transparent base to get the colours to blend well. The emulsion they use isn't the lowest cost available; it is the best at resolution and durability for the High Solid Acrylic inks they need to use.

Their print crew is called aside by the production manager for a pre-production meeting with production samples used to note areas to inspect; key elements that need to be perfect; colours that need to match other band promotional material colours. Their policy is no surprises, be prepared to run the marathon and finish with a great time. The crew is ready; the screens prepared a day in advance to be totally dry, inks matched, and the job begins.

Eighteen hours later they have 8000 pieces finished on a 20,000-piece job, and the deadline and ship date are assured with days to spare. The screens aren't breaking down; the mesh isn't losing registration and production hits consistent hourly yields so that product will be at the concert venue on time. In band merchandising fulfilment if you are one day late, the band is already in the next town and the band manager contacts another screen printer for dates in the future, having lost merchandising sales the band relies on for income. After a successful print run and on time shipment the motivated company has a better chance of getting more work. It's far easier to ask a client for more work when quality and on time delivery are the best they can be.

Continued over

Gridlock affects production yields, to the detriment of a company's efficiency and reputation

BUILDING STAMINA

As the years go by the complacent printer is struggling to stay in business. Key employees have left for better opportunities. The customer list that is left is commodity type printing with lots of competitors low balling their quotes and making profits thin. The complacent printer has many presses failing with several printheads not working. Screens are being prepared in screen rooms that they have long outgrown, originally designed for the first automatic press and not the eight presses on the floor. They rush screens through the coating/drying/exposure process due to lack of space. Exposure lamps have aged and make images, but they also make weak screens that breakdown sooner on presses that wind up standing idle waiting for replacement screens. Inkjet film printers have lost their ability to make a focused halftone dot even though with the naked eye the image looks 'okay'. Up close the halftone maybe just a haze of picolitre dots that can only image with severe under exposure that will lead to stopped presses and little money being made. Complacency becomes, "no we can't do that" instead of "let me talk to my guys and we'll get it done." If you have ever owned a production shop you know there are all-night marathon jobs that gain a customer or keep one. Plan for it; it will happen, but all processes from product selection to print recipes need to be able to run the marathon with you.

SPACE TO GROW

Be prepared to run the marathons of growing a business. Build a dedicated series of screen rooms for coating, drying, then storage, and a final room for the exposure process, all climate controlled. Focus on production yields and print quality. Choose emulsions and mesh based on their ability to excel at production. Focus on productivity yields per hour, per day, per month, per year and research every facet of production and what helps achieve better yields. Better production yields help generate a better ROI with money available for better equipment and supplies. Plan to move to a larger facility to stay efficient *before* growth shows signs of grid locking current facilities – maintaining the flow of goods to presses and fast shipment enables faster turnaround times, making these forward-leaning companies more competitive and able to handle rush orders without affecting current production.

Maintain presses to original functionality every day and address all needed repairs immediately. Schedule yearly press tune-ups over holidays to keep presses running so they are ready to go when full crews come back to work. Stock common spare parts like proximity sensors, safety cords, speed clamps, squeegee clips and keep in a tool store room to avoid parts delays in shipping or tech support. Learn to fix the presses, or find a worker who can. Invest in an air chiller, oil and water separator to keep the air cool and free of contaminants to protect the valuable investment(s) in presses. In a larger shop, hire a dedicated maintenance worker to keep the shop clean. A clean shop is more pleasant to work in. A shop with ink everywhere is tiring on personnel and takes away their production time. Some companies run two 10-hour shifts with full crews and a four-hour shift with a smaller crew for press maintenance, print set-ups, mixing inks, staging orders and getting all presses ready for the morning crew. This can mean firing up ovens and warming up press pallets a half an hour before production crews arrive so they can walk to the press and start loading shirts. Too often shops let the clean-up and prep work fall to the next shift that spend the first hour fixing the mess created by the previous shift and become complacent on the overall goals of the shop's success.

Focus on the details: a complacent company prints ink; a driven company creates masterpieces

TEAM SKILLS

Growing companies train employees for success, cross trained for shared knowledge for the inevitable employee absences so that production is unaffected by their absence. New company positions are filled with current employees. Employees sense their value and are rewarded with better jobs and more authority as their efforts pay off and their knowledge valued.

Companies who ignore the downward production trends are preparing to fail due to their complacency. Today the price wars of suppliers can handcuff a company with long commitments for a low price on a product that has not been proven. The minor costs of testing and evaluating products often shows that low cost products cost more in lost production revenue over time. As a company grows there is danger in not proving the validity of new products or equipment with numbers.

The press is the main money maker for most print shops. Its hourly/daily/monthly/yearly production figures are good numbers to look at. Without good documentation of the facts, it is difficult to come to a conclusion on why the same job dropped 100 pieces per hour compared to last year's hourly yield. Will a complacent company document the details necessary to pinpoint the issue? Not often. They will blame production, employee effort or morale, but may not hit upon the one thing that is causing the drop in productivity. It could be the emulsion, the coating technique, the exposure time, the mesh, the tension, the press, the inks, and so on. A complacent company will offer the excuse: documentation takes time, time is money they will say, there are more important rush jobs that need to be done as low production output makes all jobs a rush job. The print marathon becomes a struggle to get back in the race.

I get to visit a lot of companies. The ones that amaze me are the ones who want all details recorded and keep meticulous log histories to pinpoint accurately what needs to be fixed to get the production numbers back up. I have one company that records everything. Why? They have engineers who analyse this data and work hand in hand constantly with production. They can pinpoint with accuracy that switching their emulsion last week cost them 5,000 pieces in production due to breakdowns. They quickly analyse data to prevent losses. How?

Each screen has a screen number that is logged for every exposure, showing mesh count and thread diameter, tension, emulsion, exposure unit, time exposed for, date screen was exposed, job#, number of times the press stopped, reject rates, fabric, shirt manufacturer style, colour, print recipe, sequence, PMS numbers, formulas and so many more for every job. They run Excel sheets to find jobs that had poor performance and what screen numbers they used. They pull those screens to inspect. The emulsion was different from last time this job was run. They go back to the excel data sheets and research all jobs done with that emulsion. They find an answer: all jobs with the new inexpensive emulsion suffered on press breakdown and needed screens to be replaced causing significant downtime on discharge

jobs. Their answer is sent to purchasing and admin to find an emulsion that works and may cost a bit more, but has far better production yields. The difference in emulsion cost is not worth the loss in production. The same is true with mesh. When I approached this company with S mesh they dedicated a press and set up a print with a large base plate and used a 150/48 mesh for one sample and their standard 110/80 on the same press and evaluated the results. They weighed the finished prints to see if there was any ink savings. The 150S used less white ink as well as other thin thread mesh counts they added to their inventory because they are not complacent in their approach. They validate their decisions based on science and yields, not price. Their presses are their money maker. Growth happens when presses hit optimal production numbers.

Companies grow with small successful steps or go out of business with small barely noticeable failures. "A discharge screen just blew out on press 2" could be a small failure that snowballs out of control and makes little to no money on the job, while "I need more shirts on press 2" is a step up. The screens are withstanding the discharge ink, the operator uses other personnel to get him shirts and stack them. The marathon race of production requires a finish. A company can finish a production marathon smoothly and efficiently, or struggle to keep running and crawl across the production finish line.

ATTENTION TO DETAIL

As a printer you can be walking through an airport one day and see one of your prints. Are you proud of it? Your print is a calling card that never stops advertising your work. One of my best chance meetings happened on the way to San Francisco. I recognised one of our shirts made for a catamaran regatta in Northern California and struck up a conversation with the wearer regarding his shirt and how cool it was to see our work by chance. He asked some questions and in the end we exchanged business cards. Three months later he ordered over 2000 shirts for his company uniforms and T-shirts, hats and jackets for his boat. Had we been a complacent company we wouldn't have gone back to the art department and reworked the art to be better for the regatta. We threw in two free screen colours since the sunset background was weak without some intermediary and highlight colours. We wouldn't have re-mixed the orange for a more yellow orange, we wouldn't have individually poly bagged each shirt since the customer had said they would be handed out the morning of the regatta. The individual bagging was cheap insurance to protect the clean white shirts and the regatta's investment. A complacent company might have just printed them on the first set up, and produced a mediocre shirt, whereas this new client saw the shirt at the regatta and felt compelled to buy one and wear it because it was one of his favourite tees. I have a drawer of my favourite T-shirts we produced, and looking back all of them required more effort than we would have wanted to do, but they are cherished pieces of art. A complacent company prints ink; a driven company creates masterpieces. For us the marathon was never over. In printing it's a way of life.

So your supplies make the most important tool in your shop: the screen, which I have said before. It should be evaluated constantly for its performance value by keeping data that your shop should generate daily. Quality screens can get you to that euphoric feeling you had when you saw your first great print and made you want to conquer the screen printing world. ■

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DIGITAL PRODUCTION FOR MODERN FLOORING

Dr. René Pankoke discusses futuristic, automated technologies for modular multilayer floors

Deceptively authentic design in decoration and structure, low-maintenance and water-resistant – this is what today's floors must provide in order to meet the high demands of the customer. Often the derived-timber products industry has even managed to keep one step ahead of the wishes of the market with efficient production systems.

Flooring manufacturers need a system technology that can be adapted individually to the requirements of their production methods; from full board with a working width of 2,100mm right down to highly flexible 'individual board production'. This is the case for conventional manufacturing methods for laminated flooring, as well as for a full industrial solution for multilayer modular flooring (MMF). A complete plant solution should cover everything from primer application using liquid coating systems to high-quality digital decorative printing, even for difficult decorative patterns, to multiple layers and even structured digital printing. Further product qualities (e.g. anti-fingerprint; different levels of gloss) can also be achieved.

AUTOMATIC COLOUR CALIBRATION

Mechanical and system engineering company Hymmen has more than 10 years' experience in digital printing, and there has been a high level of investment and effort generated to develop new digital printing systems and flooring production lines over the last few years in particular. Hymmen's digital printing technology has already been tried and tested in practical application for MMF (see **Fig. 1**). Reliable adhesion of the inks on the substrates has been proven, and the company has managed to print even particularly difficult flooring decorations (e.g. stone patterns with almost single-colour surfaces) in excellent quality, in a single pass. For this purpose, Hymmen has developed the ACC (Automatic Colour Calibration) software. The printed

Continued over

Dr. René Pankoke, Managing Partner and CEO of Hymmen

No.	Process step	System from Hymmen
1.	Primer application	Roller application machine
2.	Decorative digital printing	Digital printing lines
	Up to 2,100mm	JPT-C
	Single Plank Line	JPT-CW
3.	Software correction for sophisticated decorative patterns	Automatic Colour Calibration (ACC)
4.	Wearing surface application	Roller application machine(s)
5.	Structural digital printing	Digital Lacquer Embossing (DLE)
6.	Supplementing of special finish properties	Excimer

Fig.1: Process steps for the manufacture of multilayer modular flooring

Fig 2: The appearance of a sophisticated flooring pattern before and after software correction using Hymmen Automatic Colour Calibration (ACC). "A great new flooring pattern shown at a trade fair that has been digitally printed behind closed doors is still nowhere near being a system suitable for industry," believes Hymmen's Managing Director Dr. René Pankoke. "But our newly developed ACC error correction system now gives us a clear competitive advantage. It guarantees reproducible quality in industrial conditions."

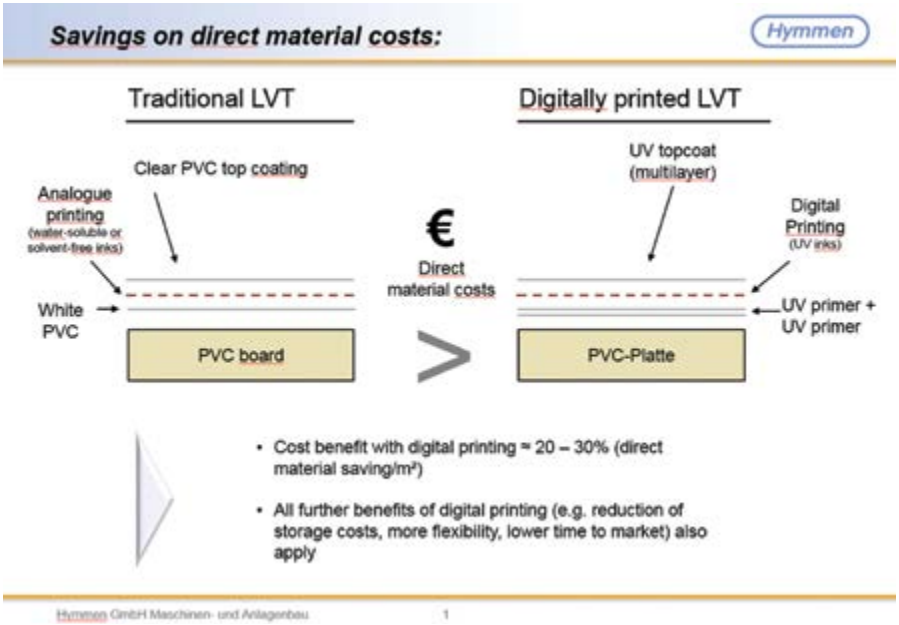

Fig. 3: Different product structure of LVT and MMF

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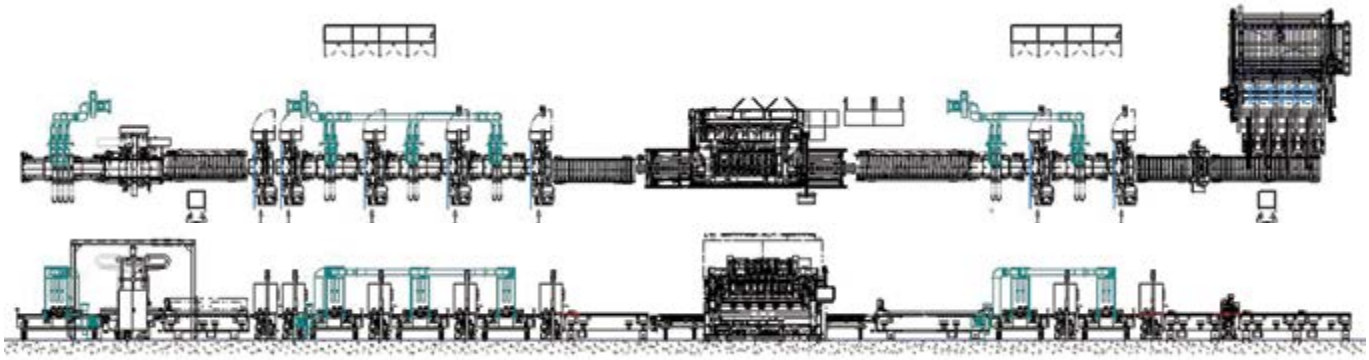

decorative pattern is captured and analysed using scanning technology developed in-house, and the smallest discrepancies and irregularities are corrected. The photos in **Fig. 2** show a pattern with and without use of software correction.

COUNT THE SAVINGS

In addition to a high quality result, when the digital method is selected for decorative printing on LVT or multilayer modular flooring, clear cost benefits can also be achieved. The traditional process of LVT production includes the extrusion of carrier boards, laminating with a printed decorative layer and a transparent layer for abrasion protection. Purchasing decorative films and the abrasion-resistant layers in the form of

Fig. 4: (Above and right) The JPT-CS digital printing system for digital printing on single planks

thermoplastic films leads to high material consumption and thus increased production costs. Digitally printed LVT on the other hand requires only a base coat, the digital decorative print and an abrasion-resistant top coat for the same finish quality. It is possible to achieve cost savings of approximately 20–30% by using lacquers and digital printing in place of thermoplastic films (see **Fig. 3** for information on the different product structure).

Flooring manufacturers with lower output quantities might not be willing to spend such a high investment in their production technologies like larger companies. They need a smaller and less cost-intensive machine. At the same time, the production of their smaller capacities must be as economically interesting as the production of larger capacities with a larger machine. Hymmen's newly developed JPT-CS digital printing system for conveying and printing single planks with a maximum width of 410mm is of particular interest for flooring manufacturers with lower output quantities (see **Fig. 4**). The specially developed vacuum conveyor secures the planks. It allows for different digitally printed decorative patterns on a flexible individual plank basis.

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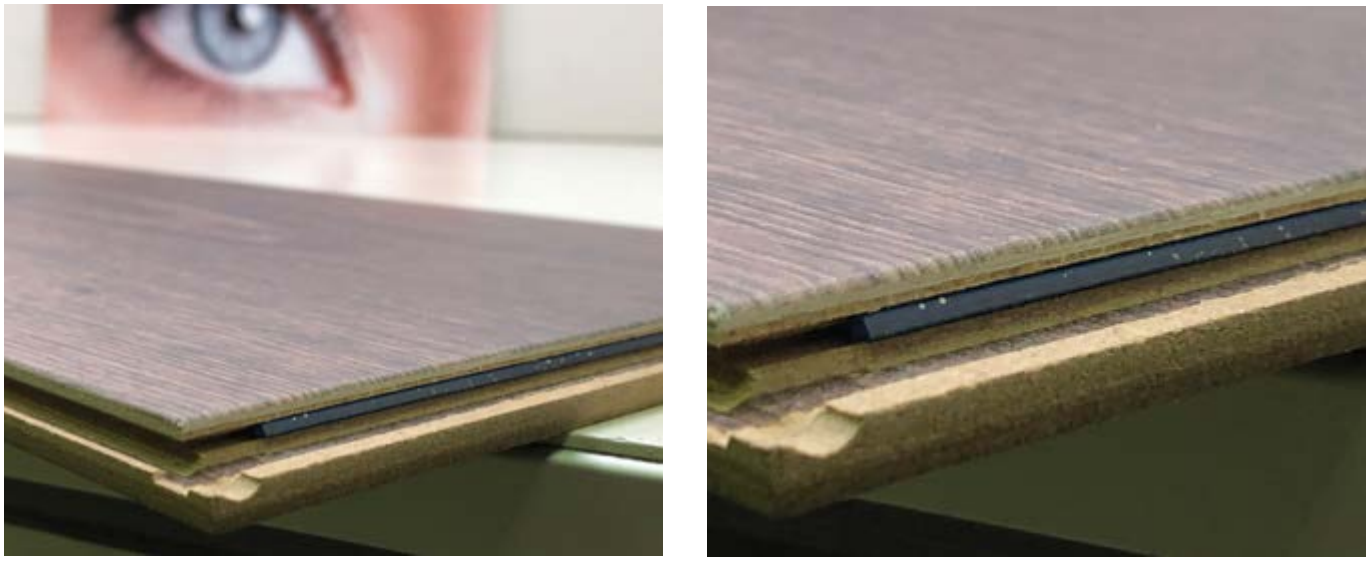

Fig. 5: Decorative printing, even into the V groove

One particular benefit of the individual plank handling system is the fact that the decorative pattern can be printed into and beyond the V-groove (see **Fig. 5**). The investment for the JPT-CS is much lower with the same economy per individual board when compared to a system for greater capacities. This is still the case even when the capacity limit of a system (2 million m²/a) is exceeded and investment needs to be made in a second system.

DIGITAL LACQUER EMBOSSING

To complete the finishing process after the digital decorative printing, structuring of the surface must follow – in various level of matt and gloss finishes. If each plank is to be given both a different decorative pattern and a different structure, again we need a digital technology to be economically interesting for that. Hymmen Digital Lacquer Embossing (DLE) can be used to print matt and gloss structures in various depth structures into the lacquer. The DLE is an excellent piece of technology even for single-colour finishes, for giving the finishes structures that go beyond the wood effect (see also **Fig. 6**). All the digital benefits are utilised and further benefits exploited:

- High flexibility
- No costs for rollers or press plates
- Avoidance of make-ready times for roller or press plate changes
- New design options
- Option of integration into existing conventional production lines
- Synchronous structures without repetition
- All tried-and-tested properties of known lacquers are maintained (e.g. scratch resistance, surface hardness, chemical resistance)
- Only one single-pass print bar (up to 2,100mm)

EXCIMER TECHNOLOGY

Hymmen can also supply excimer technology, as the final element of this type of complete production line for multilayer modular flooring, to achieve various levels of matt and gloss finishes. Exposure of surface coatings to short-wave excimer beams leads to polymerisation (hardening) in the upper layer of the lacquer. A thin hardened film forms on the surface. The polymerisation also causes shrinkage. As a result, the surface film features micro-folds, creating a matt finish. No matting agents are required, but they can still be used. The achievable level of gloss finish is 2–30 gloss units (measuring angle: 60°), depending on the parameters and coating.
In addition to the various gloss levels without matting agents, the excimer technology provides further benefits:

- Extremely scratch-resistant and abrasion-resistant lacquer finishes
- Increased surface hardness
- Excellent chemical resistance
- Soft-touch effect
- Anti-fingerprint effect
- Perfect reproducibility
- Pleasant feel
- No solvents

A combination of DLE and excimer matting facilitates optical distinction using gloss effects, the increase in surface resistance, the anti-fingerprint effect and an increased variety of designs.

IN SUMMARY

Hymmen supplies a piece of technology for the manufacture of multilayer modular flooring which is considerably more flexible and cost-effective than conventional methods. In the process, Hymmen is happy to act as a turnkey supplier, providing the complete system, including handling equipment and process control.

However, parts of the described overall process can just as easily be integrated into existing production processes. Hymmen employees can call on a decade of process know-how, meaning that individual technical solutions can be created. ■

Dr. René Pankoke is Managing Partner and CEO of Hymmen

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Fig. 6: Wood effect, geometric decorative patterns and more – digital surface structuring with Digital Lacquer Embossing makes it possible

Camera control and registration systems are now common within the screen printing industry

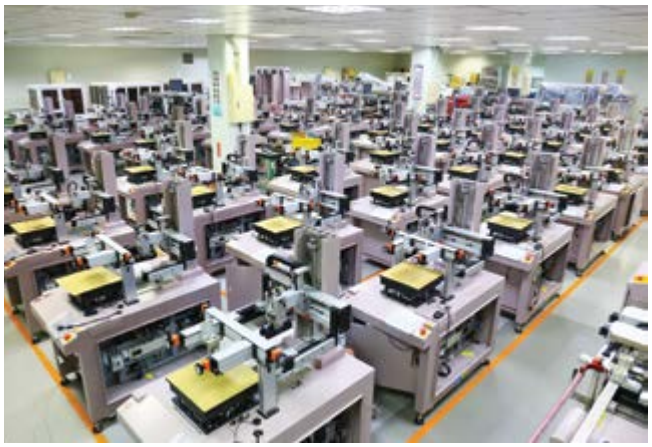
LIFE THROUGH A LENS

Jan van Schaik evaluates the increasing use of camera control and registration systems within the screen printing industry

During the past decade, camera systems have become affordable; computers to process the data have become much faster and industrial screen printing has become more demanding! Together this explains the rapid introduction of camera control and registration systems within the screen printing industry.

For over eight years, flatbed machinery using camera registration systems has been available on the market. The ATMA MF series (illustrated) is widely used within industrial screen printing for flexible electronics, blood test strips, membrane switch overlay, FIM IMD technology and other functional screen printing applications. The MF series can be used as semi-automatic (hand load/hand unload) or three-quarters automatic with auto take off systems or fully automatic systems. Production output would normally not exceed some 400iph [impressions per hour]. In addition, the screen set-up time on this kind of machine is extremely short. Due to the presence of camera technology, there is basically no need for traditional mechanical screen fine adjustment!

ATMA MF series flatbed print machine



Mass production at the ATMA factory in Taipei, where camera controlled systems print glass covers for mobile phones

HOW IT WORKS

The principle is simple. Material is placed on a vacuum table and held securely. Two or four cameras are looking down to the image/sheet reference. Adjustments are made by means of four built-in servo motors and the print table is positioned in exact reference to the position of the image within the screen inside of the printhead. This sort of flatbed screen printing machine can reach accuracy of 15 microns. All are driven by direct servo technology and the built-in electronics give the operator the option to store machine settings for efficient processing of jobs that come back on a regular basis. In addition, this generation of printing machine can hold data records and communicate directly with the customer's central software systems.

FROM FLATBED TO CYLINDER

Use of camera systems is now more feasible for faster-running cylinder machines. SPS/ATMA are designing a complete series of camera control systems for before, during and after printing.

Camera System Before printing:

1. CCD Screen set-up assist system (SSA): Passive camera screen set-up.
2. CCD Auto Screen Registration System (ASR): Active camera screen set-up

During the set-up procedure of a new screen, a serious amount of time can be lost establishing the original 'zero' position of the prepared screen inside the print machine. Even with stable and well built machines, we notice that operators almost never place the micro adjustment system back to the original position. This practice derives from the fact that they always start from a wrong position, no matter how accurately the pre-press department has copied the image inside of the screen.

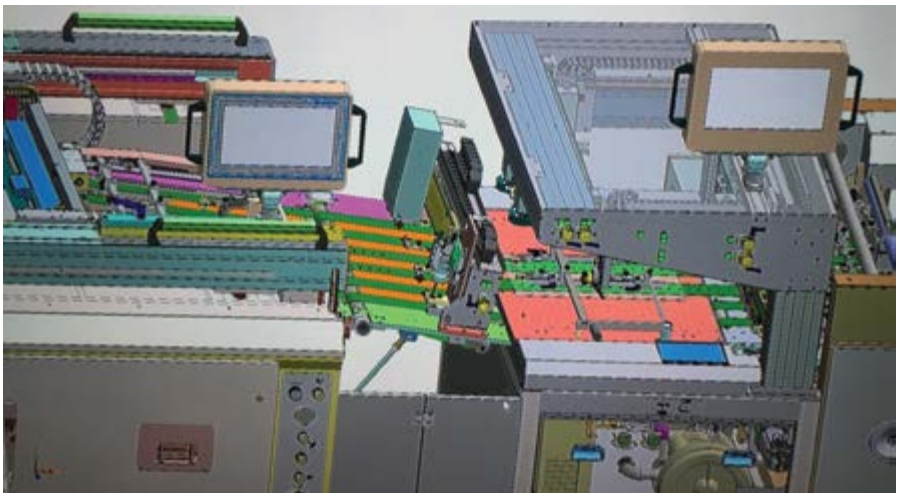
For both active and passive screen registration systems, two cameras are placed underneath the exit belt segment of the cylinder machine. The screen carrier is stopped at a pre-set position and the camera reads the position of the additional reference marks that are exposed in the screen. These markings are now visible on a monitor mounted right-hand-side of the machine exit segment. The ASR system automatically sets the screen frame to the pre-established 'zero' position in just a matter of seconds!

With more and more screen printers using computer to screen (CtS), the stencil position inside the screen frame can be (close to) perfect. In combination with CCD Auto Screen Registration systems, the set-up is fully automatic and time is drastically reduced. In addition, there is no more waste of sheets used for making register. The CCD Screen Set-up systems are available on the full range of SPS Cylinder machines.

NEW GENERATION: ASTRON QX57

During FESPA at Munich, 14–17 May, SPS will introduce the all new SPS Astron QX, a full servo driven cylinder machine designed for high-end industrial screen printing applications. The direct drive systems

The new SPS Astron QX is a full servo driven cylinder machine designed for high-end industrial screen printing applications



Camera systems installed on SPS Astron QX series

have replaced the complete mechanical main drive structure of the traditional SPS cylinder series. The print cylinder has a core integrated servo motor, implemented inside of the cylinder drum itself. The screen carrier is driven by means of two linear motors, a system similar to that used for the high speed bullet trains in Japan! Use of direct drive systems has virtually eliminated all chains and other mechanical drive connections within this construction. The separate drive systems of cylinder and screen carrier make it possible to freely implement 'print elongation correction'. Essentially, the image can be 'stretched' or 'shrunk' freely over the full length or in multiple small segments. This is of particular advantage when material has deformed during former process and/or drying. In addition, it is possible to set different speeds for print and flooding actions. This can further increase productivity.

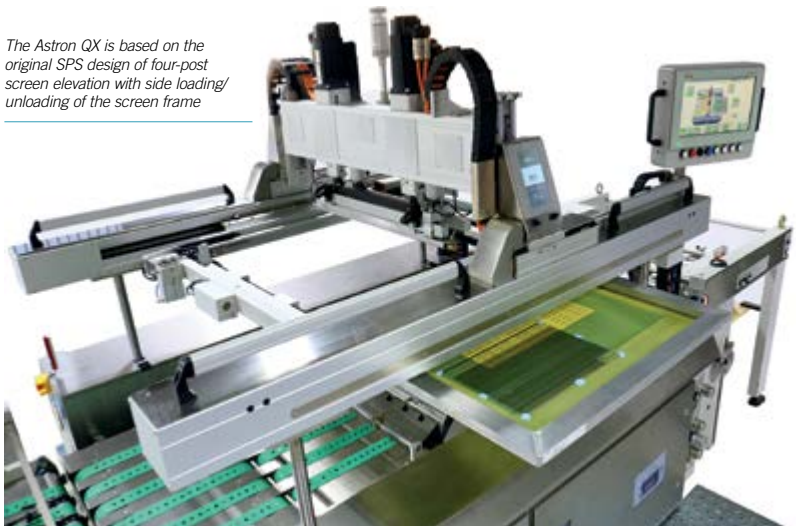
The Astron QX is based on the original SPS design of four-post screen elevation with side loading/unloading of the screen frame. For inspection and cleaning purposes, the entire top frame can be raised 40cm, and the screen can slide outside of the machine body for maximum operator comfort without any loss of registration. Also, with top frame in the raised position, the operator has 'on the fly' free access to the material flow. The QX series is equipped with the afore-mentioned CCD Auto Screen Registration system (ASA).

In addition, the Astron QX series has a fully automatic material size related set-up procedure: 'seri-smart F'. Simply enter the sheet size (numerically) and servo motors will calculate all sheet size-related settings in a couple of seconds – from feeder, to print machine and automatic sheet stacker.

WHY CAMERAS?

Traditional printing machines use sheet edge as a reference for accurate registration. Normally, the sheet would make contact with mechanical stops at three positions of the sheet edge. Although well built traditional mechanical cylinder machines have proven to print in perfect registration (SPS guarantee 30 microns), there are three reasons why printers might want to go for camera controlled individual sheet/image control systems.

1. When screen printing is used in combination with an earlier applied digital print. This could be for textile transfer printers, applying a white on top of a digital printed image. Most of the digital printers would hold perfect register within the actual image but are not at all accurate when it comes to the image position on the actual sheet.
2. When the sheet edge is not reliable for registration. This could be the case with some laminated materials where the laminate is 'hanging' over the sheet edge, e.g. when printing on laminated plastic cards. Also, some self-adhesives do not have a perfect sheet-edge. In addition, industrial printers are looking to use base materials as thin as 60 microns; such materials are no longer stable enough for edge registration.
3. When we have trouble finding skilled operators. This is a global problem but even more so within the screen printing industry. In order to use the traditional 'sheet-edge' registration, the operator must have some basic skills in order to bring the sheet-edge in smooth contact with the mechanical machine stops.



The Astron QX is based on the original SPS design of four-post screen elevation with side loading/ unloading of the screen frame

SUMMARY

The Astron QX series can be equipped with a camera registration system that matches the image position within the screen frame to the image position on each individual sheet.

The CCD Auto Screen-Sheet Alignment System (ASA), is a system whereby two cameras do a 'on the fly' check on cross marks of the former print and send the image information to the servo automatic screen registration. Each individual sheet is scanned and the screen is adjusted according to image position. Deviations of up to 1.5 mm can be detected and compensated for. The final accuracy of print registration is ≤ 20 microns!

The new Astron QX57 is available for a maximum sheet size of 550 x 800mm and comes with a single sheet front-pick-up feeder. The machine has a maximum production speed of approximately 2,000iph. ■

Jan van Schaik is Sales Director at SPS

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DIGITAL DECORATION

Don Copeland details the benefits of adding DTG or UV LED printing to your business

You have been cruising along for a number of years, handling the ups and downs of your printing business. Then, one day you realise that you have to work longer and harder to make the same money that you did 3, 5 or 10 years ago. Margins have shrunk, competition has increased, and maybe the product you offered is in lower demand.

So, what do you do? You start thinking outside the box about expanding your business. You have some options: you can invest more money into equipment to do the same thing you are currently doing. If you are running at full capacity and turning away work because you can't meet deadlines, then this is a good option to consider.

In fact, newer equipment might be more efficient thus allowing you to not only do more but do it quicker. The problem is that for most one or two-dimensional businesses this isn't the case. And therein lies the root of the matter: one or two-dimensional business. While you have been focused on doing one or two things, the competition, or even companies you wouldn't consider competition, have been slowly drawing your customer base away by expanding their offerings.

DTG printed t-shirts

It takes three minutes to print this tray of golf balls using a UV-LED printer

A TYPICAL EXAMPLE

Imagine you have a company that does traditional printing, web, offset, flexo – even digital. Meanwhile, a company down the street

Continued over

Examples of UV printed items

Printing golf balls

Variable data name badges printed with UV


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(we'll call them Company B) that also does these same types of printing adds on a digital printer for t-shirts or promotional products – like a small format UV-LED printer. Your customer needs some t-shirts or maybe promotional thumb drives or ink pens for giveaways to their customers. They head over to Company B for these items, and a sharp salesman asks them where they get their traditional printing done.

Now, we all hope that our customers are loyal to us, but you can't always count on that. Your business with that customer may now be in jeopardy for no reason other than the fact that they can get more of their needs met at Company B than at your shop. It doesn't mean that your product is inferior or your service not on point. It's a matter of convenience.

STEPPING OUTSIDE YOUR COMFORT ZONE

So, you ask, is this article just to depress me? The answer – No! It's to get you thinking outside the box. The 'box' in this case is your comfort zone, what you have always done; what you define yourself as – "I'm a screen printer", "I'm a flexo printer", "I'm a trophy shop…" or one of any other decoration trades.

The reality is that you are in the ideas business. You take ideas and you bring them to life on paper, on signage, on plastics, business cards, t-shirts, caps – the list goes on and on.

EXPAND YOUR PRODUCT OFFERINGS

Why not offer the ability to bring those ideas to life on an extended range of products? You are already doing the graphics work, and you already have a customer base, Right? So the relationships are already built – it is just a matter of adding equipment.

Where to go with the equipment can be difficult if you haven't been listening to your customers. What products have they asked about that you don't offer? What items do you see them with or wearing that has their logo on it that you didn't produce? What sort of service is missing in your service area?

ANALOGUE OR DIGITAL?

If you are looking for the path of least resistance, then digital is the way to go. Analogue processes like screen printing, pad printing, even vinyl application require skills that take time to develop and you are always chasing the established players in the market. Plus, most of the analogue decoration methods are in mature marketplaces and thus more competitive and less profitable – especially for a newcomer.

Digital, on the other hand, generally has a shorter learning curve, involves less space and opens up the higher profit, short-run business. No screens or clichés to worry about, no films to print and then store, no need for a bay to do vehicle wraps to a crane to install banners and signs – load the item and print.

DIRECT TO GARMENT/LASER TONER TRANSFER OPTIONS

Where, then, should you look to extend your range? For apparel direct to garment and toner-based transfer systems offer the ability to produce high colour, low to mid-volume output with a minimum of space compared to traditional screen printing and without the waste and clean-up.

Printers like the DTG M2, supplied by ColDesi, can produce full-colour images on t-shirts, hoodies, towels, socks, and a number of other garments with no set-up costs and no minimums. Re-orders are as easy as pulling up the artwork, loading the garment and printing it – one, two, dozens, even hundreds.

Continued over

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SMALL TO MID-FORMAT UV-LED OPTIONS

Another spin is to consider adding a small to mid-format UV-LED flatbed printer like the Compress iUV-600s and 1200s. With the ability to print on traditional pad printed specialty items (e.g. pens, thumb drives, golf balls, key fobs … all the freebie items that companies give away to promote their business), UV printing takes you to a whole new level of service you can provide to your customers.

Unlike screen printing where a two-colour job is not really a major undertaking versus a one-colour job, with pad printing a two-colour job quickly eliminates a large percentage of companies from even bidding on jobs. The vast majority of pad printing presses are one colour only. When you start to get to three, four or more colour presses the numbers drop way off. Set-up costs are high; minimums are high and variable data … out of the question.

ADDING UP THE COSTS & PROFITS

An example of this is a recent simulation that we did which compared a five-colour design for golf balls done on a pad printing setup versus the Compress iUV-600s. We simulated a 648-piece order: 54 dozen golf balls. We assumed that the artwork was ready for both processes before starting. The final numbers were staggering.

Between film costs, cliché costs, ink cost including waste ink and labour, the pad printing job took twice as long (not including clean-up!) and cost over $100 more to produce than the UV-LED printed balls. To pad print a five-coloured logo onto 648 golf balls took two hours and cost $100. To print the same logo onto the same number of golf balls using the Compress iUV-600s took one hour and less than $21 for labour and consumables (and virtually no clean-up!).

You can check out the story here: https://vimeo.com/289538032. By the way, the digitally printed golf balls had different names on each dozen… Game over!

Maybe it is time to take a step back, evaluate your business and consider thinking outside the box and adding digital decoration like direct to garment or UV-LED printing to your arsenal. You'll be glad you did. ■

Don Copeland is Digital Products Manager – UV Products at ColDesi

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ESMA gained two new Honourable Ambassadors at its General Assembly in March

WHAT'S HAPPENING IN 2019?

ESMA continues to connect the dots of the printing industry

NEW ESMA HONOURABLE AMBASSADORS

The annual ESMA General Assembly took place on 15 March 2019 in Barcelona and introduced two new Honourable Ambassadors of the association. André Peyskens (ex-Saati) and Alex Zuckerman (ex-Fimor) have joined ambassadors from previous years: Wilfried Kammann, Walter Frick and Rudi Röller.

ESMA EXPERTS TO OFFER TECHNOLOGY ADVICE AT FESPA 2019

The joint ESMA/*Specialist Printing Worldwide* pavilion at the upcoming FESPA (Munich 14–17 May; hall A6, booth A70) will feature five ESMA member companies, suppliers for screen and digital print technologies: Fimor, Global Inkjet Systems, PVF, RK Siebdrucktechnik and UMS. Several other members will be exhibiting in Munich, many of them with contributions to the Industrial

There's still time to submit a paper for TheIJC EU this autumn

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ESMA's pavilion at FESPA

Print Showcase incorporated in the ESMA pavilion, presenting samples of functional, industrial and speciality print applications. Every FESPA visitor, coming from industrial or commercial printing field, is welcome to book a free-of-charge session with the ESMA Expert Team. Among the topics handled are: transformation from analogue to digital, colour management, RIP software, ink chemistry, digital textile printing and industrial inkjet system design.

To book an appointment please visit www.fespaglobalprintexpo.com

THEIJC USA REVEALS PROGRAMME DETAILS

As the second edition of The Inkjet Conference (TheIJC) USA is coming closer, the event programme is filling up with technical topics and expert talks on inkjet engineering and inkjet chemistry. Held on 22–23 May 2019 at Crowne Plaza Chicago O'Hare, 250 technology suppliers, OEMs, printers, brand owners, innovators and researchers are expected to attend.

Presentation topics include: Inkjet in coatings and complex shapes; Extending colour gamut; High shear viscosity measurements; Advances in silicon MEMS printheads; Characterising drop formation and drop-substrate interaction; Waveform optimisation; High performance colorant dispersions for packaging applications; Urethane acrylate design for low viscosity; 3D inkjet printing for medicines; Hybrid curing solutions; Nozzle out detection and compensation; Inkjet vs. offset and flexo quality; Inks for industrial applications; Near-infrared drying for improved printing speed; Optimal polymerisation of

TheIJC USA

ESMA football tournament

UV DOD inks; Colour management software for industrial colour printing; Next generation LED curing systems; Microscale liquid engineering; Controlling high standoff defects in inkjet. The networking arena features stands from Adphos, Agfa, Allnex, ColorGATE, Digital Direct, Encres Dubuit, Formulaction, Fujfiilm Dimatix, Fujifilm Inkjet Technology, Global Graphics, Global Inkjet Systems, Hapa, ImageXpert, Industrial Inkjet, Integration Technology, iPrint, Kao Collins, Kodak, Krüss, Lubrizol, Meteor Inkjet, Nazdar, Phoseon, Sugino, University of Cambridge and Xaar.

For the final conference agenda and registration please visit http://usa.theijc.com

ESMA FOOTBALL TOURNAMENT 2019

The ESMA Football Tournament follows its two-year cycle and prepares for the next edition on 7 September 2019 in the Swiss town of Saint Gallen. Along with hosts Sefar, teams from Encres Dubuit, Epta, Fimor, Lechler, Marabu and the reigning champions Saati have confirmed their attendance.

Last minute booking is still possible – please write to info@esma.com

THEIJC EU CALLS FOR PAPERS ON INDUSTRIAL INKJET TECHNOLOGY

Staged for the sixth time, The Inkjet Conference (TheIJC) Europe is the world's largest forum for the latest developments in inkjet technology for industrial applications. It takes place over 29–30 October 2019 at Crowne Plaza Düsseldorf and features 62 presentations held in front of over 500 OEMs, brand owners, technology suppliers, innovators, decision makers and top research institutes. With over 50% of the slots already booked, it is still possible to submit your abstract to info@esma.com. Conference organisers welcome innovative presentations on any topic related to inkjet engineering, inkjet chemistry or inkjet applications.

For more information please visit http://theijc.com ■

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THINK BIG

Bruce Ridge interviews Lon Winters, President of Graphic Elephants

Lon Winters, Founder and Managing Director of Graphic Elephants in Elizabeth, Colorado

In December 2018 Bruce Ridge spoke to Lon Winters, Founder and Managing Director of Graphic Elephants in Elizabeth, Colorado. This interview is the latest in a series of articles intended to provide insight to the future of our industry from the perspective of members of Academy of Screen and Digital Printing Technologies.

BR: Where does the name Graphic Elephants come from?
LW: Going back almost 25 years ago, we had a company named Graphic Elements. I was the President and minority owner. My partner owned 55 retail resort stores. We built up an operation that was doing several million impressions a year. Business changed with the retail stores and soon we were the most profitable part of the business. We broke off and built a new company. The name Graphic Elephants represented the good that was left and was a bit of a tongue twister.

BR: Is Print This, Inc. a part of Graphic Elephants?
LW: We are in the midst of a re-brand. Print This, Inc is our corporate name established in 1993. Graphic Elephants is the brand. Print This is sort of the parent company. We have multiple segments under the Graphic Elephants brand. Screen Printing, Embroidery, Digital Printing, Retail Brands, Educational Materials and the Consulting. www.graphicelephants.com

BR: Your company is located in a small town in Elizabeth, Colorado. How did you come to settle down there?
LW: I went to college in Nebraska, where I graduated with Math and Art majors. Perfect for screen printing, right? My wife insisted that we better get away from our college friends for our own safety, so I took a job with Ocean Pacific in Denver, Colorado and learned how to screen print. I started as an ink tech in the late 80s for $4.05 an hour and became the Production Manager within a year. Being country folk, we ended up in a small ranching community outside of the big city.

BR: I once worked with the OP plant in Costa Mesa, California in the mid 1980s. I seem to remember that company imploding?
LW: The brand still exists. And some of the big box stores still carry their shirts and flip-flops. Surf wear is still sold throughout the country. They were one of the original surf brands and it is sad they fell apart.

BR: There are lots of videos of yours on YouTube. Many seem to be part of your workshops. How often do you do them?
LW: I have been doing training and workshops on the screen printing of T-shirts for 25 years. About four years ago I took a step back because I started to think, 'Maybe I don't know so much?' I thought it was time to start listening and learning more myself. I have learned a lot by doing this. There is a lot for me to learn. So instead of being the expert, it was time for me to listen more. There is so much to be learned in the new business space. Especially from young people that are building their businesses in this new market space.

In the online age, everyone is an expert. It used to be you had to do something for many years before you became the expert. That has changed. It is a very competitive arena where there is so much out there that is free. Some of it is good and some not so good.

Since there are consultants and suppliers offering training for free, it makes it very difficult for anyone to charge for training, no matter how good it is.

BR: Do you do training outside of your company?
LW: I continue to write, speak and exhibit for *Printwear* magazine (NBM), and I participate on several SGIA committees. I try to be as active as I can with the garment decorating community.

BR: On your website, your company lists consulting and printing. How much of your business is in consulting or training?
LW: The consulting part is substantial. I'd say it is 30–40% or more of our business and it keeps me on the road 2–3 weeks a month. We have changed the model to be more of a retainer type arrangement. Many of our clients are manufacturers and distributors that we have worked with for 20+ years. We help provide solutions for their customers.

BR: Have you done workshops or training in Europe?
LW: We are doing work for Virus in Italy. Most of the time, when we do our work, we are using or recommending products for the simple reason that they work and we use them. We are not getting paid to recommend products. It is difficult to stay an independent consultant, but we have done our best to remain so.

BR: You mention the Virus water-based inks? Do you use them in your shop?
LW: Yes we do. We have been working with [Virus president] Beppe for 11 or 12 years now. We have done workshops for them years ago with their HSA and hybrid inks. We have developed a good relationship with them which has been good for the both of us.

BR: When do you recommend someone use HSA/water-based vs. plastisol and what is HSA?
LW: We are different in our working model. We do a lot of development for the manufacturers. Our client base is not typical. We have to jump back and forth from plastisol, to HSA hybrid, to silicone, to discharge. It is not easy to move from one to another.

HSA stands for high solids acrylic. But there is so much more than that available in this hybrid technology.

What we tell people when moving to HSA hybrid, is you must be all in and make a conversion. Most printers struggle with screen making. Once you move toward this technology from plastisol, you really see screen making issues if they exist. Many companies are terrible at screen making and they don't know it until they jump in to something like this.

The new technology can be complicated. These inks contain water and solvent. Most printers have moved to LED exposure, so we need a stencil that is water-, solvent- and abrasion-resistant while at the same time being LED compatible. The bottom line, this isn't your grandfathers' water-based ink.

BR: What stencils are you using for the HSA inks?
LW: Most manufacturers are now making hybrid photopolymer and diazo emulsions, and in the United States we want them to be reclaimable. Even though there is talk in the US about converting to water-based, we don't see it happening that fast just yet. It is like the move to non-PVC inks. The major brands and some of the smaller brands forced this, but many printers won't go this way until they absolutely must for their own client base.

BR: How does Graphic Elephants image its screens?
LW: We image our screens with a direct to screen system. We have an I-Image with onboard exposure. We bought it about five years ago as more of a want than a need. It took me about a month to see it was going to pay for itself in a couple of months. The economic return was obvious. But the other benefits associated with image quality in not dealing with film, glass, dirt, and registration issues really outweighed the cost benefits. You know, all the things Geoff McCue has been preaching about for decades. Having the relationships with other Academy members has really been beneficial for me and our company when it comes to making these types of technology decisions.

BR: Have you been involved with the THREADX conference and has it been beneficial?
LW: Yes. I am the chair of SGIA's Garment Decorators Committee who helped develop ThreadX It is different from anything else out there. We have a great program set for this year in San Diego. The emcee, riCardo Crespo has a great perspective and is an excellent presenter. Aaron Draplin is the keynote. Attendance is up from last year and we have a location for the 2020 conference. There was huge momentum at the end of the 2018 conference that we tried to capitalise on.

BR: Inkjet is now established in textile printing. In 2018 M&R introduced the combined processes with the digital squeegee. Does Graphic Elephants incorporate ink jet in its imaging?
LW: We do some inkjet, primarily for the one offs, and for a separate brand we have which is Tee-Towels. www.tee-towels.com My wife runs this business. This is an online business where colourful and vintage images are printed on old school flour sack towels and other kitchen items. This lends itself to inkjet printing very well.

I think the M&R digital squeegee is very cool. I am under the impression that many of the contractors for the big brands have purchased them. A friend of mine uses one for printing for a big brand where they want full colour photographic images without the appearance of dots even if the cost is three times what screen printing would be. But it gives them the look they are after.

The big advantage for them is they can produce 10 different samples a day as compared to two a day printing sim or traditional process in screen. For that use it fits.

Where it would work for me conceptually is, say I had a contract to print for different zoos. You could name-drop the zoo and then their main animal.

For example, Michelle Moxley at M&R has done some real nice work creating under bases with greyscales that work well for the highly transparent digital printing. That could really be dialled in for a black background. There is still some work that needs to be done for different coloured backgrounds, but it is very promising.

BR: On your website you list simulated colour process. Do you also print traditional subtractive CMYK process on shirts and if so when?
LW: Yes, that is what I grew up on. I was working at Golden Squeegee at the time and we got a contract from Leanin Tree cards. They wanted their great card images on shirts. So, I started to print process on shirts by ordering some separations from Mark Coudray. The result was terrible, so I called Mark and he suspected my screens were the problem, so he hooked me up with Andy Anderson. Andy was super helpful which really helped us to become successful in printing process colour. This made us focus on screen making which is something we are really good at now. We always say in our training, "If you can control the screens, then you have a chance at controlling the process".

BR: Do you do any teaching or training at schools?
LW: We haven't done that yet. We have participated in the Skills USA / SGIA competitions for the last five years. We built Operation Screen Print with Dane Clement which is a modern, fresh spin on a Scott Fresener type of how to do black shirts from the ground up; from a pencil drawing to printed shirts. This has been offered to some schools, and many have used it as a curriculum. We are in the middle of reworking the program for on line delivery.

BR: I see there is still a lot of student entries in the SGIA Golden Image competition. It appears t-shirt printing in high schools and community colleges is alive and well.
LW: You're right. And you can do some pretty cool shirts even with one colour. You don't need to be doing multicolour sophisticated images to have fun and make a statement. Inkjet and sublimation are also great ways to create images in schools in supplementing the screen printing of shirts.

BR: Where do you go to find new information on the industry and or inspiration for printing?
LW: Everywhere. There are so many options it is almost overwhelming. I think networking is important. Especially at the highest level. The best way you can do that is to contribute at the highest level. When you contribute you can then ask for those resources in return. I had a huge consulting gig recently and was a bit overwhelmed, so I reached out to a couple of my mentors, Mark Coudray and Joe Clarke and told them I needed them to act like mentors and help me out and they did. Being involved with SGIA, Skills USA, Printwear and The Academy have all help me connect with different people with expertise I may not have known otherwise. Contributing your time to these things really pays off in the long run not only for my own business, but for the community as a whole. ■

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.

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TREND SPOTTER

Embracing CtS technology and automation has allowed this Portuguese company to meet ever-increasing textile fashion demands

Living in a new world started by the globalisation process and quickly followed by Industry 4.0, we all have to adapt to technologically innovative industries to be guided by digital processes anchored in software and automation.

It's fundamental to simplify by normalising process steps, ensuring reproducibility and repeatability to support higher quality design images, flexibility, reducing lead-times, lower production costs, and differentiating on services to be able to meet the new exigent market demands.

MARKET CHARACTERISATION

Portuguese textiles represent 4% of all European Textiles. Represented today by 9,500 companies and 110,000 employees located mainly in the north region, the Portuguese textile market is showing a very positive evolution over the last 10 years of expansion and continuous growth, being strong on design, representation at international shows and receiving accolades – for example the ISPO Awards.

Demonstrating its ability to adapt to the changing market, for the next decade the Portuguese textile industry will focus on sustainable products, technical textiles, added value and services anchored on the excellence of the Textile Technologic Centres and Technological Textile Chain, to: Be Flexible – Be Fast – Be Different – Be Cost Efficient – Be Sustainable.

Fusão Print's ethos is 'Leadership, Strength & Astuteness'

FUSÃO PRINT

Specialists on textile fashion printing (T-shirts) Fusão Print [Print Fusion] was established in 2009, and today employs 200 people and 24 carousel printing lines up to 16 colours with production capacity of 6 million prints per year. With a young and motivated team, technologically driven, producing for export to high demand European market segments, the company's internal slogan is 'Leadership, Strength & Astuteness.'

Highly conscious of quality requirements, the Fusão Print has in-house multi printing technologies: digital, screen and transfers, and in the future will also offer hybrid printing lines (digital + screen) in order to be able to satisfy market needs.

SCREEN-MAKING SIMPLICITY

Early on, the business invested in screen pre-press CtS technology, which revealed that stencil making was their production and quality 'bottleneck'. A fully automatic inline CtS joint technology system from Grünig and SignTronic allowed Fusão Print to

The company has invested heavily in its T-shirt printing machines

KTK carousel T-shirt printing lines

The Fusão Print plant

standardise all its screen pre-press. Standardisation was a must to minimise the number of stencils formats as well as mesh counts. Set-up times were reduced and stencil feeding, emulsion coating, drying, light direct digital exposing, developing, drying and unloading all became fully automated processes controlled by just one person. Along with solving the stencil making problem, standardisation also guaranteed reproduction as well as repeatability. The production bottleneck moved from screen making to the image department (positive change) and stencil production became filmless, predictable, simple, fast, with no retouching; as well as low cost, increasing flexibility and design differentiation on any type of job.

PRINTING DEPARTMENT

With 'sampling' becoming increasingly important in textile fashion, Fusão Print's business development and new digital pre-press automation concept allows the company to separate R&D and sampling from production, as two different drives and costs. As a result of its in-house CtS technology, Fusão Print's customer designers or decision makers often stay at the company's premises during print tests, as printing and reprinting is now so quick and easy.

Fusão Print chose the German ColorGATE RIP software solution for its screen printing and textile printing pro CtS development, enabling all kinds of dot range, from traditional to stochastic for photographic images, half tones, degradée constancy, 3D or solid colour jobs. Combined with their CtS technology, it

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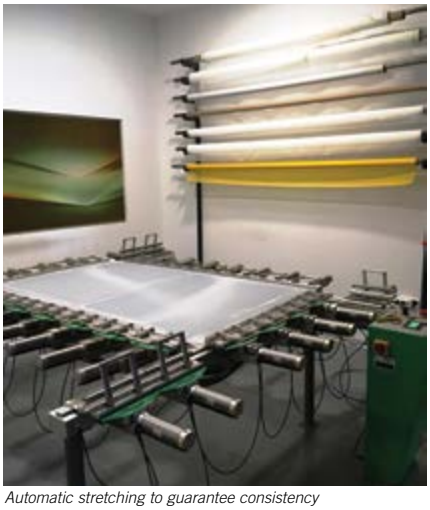
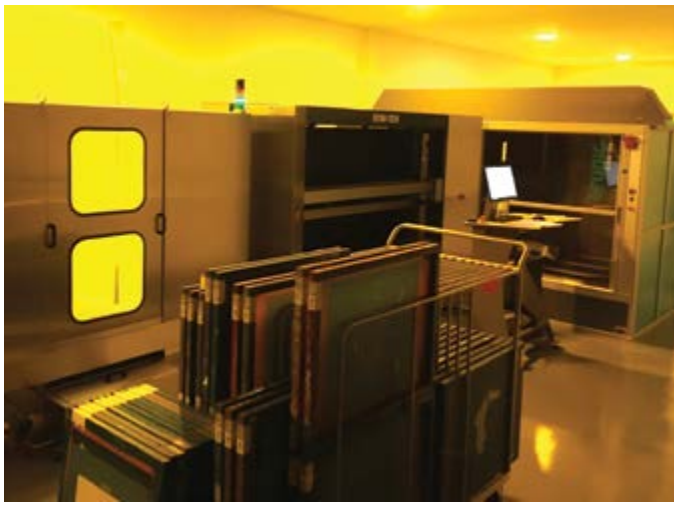


Automatic stretching to guarantee consistency



CtS enables fully automatic inline coating, exposing, developing and drying

Article author David Forrester Zamith is CEO of Ruy de Lacerda, and representative in Portugal for Grunig and Signtronic

was another move to make the company faster and more flexible.

Image, pre-press stencil making and printing should work hand in hand and Fusão Print strives to do this. With stencilling fully under control, faster set-up times are increasingly evident in small and medium print runs, when guaranteeing the print quality of reproduced images is the objective.

This is one of the reasons why recent investment at the company has gone into its KTK carousel T-shirt printing lines, with the aim of directing the values of CtS technology towards the printing lines. If screen making for textile printing is now in total control under CtS and automated technology, then printing must show similar results.

Integrating camera systems and servo motorisation, accurate controls on printing head pressure, off contact value, squeegee angle and ink feeding, as well as being able to print easily on 140,31 mesh, with less ink and greater energy savings will all yield future benefits.

TARGET

For Fusão Print, the focus is on screen printing textile fashion, not forgetting all other print methods and finishing processes, with investment in image software and automation at all process levels in the company. Employees are a motivated team, constantly striving for perfection, and benefitting from continuous training to improve internal skills. By investing in automatic technologies, the company reinforces its aim to simplify the screen printing process. ■

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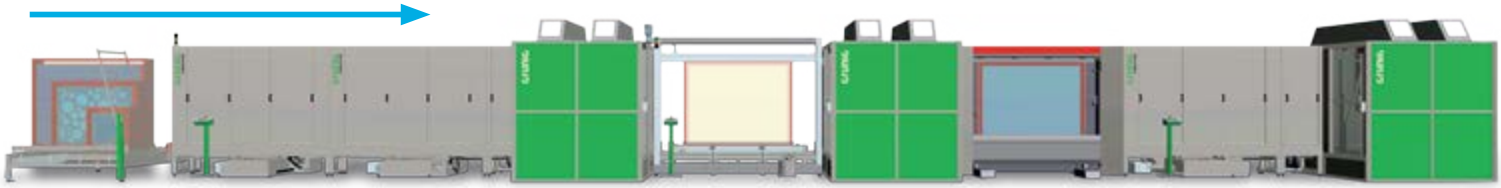

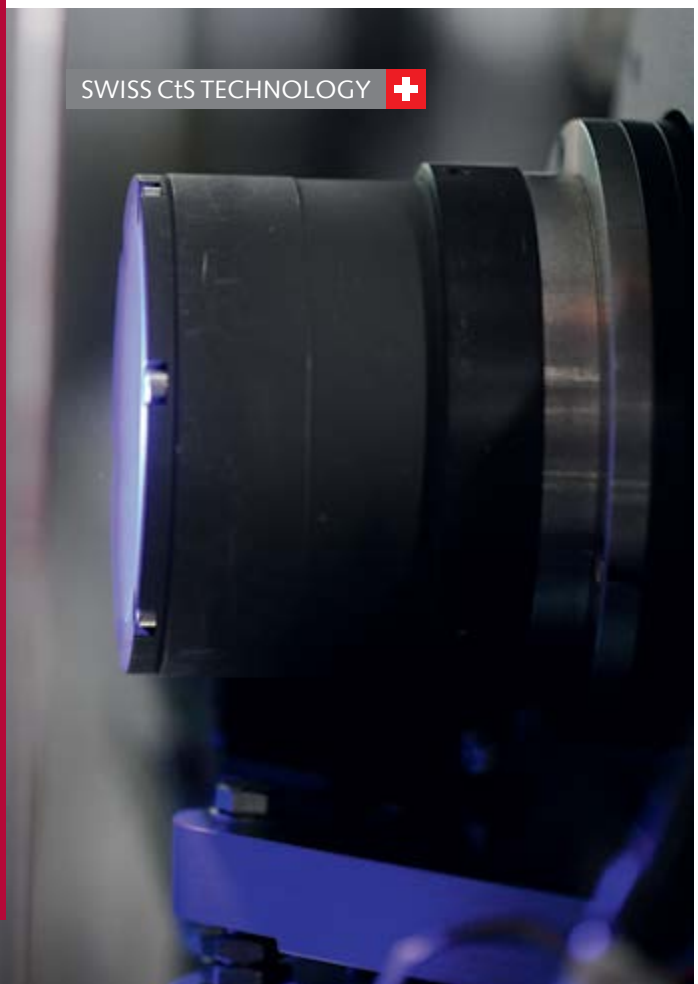

CtS DIRECT EXPOSURE

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CUTTING A DASH

Installing versatile digital cutting systems helped this Zurich-based print and advertising company to optimise its production

Founded in 1999 by Rinaldo Fochetti, PlotFactory's one-man operation was a 'factory' in name only. Twenty years later, things are very different in the company's vast production halls near Zürich, Switzerland and the business creates a wide range of advertising and promotional products.

From the outset Fochetti was fascinated with the potential of digital cutting and finishing and the creative diversity these technologies offer: "We are producing an incredible bandwidth of experience-based communication, which continually demands new solutions," he explained. "The approach keeps changing, and the way we use technology evolves accordingly."

The trend towards industrial fabrication is most apparent in the high level of productivity the company has managed to achieve. Long gone are the days when printers printed at a leisurely pace, the fabric was manually cut with hot knives, and material distortions had to be corrected manually. It did not take long for order volumes and quantities to start growing rapidly.

"It became very clear that we needed to optimise our production processes, increase output quality, and lower costs," noted Fochetti. Accordingly, the production line grew to 12 digital printing systems and two high-performance Zünd cutters. "Being able to permanently increase efficiency is game-changing in this market," maintains Fochetti. "With pricing structures the way they are, you don't stand a chance otherwise."

Tandem operation lets the Zünd G3 3XL-3200 cutter produce non-stop

VITAL VERSATILITY

At PlotFactory every order is different and order quantities, too, can vary greatly from one piece to many thousands. "The production workflow varies with each job and may involve different departments every time," says Fochetti.

The company is geared towards versatility and has the capabilities to handle the entire value chain in-house, from prepress to printing and digital cutting all the way to a design and finishing studio, a sewing operation, and a specialty projects workshop. The latter works with materials such as acrylics, wood, and aluminium.

"Post-processing and finishing have been growing steadily for the past several years," reports Fochetti. "The demand for printing as standalone process has gone down, which is why diverse, efficient finishing capabilities are making all the difference. Being able to produce everything in-house offers tremendous advantages and thrilling possibilities. While it makes our production workflows more complex, it also increases their efficiency since we are not depending on outside service providers."

For digital cutting, PlotFactory has relied on Zünd digital cutting systems for many years. Besides a 180cm-wide G3 L-3200, the company has had a 321cm-wide G3 3XL-3200 in operation since October 2017. For processing rigid substrates such as acrylics and wood, the company uses the RM-L routing system, which delivers up to 3.6kW of power, and is equipped

with the automatic router bit changer ARC.

"We are able to cut just about any material we can think of with our Zünds," explains Stefan Herber, who oversees sewing and finishing operations, regularly runs the cutters himself. "It always amazes me to see just how versatile these cutters are. And it's a great feeling to be able to live up to our motto 'No-go is a no-no'."

The cutters are so productive, they cut faster than his colleagues are able to print. And tandem operation further boosts productivity.

"Being able to produce literally nonstop is absolutely genius," enthuses Herber. "Alternating sides for loading materials, while cutting continues on the other, has dramatically sped up our production. And operating the cutter is so simple, even our interns can do it."

For Herber the user interface and workflow software Zünd Cut Center ZCC is just as important as the hardware: "I can see exactly how much time the cutter is expected to take to process a job, and after it's done, how long it actually took. Our day-to-day operations are hectic, and many orders come in on short notice with delivery times that tend to be very short as well. So it is not uncommon for us to have to interrupt a lengthy job with a rush order. Fortunately, on a Zünd cutting system, this is easily done since so little time is required for changeovers."

PlotFactory's Zünd G3 L-3200 cutter

SATISFIED CUSTOMER

Rinaldo Fochetti's opinion of the latest Zünd cutter installed at PlotFactory is a very positive one: "We are extremely satisfied with the new cutting system. It has given us some much-needed capacity for whenever the other Zünd is occupied, and with both machines equally equipped for cutting and routing, we have gained a great deal of production flexibility. It has given us a lot more wiggle room in production planning and order processing.

"Zünd cutters are also extremely user-friendly and reliable — simply put, they are quality products," he concludes. ■

Daniel Bischof works in Media Relations for Zünd

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IN BRIEF

Do you have news to share? Contact: inbrief@specialistprinting.com

Marabu demonstrates its diversity

This year's FESPA Global Print Expo will see Marabu present its portfolio of inks and unveil new solutions for specialised applications in screen, pad, and digital printing. These include inks for packaging, glass, plastics, and sensitive products e.g. those that come into direct contact with skin. Moreover, Marabu will spotlight a number of digital printing inks – particularly its UV-curable and solvent-based options for the latest generation of printers from multiple manufacturers – plus its water-based liquid coatings.

Marabu's solvent-based Mara Jet DI-TV ink was specially developed for use in all Roland TrueVIS Print & Cut devices, and is suitable for all printers that can employ the TrueVIS ink configuration

Innovations will include low-migration UV-curable screen printing ink for PE/PP plastic food packaging, versatile inks for container and flat glass, new UV-curable solution for credit cards, the market's first water-based pad printing ink and flexible pad printing inks for diverse applications.

At the expo, Marabu will also highlight its successful Switch It! Concept, a new solution for the Roland TrueVIS printer range, a broad spectrum of UV-curable digital inks and ClearShield liquid coatings – the cost-effective alternative to film lamination.

www.marabu-inks.com ■

Booth sales open for Graphics of the Americas 2020

Taking place from 27–29 February, 2020 and held in Halls A and B of the Miami Beach Convention Centre, this will be the first edition of Graphics of the Americas (GOA) under Specialty Graphic Imaging Association (SGIA) ownership.

"We're excited to bring GOA back to the Miami Beach Convention Center following its three-year, $620 million renovation," said Lexy Olisko, Vice President, Expositions, SGIA. "Miami's a vibrant city and a real draw for the GOA audience. Plus, the updated convention centre is remarkable."

Entering its 44th year, GOA presents a wide swath of technologies and markets, attracting printers, designers and graphics communications professionals from North America, Central America, South America, the Caribbean and around the world. Attendees represent the screen printing, digital printing and offset markets; 60% are company presidents or CEOs and 90% make or influence buying decisions.

SGIA currently is working with the Florida Graphics Alliance (FGA) and Conlatingraf, the confederation of Latin American printing associations, on the programming for GOA.

"The GOA program is created by and for the Latin American and Caribbean market, and leaders in that market will be there," confirmed Olisko.

Booth sales have opened for Graphics of the Americas and PRINTING United exhibitors will receive a 10% discount on booth space.

www.goaexpo.com ■

Xaar celebrates success of its 5601 printhead

At a special event for over 300 of its UK staff, Xaar celebrated the technologies of its high performance Xaar 5601 printhead. Based on Xaar's silicon MEMS thin film platform, the 5601 provides a foundation for Xaar's thin film printheads of the future.

"We wanted to create a new platform with capabilities that we didn't have at the time," explained Ramon Borrell, Chief Technology Officer at Xaar plc. "Specifically, we wanted to develop an aqueous printhead, with higher resolution, higher printing speed and higher print quality. This meant we needed to start our development with a blank piece of paper; designing every part from the ground up and not being limited by the previous technologies."

With over 5600 active nozzles, the Xaar 5601 printhead is the first printhead from this new platform, providing a print resolution capable of jetting up to nine litres of fluid per hour at a frequency in excess of 100kHz and achieving print speeds of up to two metres per second.

"The Xaar 5601 is the culmination of all the R&D teams' hard work on the new technology platform" said Jason Remnant, Product Line Manager at Xaar. "We've invested in a platform that will produce not just one printhead, but a family of printheads and we wanted to recognise the hard work that has gone into the programme."

Commenting on the day, Doug Edwards, CEO of Xaar, said: "We are immensely proud of what has been achieved in terms of delivering a completely new technology platform, which we expect to deliver a step-change in inkjet printing. Today was about recognising this and reinforcing how each person had a role to play. It is a fantastic achievement by everyone at Xaar and demonstrates our leadership in inkjet technology."

www.xaar.com ■

adphos appoints Sales Director

At the beginning of the year Frank de Jonge joined adphos to head up its digital print division. He has held positions in Account Management, Business Development and Business Development at Mitsubishi, Hitachi, Toshiba and Sensient Technologies. Prior to joining adphos, de Jonge was Business Development Director at Armor Industrial Inks Lab, where he contributed to the company's European success in industrial digital print.

"I was always driven to explore new applications," said de Jonge, citing adphos' energy-efficient aNIR drying system as "the ideal technology to further develop the digital industrial print market."

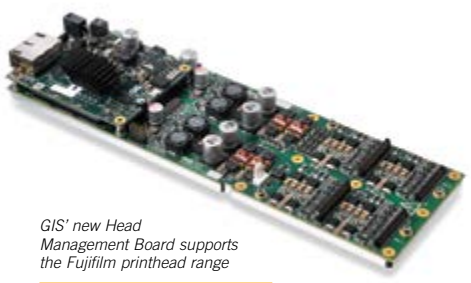
"Frank de Jonge is an experienced personality with a proven track record in the digital print industry," commented Dr. Kai K. O. Bär, Managing Director and President of the adphos group. De Jonge's appointment supports the company's "intention to strengthen the contact to existing customers and partners and spread the advantages of the aNIR-technology to a wider range of customers and applications," explained Bär.

www.adphos.com ■

Frank de Jonge started as Sales Director at adphos in January 2019

GIS drives Fujifilm Dimatix printheads with compact HMB

The new Head Management Board (HMB-FD-HV) from GIS can drive up to 4 x Fujifilm Dimatix Starfire SG600 or 4 x Starfire SG1024 off each board. The HMB-FD-HV can also be configured to drive large numbers of the Polaris, Sapphire, Emerald, Nova, Galaxy and S-Class printhead ranges from a single board.



GIS' new Head Management Board supports the Fujifilm printhead range

The compact HMB is based on GIS's Ethernet platform, which includes data management, waveform generation and printhead diagnostics, all accessed via Gigabit Ethernet. It supports the full binary and greyscale capabilities of the Fujifilm Dimatix printheads with multi-level waveforms, meniscus activation and jet straightening control. The HMB-FD-HV works in conjunction with the GIS Atlas customisable User Interface and Atlas Machine Control Services software (MCS) for managing the entire printing and sub-system process.

"This new Head Management Board for the Fujifilm printhead range demonstrates the huge flexibility and capability of the GIS Ethernet platform," said Debbie Thorp, Business Development Director. "We are able not only to support the new SG600, but also to offer an upgraded solution to users of other well-established Fujifilm printheads."

OEMs and system builders are invited to engage with GIS to discuss their integration needs for the Fujifilm Dimatix printhead range.

www.globalinkjetsystems.com ■

Larger vacuum pallet available from Vastex

Vastex International has introduced a new 67 x 95 cm vacuum pallet to hold poster board, corrugated plastic and other flat substrates in place quickly and firmly on a standard textile screen printing press.

"The new larger vacuum pallet offers garment screen printers a quick, easy way to diversify into printing signage, bumper stickers and posters on corrugated, foamed, or magnetic stock, as well as paper, cardboard and paper-thin plastics down to 250 microns," said Mark Vasilantone, Vastex president.

The all-steel pallet contains hundreds of perforations across a 64 x 91cm suction grid, holding materials with vacuum more securely than possible with glue or quick stretch. It is offered self-powered in 120V or 240V models with integral blower or with a universal hose adapter for connection to a customer-supplied shop vacuum or central vacuum system.

Equipped with a levelling feature to assure even transfer of ink, the pallet allows printing on flat stock slightly larger than the pallet itself, and can withstand the heat of repeated flash cure cycles.

The pallet is mounted as standard on a heavy-duty pallet arm that slides onto the rotor arm of Vastex V-2000HD series presses, and is secured in place using two lock knobs.

Vastex' new 67 x 95cm vacuum pallet with integral 120V or 240V vacuum pump

It can also be mounted to the pallet arms of other manual presses having adequate weight capacity.

www.vastex.com ■

Heat treatment from Monti Antonio

The cylinder inserted into Monte Antonio machines

In Monti Antonio's sublimation machines a heated steel cylinder is responsible for triggering the process that allows the sublimation inks to bond to the fabric. In order to ensure a perfect result, heat must be evenly distributed over the entire external surface of the cylinder and the temperature must remain constant over time. Oil, a series of resistances that serve to heat it, and a system of constant recirculation of the fluid (preventing its sedimentation) are inserted into the device. The heating process of the cylinder takes place in complete absence of pressure and air, to ensure absolute control over all the variables involved. The cylinder temperature, set via touchscreen and regulated by an electronic board, has a very low margin of tolerance, which serves to ensure colour uniformity and perfect penetration of the inks. It remains the same for all cylinders, regardless of their size, which can vary in terms of width (from 300 to 5,400mm) and diameter (from 200 to 1,500mm).

www.montiantonio.com ■

Hönle to reveal latest jetCURE LED development at FESPA

Designed especially for inkjet printing, elements of Hönle's range of curing and drying systems will appear at FESPA 2019. In addition to tried and proven UV and IR versions, Hönle will present a brand-new further development of its jetCURE LED. The LED system now reaches irradiation intensities of > 18.000 mW/cm², offering faster and more reliable curing of inks and coatings. Also new is a one-sided air-cooling to prevent airflow towards the printheads, which might impair the printing quality. In addition, Hönle engineers managed to reduce the weight of the LED-UV unit, to assist multi pass application.

The slimmer jetCURE LED has a light aperture of 20mm; the broader one, 40mm. The length of jetCURE LED can – in 82mm-steps – be individually adapted to the application. The wavelength can be optimally adapted to the ink.

Hönle will also demonstrate the lightweight and compact design of its LED Powerline AC/IC.

www.hoenle.de ■

Hönle's new jetCURE LED will be shown at FESPA 2019

Successful installation of Luescher's first JetScreen! LT

At the beginning of January, Luescher Technologies' first fully redesigned Computer to Screen (CtS) equipment, JetScreen! LT, went into operation at Serilith AG, a printing industry contractor with premises in the Seetal valley, near Lucerne.

Capable of directly exposing printing screens of up to 4600 x 3200mm, the JetScreen! LT has a resolution of 2540dpi and exposure is achieved using 128 UV laser diodes. The high energy technology is suitable for imaging and hardening even challenging thick layers of screen emulsion.

Serilith installed the JetScreen! LT to replace a first generation CtS machine from Luescher, which had been in reliable operation since 2007. In March 2018 the company installed a Luescher Multi-DX! 340 UV which is used for digitally exposing smaller screens.

www.luescher.com ■

The JetScreen! LT was installed at Serilith in January

Sensient reduces viscosity of its ElvaJet Opal ink

Following the success of its Opal SC inks for mid- viscosity printheads, Sensient has now released ElvaJet Opal SB digital dye sublimation inks for low-viscosity Epson printheads.

"Users of wide format and industrial printers in the same print shop can now reproduce the same output on all machines because ElvaJet Opal SB and SC inks use the same colour reference," explained Dr. Simon Daplyn, Marketing Manager of Sensient's inks division. "Early market tests show significant ink savings can be achieved by new customers switching to ElvaJet Opal SB ink."

"We are delivering reliable printing with outstanding results in terms of batch to batch colour consistency, sharpness of print detail, colour intensity, and high release from the paper, all with Eco Passport status providing further reassurance of brand compliance and sustainability in the supply chain," added Mike Geraghty, President of Sensient's Colour Group.

The digital sublimation inks have been formulated for use in Piezo-based printers for applications such as fashion, sports apparel, home textiles, and sign & display.

www.sensientinkjet.com ■

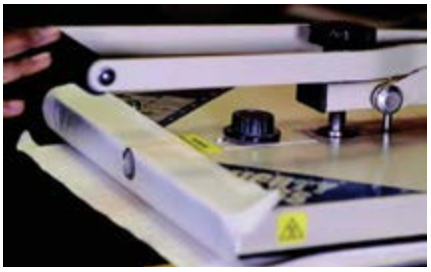
Neenah offers green solution to screen creation

Neenah Coldenhove has relaunched an improved heat transfer product that eliminates chemicals and process steps from the task of making and reclaiming screens. Exostencil Screen Prep Paper is an economic, green solution aimed at small to mid-size screen print companies or those in regions where environmental regulations make chemical handling difficult.

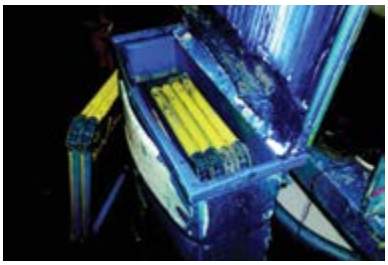
To counter problems relating to conventional screen preparation (including a long pre-press cycle and having to handle and dump multiple chemicals), Neenah strove to eliminate the need for chemicals, reduce the complexity of screen creation, shorten the pre-press cycle to just a few minutes, and reduce the equipment required to just a few pieces.

Benefits of Exostencil Screen Prep Paper include: time and cost savings, less equipment required, no mixing – no mess, and reducing the need for chemicals. Neenah advises: 'This emulsion remover is drain safe, however whenever rinsing emulsion remover and its byproduct down the drain, be sure to use a filtration system and comply with local regulations.'

www.neenahperformance.com/screen-print ■



A heat press is required to transfer the images to the screen



Exostencil eliminates the mess of traditional screen preparation

Neenah's Exostencil paper is available in 3 sizes: A3, 11x17 and 13x19

Proell offers new approach to IMD/FIM technology

Formerly, in-mould decoration (IMD) and film insert mould (FIM) technology required screen printing on a second surface; forming, trimming and back moulding of decorated standard- or hard-coated PC films. Now, due to the development of chemically and abrasion resistant dual-cure screen printing lacquers, films can be decorated from both sides, for creating matt/gloss or 3D effects or special dual designs.

Dual design means that a transparent PC film is first surface decorated, e.g. with a haptic aluminium brush effect. The semi-transparent silver layer is then overprinted with a thick line structure of Norilux DC dual-cure lacquer. The second surface of the film can be decorated e.g. with a photo-realistic wood or stone image, achieved by four-colour process screen printing with NoriCure IMS UV-curing inks.

But, the first ink layer on the second surface is a semi-transparent black, to prevent a shine through of the image. The wood image is then back printed with a white tinted adhesion promoter of the Noriphan IMD/FIM ink range. The decorated PC film is then 3D formed and back moulded with a transparent polycarbonate. When the finished HVAC (heating, ventilation, and air conditioning) panel is backlit, the four-colour wood image is visible.

In the future, IMD/FIM parts will include a night design with functional symbols due to the integration of printed electronics.

www.proell.de ■

Back moulded HVAC

Backlit HVAC

Conventional IMD/FIM process for a Mercedes Benz E-Class

Nazdar launches alternative inks for UV inkjet

Suitable for HP Scitex FB7500 and FB7600 printing-bridge industrial presses, Nazdar's 735 ink series has been formulated for use in multiple graphics applications, and with adhesion to a wide variety of both flexible and rigid substrates. The 735 Series promises long-term exterior performance, with resistance to the effects of UV degradation and colour fade. The inks are available in five-litre containers in Cyan, Magenta, Yellow and Black, plus Light Cyan, Light Magenta, White, Light Black and Orange.

"We've developed 735 Series as a cost-effective, alternative ink," explained Josh Lutz, market segment manager for UV Digital at Nazdar. "Customer response has been that it is nearly impossible to spot the differences in ink performance between the OEM and Nazdar 735 Bridge Series."

www.nazdar.com ■

Nazdar's 735 Bridge Series offers an alternative ink for UV flatbed printers

Screen printing applications require increasingly higher quality squeegee blades to meet their demands

All new Unitex Exar squeegee from Trelleborg

Developed by Trelleborg's technical team based in Retford, England, the new Unitex Exar screen printing squeegee is made from high-grade Diphenylmethane Diisocyanate (MDI) polyurethane and is designed to provide exceptional abrasion resistance, ensuring consistent sharp image quality over long print runs. Independent tests showed a 33% improvement in abrasion loss against a standard MDI polyurethane, which translates to longer screen printing cycles and offers potential cost and time savings as the blade does not need to be changed as often. Unitex Exar is resistant to degradation by commonly used inks, solvents and monomers and can be used for industrial screen printing as well as decorative printing such as textiles, graphics, bottles and containers. Trelleborg will launch its new squeegee at FESPA 2019.

www.trelleborg.com/en/applied-technologies ■

PRINTING United show floor 90% sold

As of February 2019, industry-leading suppliers and manufacturers have reserved 90% of available exhibit space for the debut of PRINTING United, according to event partners NAPCO Media and the Specialty Graphic Imaging Association (SGIA). The show will be held in Dallas from 23–25 October 2019.

"PRINTING United continues to gain momentum, and we are pleased to eclipse the 90% sold threshold nine months out from the Expo," said Mark J Subers, President – Printing and Packaging at NAPCO Media.

To stay competitive, print service providers (PSPs) are branching beyond their core businesses into new print markets. PRINTING United will serve printers and exhibitors by offering solutions from suppliers and manufacturers in market segments including garment, graphic, packaging, commercial, functional and in-plant printing.

"Most expos in the printing industry focus on a single segment. Our research shows that's not the way PSPs are heading," said Ford Bowers, President & CEO, SGIA. "The purpose and strength of PRINTING United is its support of businesses who are making the most of the convergence phenomenon."

www.PRINTINGUnited.com ■

Grünig and SignTronic team up for FESPA

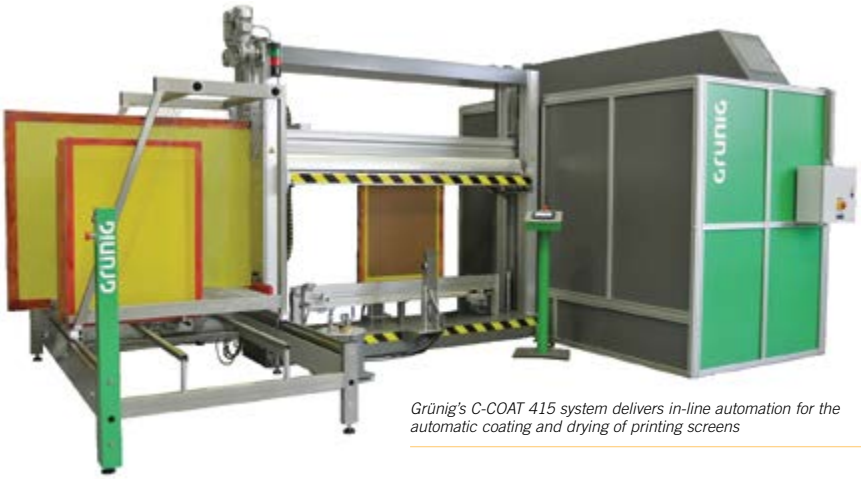
In a few weeks' time Grünig-Interscreen and SignTronic will present their equipment ranges from a joint exhibition booth at FESPA Global Print Expo 2019 in Munich.

Grünig will showcase its C-COAT 415 system, which delivers in-line automation for the automatic coating and drying of printing screens, to enable highly precise application of direct emulsion or capillary films.

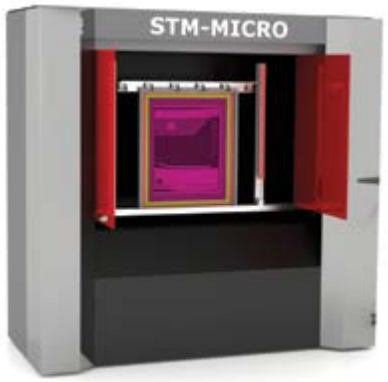
SignTronic is focusing on its Modular Computer to Screen (CtS) concept, which allows customers to select a StencilMaster model, then define a light source and optics to come up with an optimal personalised solution.

From 20–26 June 2019 Grünig-Interscreen and SignTronic will also exhibit their ranges at ITMA in Barcelona, where SignTronic will launch the STM-MICRO-TEX, which is designed as initiation solution into CtS direct exposure technology.

www.grunig.ch / www.signtronic.com ■



Grünig's C-COAT 415 system delivers in-line automation for the automatic coating and drying of printing screens



SignTronic will launch the new STM-MICRO-TEX at textile and garment technology exhibition ITMA, in June

DON'T SKIP SDS

Frank Toma underlines the importance of the Safety Data Sheet in the safe handling of chemicals

ESMA
Driving Print Excellence

Frank Toma is Chairman of ESMA's Health, Safety and Environmental Protection Committee

Yesterday I was reminded that once again it is time for an article for *Specialist Printing Worldwide.* And while sitting at my desk, desperately looking for something to write about, a colleague of mine asked if it is really necessary to provide a Croatian customer with a safety data sheet (SDS) in the Croatian language. Sometimes the solution for a problem just passes by …

HANDLING SDS IN THE EUROPEAN COMMUNITY

Who has to provide a SDS? Under REACh [the European Union regulation for Registration, Evaluation, Authorisation and Restriction of Chemicals] it is the responsibility of every participant in the supply chain of a dangerous substance/preparation, whether they are a manufacturer or a distributor with the first delivery and again whenever there are changes in the SDS. The SDS has to be delivered by mail or email. Just passively providing a SDS on a website is not sufficient; it has to be actively sent to the customer.

In what language should the SDS be provided? Well, the SDS has to be provided in one of the official languages of the member state the customer resides in (actually the same goes for the label of the substance).

I have been asked by customers if it is really necessary for them to have the SDS of all products used at their site. The answer here is 'Yes', since a lot of information relevant to the risk assessment of a substance/preparation is only to be found in the SDS. And without a risk assessment, industrial or commercial use of chemicals is not allowed. Also, every worker handling substances/preparations classified as dangerous has to be granted access to the SDS of these products.

WHAT INFORMATION DOES AN SDS PROVIDE?

Let's have a look at the most relevant sections (in my humble opinion). In Section 2 'Hazard identification' the classification and labelling of the product are described. Here a first check shows if there are any unwanted risks (like toxic, very toxic or CMR properties) to be expected when using the product. In that case it might be a good idea to ask your supplier for a less risky product. If in Section 2 there are still the 'old' symbols (black on an orange field and R- and S-sentences), the supplier should be asked for a revised version, because classification and labelling according to the GHS is required since 2015.

Section 3 'Composition/information on ingredients' lists all ingredients of the product classified as dangerous and might also provide information on whether substances of very high concern are part of the composition (a question frequently asked by customers).

Section 4 'First aid measures' describes what to do in case of an exposure of a worker to the product and might be quite helpful for a physician in case of an accident.

Section 5 'Firefighting measures' describes among other things, which extinguishing agents are suitable – and which are not. For example, it is not a good idea to use a full water jet on flammable liquids that don't mix with water; that will only spread the fire.

In Section 7 'Handling and storage' you may find issues like the (German) storage class, which tells you, which kind of products you are allowed to store together.

Section 8 'Exposure controls/personal protection' details critical values that have to be monitored; you will find values – like the German AGW or the British WEL – established by official bodies as well as the industry-generated DNEL und PNEC values. Also covered in chapter 8 is the suitable equipment for personal protection, which is also quite relevant; for example, different solvents might also have different penetration times for a given glove material.

Section 9 'Physical and chemical properties' gives you valuable facts like the flash point of the product, which tells you whether you have to think about measures for explosion protection.

Section 12 'Ecological information' gives information like the (German) WGK, the water hazard class, which is relevant for warehouses because legal requirements depend on how many products of which WGK are stored in a warehouse (you can also find this in chapter 15).

Last but not least, Section 14 'Transport information' contains information on whether the product is covered by Dangerous Goods regulation, which is especially relevant for distributors to avoid legal problems when delivering the product to customers.

Hopefully I have been able to show that SDS is much more than just lots of paper taking space in some forgotten folder! ■

See also guidance on the compilation of Safety Data Sheets (document can be downloaded from the ECHA website www.echa.europa.eu)

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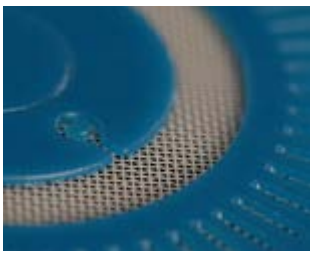

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